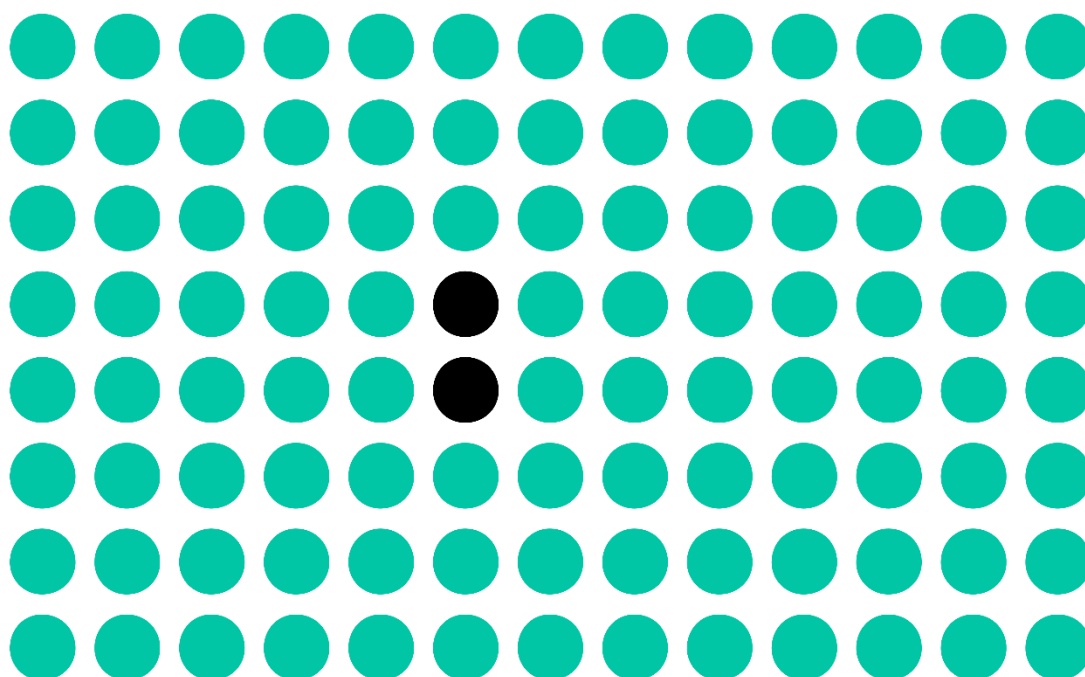




Instituto
de Medicina
Molecular

João
Lobo
Antunes

Scientific Report 2018



Lisbon, April 2019

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Structure & Organisation

Research and development in the Biomedical Sciences plays a central role in generating knowledge and in the application of this knowledge to improving the quality of life.

The mission of the Instituto de Medicina Molecular João Lobo Antunes (iMM) is to foster basic, clinical and translational biomedical research with the aim of contributing to a better understanding of disease mechanisms, developing novel predictive tests, improving diagnostics tools and developing new therapeutic approaches.

Located on the campus of the Faculty of Medicine of the University of Lisbon (FMUL), iMM is a Research Unit of the National Ministry of Science and Higher Education. iMM is mainly supported by national public funds and European Union funds. The research expenditure includes additional funds obtained from peer-reviewed competitive grants, private donations and industrial partnerships.

Created in December 2002, iMM results from the association of five former research units from FMUL: The Biology and Molecular Pathology Center, the Lisbon Neurosciences Center, the Microcirculation and Vascular Pathobiology Center, the Gastroenterology Center and the Nutrition and Metabolism Center. The institute is a Private, Non-profit Association.

iMM Associate Members

Universidade de Lisboa

Faculdade de Medicina da Universidade de Lisboa

Hospital de Santa Maria

Associação para a Investigação e o Desenvolvimento da Faculdade de Medicina

Fundação Oriente

Board of Trustees

The Board of Trustees is composed by representatives of the Associated Members and meets at least once per year to analyse the scientific and finance report and to approve the plan of activities and budget for the next year.



Board of Directors

M. Carmo-Fonseca, MD, PhD

President

Maria M. Mota, PhD

Executive Director

Bruno Silva-Santos, PhD

Vice-Director

Council of Scientists

The Council of Scientists is composed by all Group Leaders. It meets at least once per year to discuss the scientific strategies and plan of actions proposed by the Board of Directors. This council elects two representatives to participate in the meetings of the Board of Trustees.

Scientific Advisory Board

Undertake periodic evaluations to the iMM specific programmes and include international experts of scientific fields.

Caetano Reis e Sousa, PhD

The Francis Crick Institute, UK

Carlos Caldas, MD, PhD

Cambridge Cancer Center, UK

Elaine Mardis, PhD

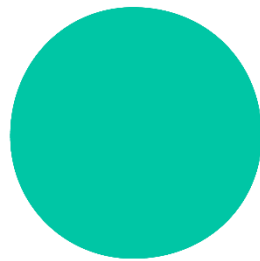
Institute for Genomic Medicine at NationWide Children's Hospital, USA

Paul Peter Tak, MD, PhD

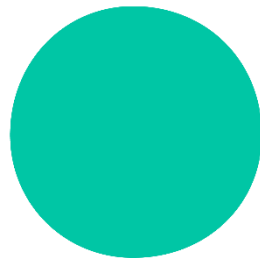
University of Amsterdam, The Netherlands

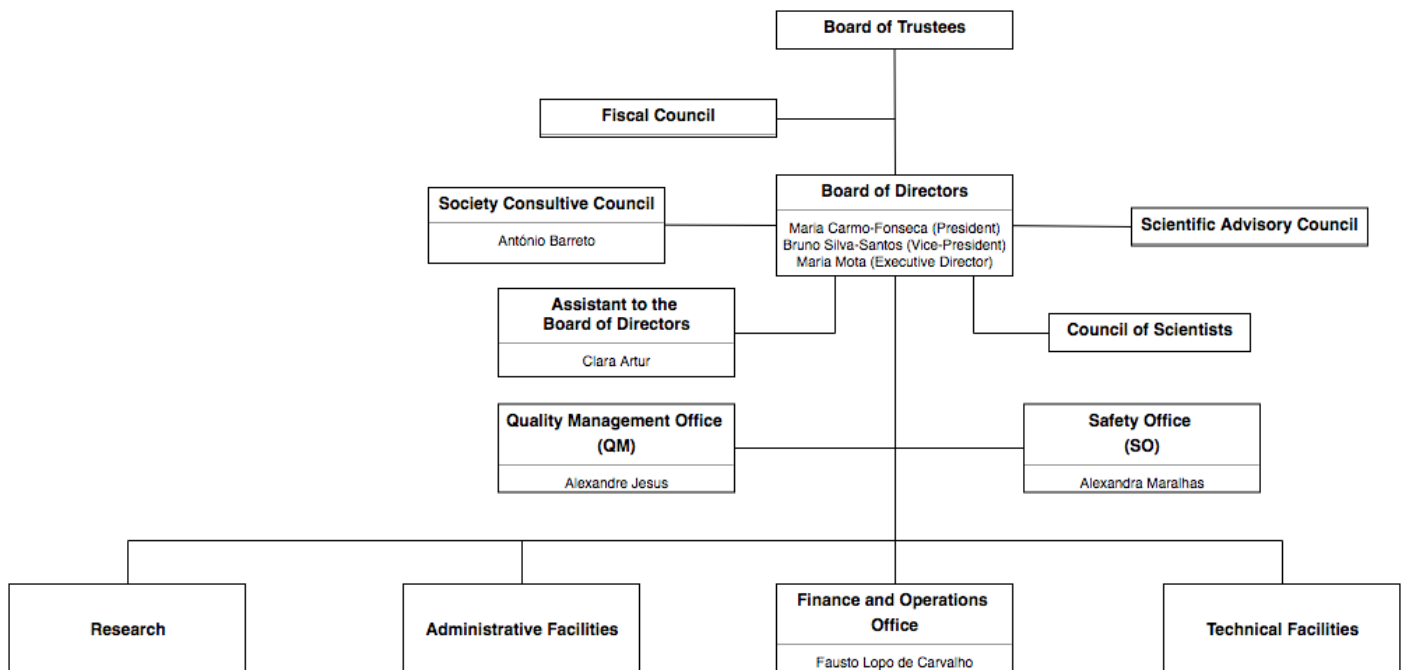
Philippe Sansonetti, MD, PhD

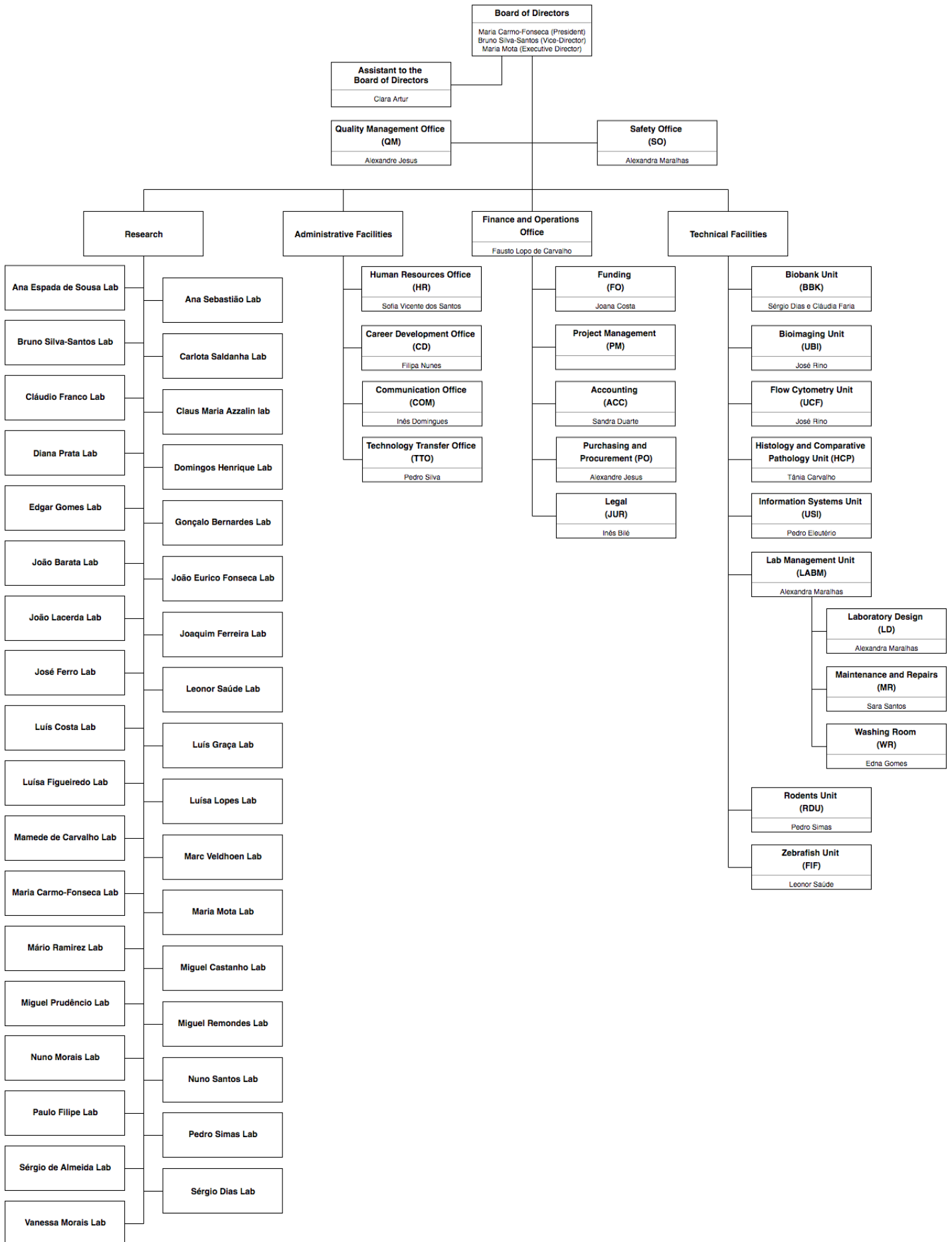
Institute Pasteur, France



Organigram







Evaluation Reports 2018

2013 FCT Evaluation of R&D Units

Period of Evaluation:

2008 – 2012: Scientific and technological activities (performance indicators);

2015 – 2020: Research strategies and planned work consolidated as a strategic programme.

Evaluation Panel:

Panel 3: Health and Life Sciences

Final Classification: Excellent

Panel's overall comments (Stage 2 – Site visit):

The site visit confirmed to a large extent the conclusions of the initial assessment that the unit has an excellent overall standing. It pointed out to some insufficiencies in the scientific output of a significant fraction of the integrated members listed in the initial application, and in the intensity of technology transfer that were openly discussed with both the unit leaders and the active group of students and postdocs. The site visit team recommended (i) a redefinition of the role of the less productive integrated members in research, teaching or management tasks that should lead to a reduction in the number of integrated members and independent groups; (ii) increased efforts in securing substantial financial resources through contracts with industry. It was satisfied with the clarification of the novel management and governance processes that have been established and praised Prof Maria Carmo-Fonseca, the Principal Investigator of the proposal and the Executive Director of iMM since 2002, to have promoted Dr. Maria Mota as the unit Director. Prof Maria Carmo-Fonseca now serves as iMM President in an oversight role with veto power on strategic decisions, and a focus on international development. Dra. Maria Mota is supported on her role as Executive Director by two Vice Directors, Dr. Henrique Veiga-Fernandes and Bruno Silva-Santos, and an experienced Finance Director, Mrs. Margarida Pinto-Gago¹. In order to achieve this in a transition period of reorganization of its staff dedicated to research and a context of potential shortage of public funding, the new iMM Board of Directors will require strong financial and managerial support from the University of Lisbon and the Faculty of Medicine. The Panel considered that the proposed strategic programme provides a solid basis for the future development of the unit in the next period, and that the budget requested was adequate, but recommended that the full executive power should be endowed to the coordinator during her term for its implementation, while the former director and President takes charge of international cooperation.

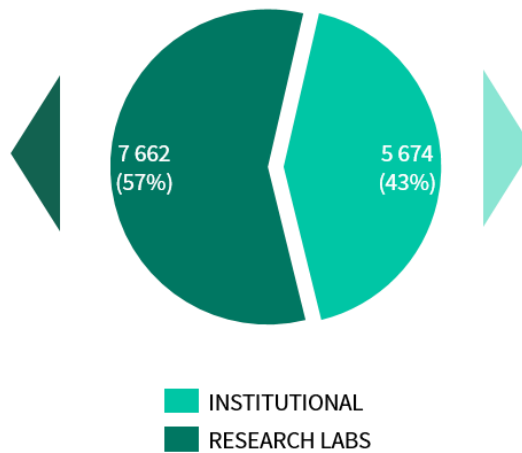
¹ Since 2017, Dra. Maria Mota is supported on her role as Executive Director by one Vice-Director, Dr. Bruno Silva-Santos, and a Finance and Operations Director, Dr. Fausto Lopo de Carvalho.

Research Funding

Expenditure in 2018 by Funding Source

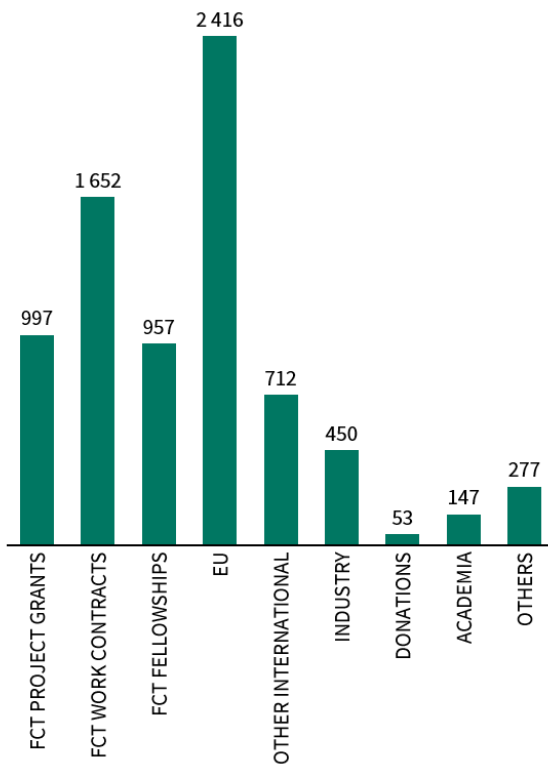
Total Expenditure: € 13.335.684²

Total Expenditures 13,3M



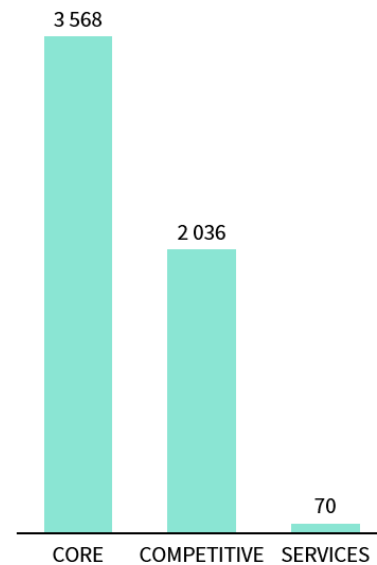
Research Labs

All Values in 000 Euros



Institutional

All Values in 000 Euros



² Figures for this exercise only consider costs registered in the exercise of 2018, from Jan 1 to Dec 31. In previous reports the numbers presented also took in consideration payments occurred in the exercise of the report but referring to expenses from the previous year. In order to reflect the yearly operations of iMM, this change in the referential was put in place from 2018 onwards.

2018 Expenditure

			(EUROS)
INSTITUTIONAL	CORE	3 568 055	
	COMPETITIVE	2 036 000	
	SERVICES	69 598	5 673 653
RESEARCH LABS	FCT PROJECT GRANTS	997 482	
	FCT WORK CONTRACTS	1 652 236	
	FCT FELLOWSHIPS	956 999	
	EU	2 416 199	
	OTHER INTERNATIONAL	711 843	
	INDUSTRY	450 183	
	ACADEMIA	53 328	
	DONATIONS	146 613	
	OTHERS	277 148	7 662 031
TOTAL			13 335 684³

³ Figures for this exercise only consider costs registered in the exercise of 2018, from Jan 1 to Dec 31. In previous reports the numbers presented also took in consideration payments occurred in the exercise of the report but referring to expenses from the previous year. In order to reflect the yearly operations of iMM, this change in the referential was put in place from 2018 onwards.

Number of Ongoing Research Grants in 2018

200 Research Grants:

Public National FCT: 119

Private National: 19

Public National Other: 3

Of which with the industry – 12

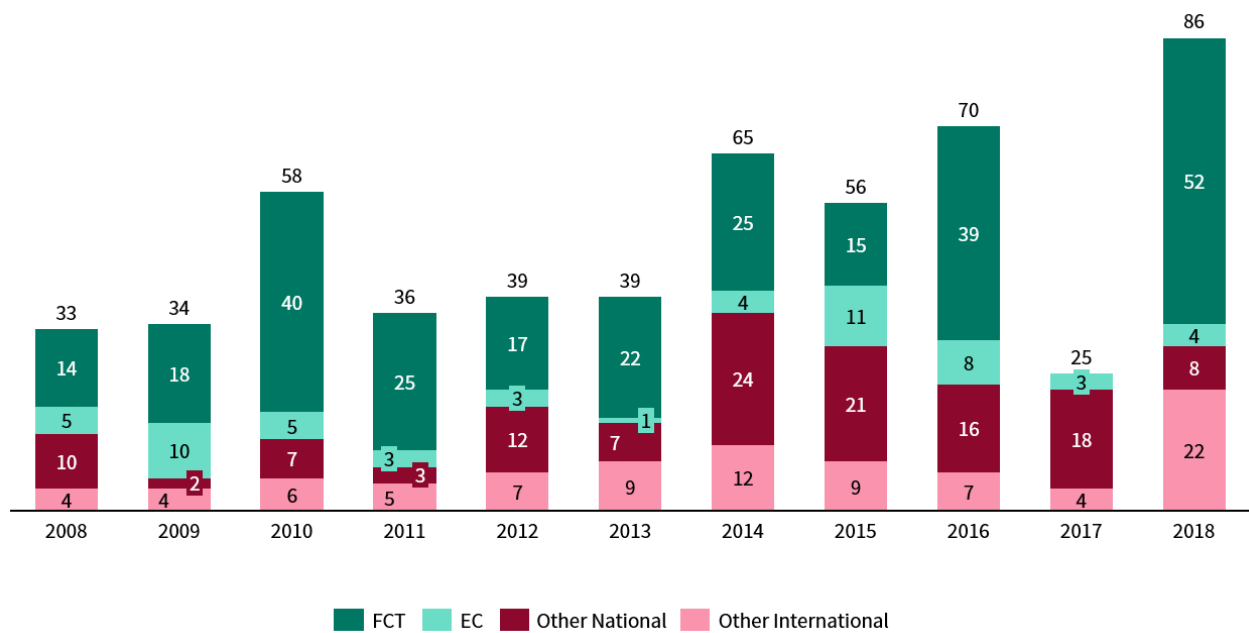
Public European Commission: 26

Private International: 32

Public International Other: 1

Of which with the industry – 10

Number of Research Grants Initiated at iMM from 2008 to 2018



Number of Research Funding Grants Initiated in 2018

Research Grants (86):

National Public: 52

International Public: 4

National Private: 8

International Private: 22

Projects Initiated in 2018 through Competitive Funds

FUNDING AGENCY	RESEARCHER	iMM BUDGET
Fundação para a Ciência e a Tecnologia (FCT)	Ana Espada de Sousa	€ 239 999,11
	Ana Espada de Sousa	€ 52 500,00
	Ana Espada de Sousa	€ 41 187,50
	Maria Carmo-Fonseca	€ 83 750,00
	Maria Carmo-Fonseca	€ 237 261,63
	Simão Rocha	€ 239 555,22
	Karine Serre	€ 239 896,60
	Karine Serre	€ 12 500,00
	Karine Serre	€ 48 750,00
	Julie Ribot	€ 239 679,45
	Vera Neves	€ 12 500,00
	Ana Herdade	€ 6 000,00
	Ana Salomé Veiga	€ 5 765,20
	Ana Salomé Veiga	€ 54 975,00
	Mamede de Carvalho	€ 155 615,31
	Carla Iris Couto	€ 239 302,82
	Sérgio Almeida	€ 239 753,90
	Robert Martin	€ 239 227,92
	Maria Mota	€ 239 886,62
	Ksenija Slavic	€ 239 761,60
	Ângelo Chora	€ 239 058,69
	Sandra Trindade	€ 231 666,36
	João Rodrigues	€ 50 189,13
	Vanessa Morais	€ 239 998,20
	Francisca Vasconcelos	€ 235 365,31
	Cláudio Franco	€ 238 865,33
	Sérgio Dias	€ 190 615,32
	Maria José Diógenes	€ 208 541,36
	Maria José Diógenes	€ 12 500,00
	Ana Sebastião	€ 15 000,00
	Ana Sebastião	€ 21 250,00
	Ana Sebastião	€ 239 867,77
	Sandra Vaz	€ 239 677,81
	Miguel Prudêncio	€ 30 000,00
	Miguel Prudêncio	€ 215 464,63
	João Carriço	€ 33 324,50
	Bruno Sousa e Silva	€ 239 854,03
	Miguel Remondes	€ 239 421,20
	Ana Catarina Ribeiro	€ 239 365,16
	Maria Leonor Saúde	€ 211 843,36
Cláudia Faria	€ 238 740,32	
João Barata	€ 239 641,39	
Tiago Rodrigues	€ 238 166,90	
João Seixas	€ 239 986,32	
Luís Costa	€ 14 743,34	

	Sandra Casimiro	€ 234 615,31
	Sandra Casimiro	€ 6 250,00
	Edgar Gomes	€ 239 999,86
	Isabel Pavão Martins	€ 7 500,00
	Marc Veldhoen	€ 164 988,93
	Claus Azzalin	€ 239 789,17
	Pedro Simas	€ 239 156,12
European Commission	Bruno Silva-Santos	€ 160 635,60
	Luisa Figueiredo	€ 2 000 000,00
	Edgar Gomes	€ 1 266 861,25
	Tiago Rodrigues	€ 353 750,00
la Caixa Foundation	Maria Mota	€ 499 950,00
	Miguel Castanho	€ 254 650,00
National Multiple Sclerosis Society	Vanessa Morais	€ 32 193,76
CHDI Foundation	Joaquim Ferreira	€ 2 546,43
AFM-Téléthon - SP du CS	Edgar Gomes	€ 51 000,00
	William Roman	€ 35 000,00

Protocols, Donations & Awards⁴

FUNDING AGENCY	RESEARCHER	iMM BUDGET
Fundo iMM-Laço	Karine Serre	€ 25 000,00
	Rui Martinho	€ 25 000,00
	Sérgio de Almeida	€ 25 000,00
Gilead Sciences, Lda	Ana Espada de Sousa	€ 32 000,00
Janssen-Cilag Farmacêutica, Lda	Bruno Silva-Santos	€ 30 000,00
Ampastta	Tiago Maia	€ 5 683,50
Lymphocyte Activation Technologies SA	Bruno Silva-Santos	€ 184 176,00
Octapharma, Lda	Susana Lopes da Silva	€ 5 000,00
Csl Behring	Susana Lopes da Silva	€ 5 000,00
Kedrion	Susana Lopes da Silva	€ 5 000,00
BGP Products Unipessoal, Lda	João Eurico Fonseca	€ 4 187,50
Novartis Farma, S.A.	João Eurico Fonseca	€ 6 650,00
	Paulo Filipe	€ 5 000,00
ACHÉ Laboratórios Farmacêuticos	João Eurico Fonseca	€ 12 850,00
Alpine Immune Sciences, Inc.	Luis Graça	€ 26 875,00
Fundação Calouste Gulbenkian	Maria Mota	€ 5 500,00
Institut Pasteur	Maria Mota	€ 150 000,00
L'oréal Paris	Inês Bento	€ 13 500,00
FEI Europe BV - Sucursal en España	---	€ 500,00

⁴ Considered protocols, donations and awards that fund projects, infrastructures and seminars.

iMM Applications and Secured Competitive Funding

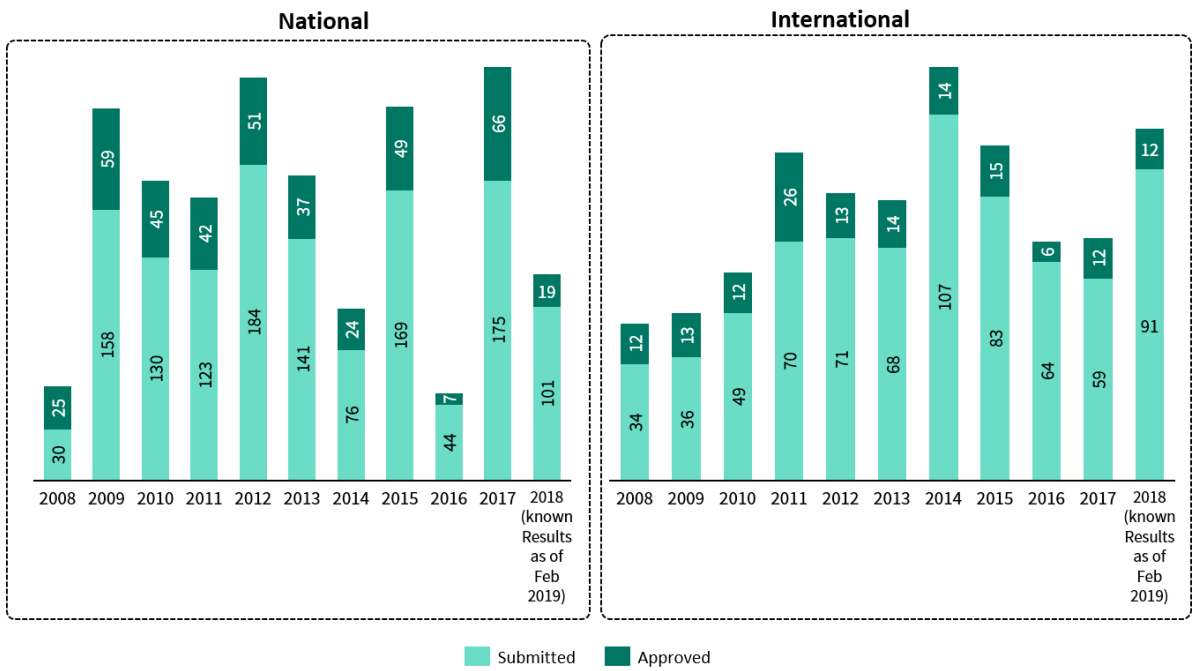


Figure 1: Submitted and approved applications to national and international competitive funding schemes since 2008. The number of submitted applications corresponds to those effectively communicated to the Funding Office. The number of approved applications for 2018 corresponds to those with known results as of February 2019 (representing 68% and 91% of submitted international and national applications, respectively).

Funds Secured (Values in Million Euros)

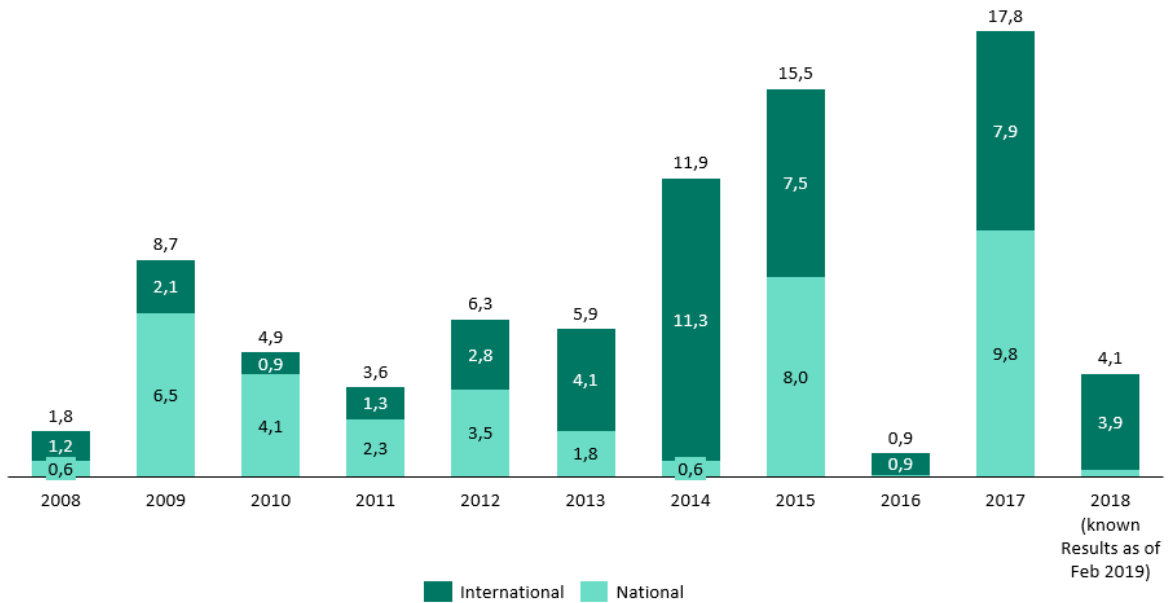


Figure 2: Total funds secured by iMM (in millions of €) in international and national competitive funding schemes since 2008. Secured funds per year correspond to the sum of the iMM budget of the approved applications submitted in the corresponding year (irrespective to the project starting date). Information for 2018 corresponds to known results as of February 2019 (representing 68% and 91% of submitted international and national applications, respectively).

Funding Sources of iMM Applications

In 2018, iMM researchers and staff have submitted grants to the following funding schemes:

INTERNATIONAL					
PRIVATE FUNDS		PUBLIC FUNDS			
JDRF	Type 1 Diabetes Project Concept	European Commission - Horizon 2020	Excellent Science	European Research Council	Starting Grant
Merck/EMD Serono	Grant for Multiple Sclerosis Innovation				Advanced Grant
Brain & Behavior Research Foundation	NARSAD Young Investigator Grants				Synergy Grant
Bayer	Grants4Targets				Proof of Concept
American Psychological Foundation	Visionary Grants			Marie Skłodowska-Curie Actions	Individual Fellowships
Angelman Syndrome Foundation	Research Grants				Research and Innovation Staff Exchange
Worldwide Cancer Research	Grants				Innovative Training Networks
EFSD	EFSD/JDRF/Lilly European Programme in Type 1 Diabetes Research			Future and Emerging Technologies	FET Open
Pfizer	Pfizer Independent Grants for Learning & Change				FET Flagships
EMBO	Long-Term Fellowship			Research Infrastructures	
	Installation Grant			Industrial Leadership	Nanotechnologies, Advanced Materials, Advanced Manufacturing and Processing, and Biotechnology
National Multiple Sclerosis Society	Pilot Grant			Societal Challenges	Health, demographic change and well-being
la Caixa Foundation	Junior Leaders			Spreading excellence and widening participation	Twinning
Frick Foundation for ALS research	Grants				ERA Chair
BrightFocus Foundation	Alzheimer's Disease Research Program	Innovative Medicines Initiative (IMI) EU Public-Private Partnership			
International Foundation for Research in Paraplegia	Research Grants	COST European Cooperation in Science and Technology			
Yakult Nature Research	Global Grants for Gut Health	European Regional Development Fund	Interreg Sudoe Programme		
Kenneth Rainin Foundation	Innovator Awards		Interreg Atlantic Area		
Alzheimer's Drug Discovery Foundation	Drug Discovery Program	National Institute for Health (NIH), US			

Chan Zuckerberg Foundation	Ben Barres Early Career Acceleration Awards
	Collaborative Science Awards
Michael J. Fox Foundation	Research Grants
	Biomarkers Across Neurodegenerative Diseases
	Improved Biomarkers and Clinical Outcome Measures Program
Open Lab Foundation (GSK)	Open Lab
MND Association	Biomedical Research Grant

NATIONAL			
PRIVATE FUNDS		PUBLIC FUNDS	
LPCC	LPCC-Terry Fox 2018	Fundação para a Ciência e Tecnologia	R&D Unit Evaluation
	Bolsa LPCC / Fundação PT		Scientific Employment Stimulus
	Bolsa LPCC / Pfizer		International Cooperation
Janssen	Prémio Janssen Inovação		
Bluepharma	Bluepharma UC Innovation Award		
Fundação Amélia de Mello	Bolsa D. Manuel de Mello		
Pfizer	Prémios Pfizer 2018 - SCMED		
Bial	Apoios à Investigação Científica 2018/2019		
Santa Casa da Misericórdia	Prémio Mantero Belard		
Fundação AstraZeneca	Bolsa Fundação AstraZeneca/FMUL 2018		
Maratona da Saúde Associação	Maratona da Saúde Award		

Funding Sources - Evolution of the diversity

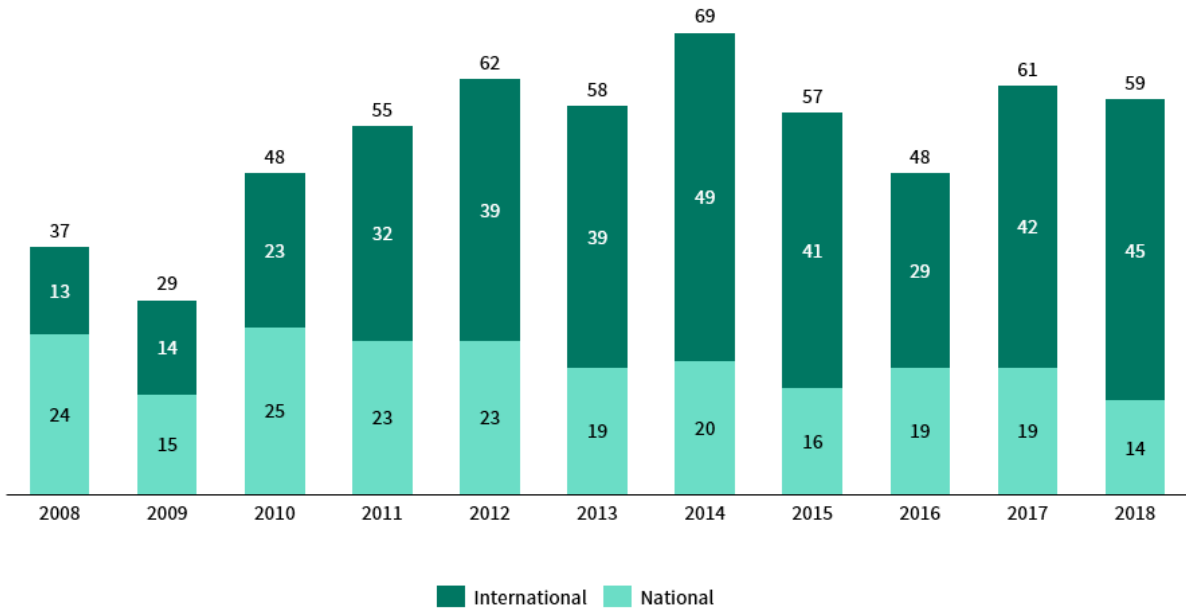


Figure 3: Evolution of the diversity of international and national funding schemes for which iMM researchers submitted applications from 2008 to 2018.

2018 iMM Activities Highlights

Human Resources 2018

		2017	2018
Researchers	PhD	194	206
	PhD Students	117	138
	MSc Students	75	94
	Master	93	88
	Graduate	33	37
	Other	10	3
		522	566
Technical Staff	PhD	8	8
	Master	27	26
	Graduate	29	20
	Other	22	25
		86	79
Administrative Staff	PhD	6	6
	Master	9	7
	Graduate	16	16
	Other	5	6
		36	35
TOTAL		644	680

Selection of Prizes and Awards

Young Biophysicist 2018

Marta Marques (Gonçalo Bernardes Lab)

2018 MedChemComm Emerging Investigator Lectureship

Gonçalo Bernardes (Group Leader)

Janssen Innovation Award – 1st Place

Bruno Silva-Santos (Group Leader), Karine Serre e Sofia Mensurado (Bruno Silva-Santos Lab)

Jakie/Sociedade Portuguesa de Reumatologia Grant

João Eurico da Fonseca Lab

Fundo de Investigação da Sociedade Português de Reumatologia

João Eurico da Fonseca Lab

Gilead Génese Programme

Robert Badura (Ana Espada de Sousa Lab)

Nunes Correa Verdades de Faria Award

Mariana Alves (Joaquim Ferreira Lab)

Nunes Correa Verdades de Faria Award: Honorable Mention

Daniel Caldeira (Joaquim Ferreira Lab)

Fahraeus Gold Medal Award

Carlota Saldanha (Group Leader)

la Caixa – Individual Project

Maria Mota (Group Leader)

la Caixa – Collaborative Project

Miguel Castanho (Group Leader)

H2020 ERC Proof of Concept

Cláudio Franco (Group Leader)

H2020 ERC Synergy Grant

Edgar Gomes (Group Leader)

ART Diagnostics, EIC-SMEInst-2018-2020 — SME instrument Phase 1

Ivo Martins, Ana Martins e Patrícia Carvalho (Nuno Santos Lab)

Scientific Excellence Award in the field of Molecular, Cellular and Immunoparasitology by the American Society of Tropical Medicine and Hygiene

Debanjan Mukherjee (Maria Mota Lab)

Santa Casa da Misericórdia Awards: Mantero Bellard Award

Luísa Lopes (Group Leader)

iMM Best Master Thesis Award

Ana Raquel Lopes (Bruno Silva-Santos Lab)

Cristiana Morgado (Sérgio de Almeida Lab)

Diana Moita (Miguel Prudêncio Lab)

BIAL Foundation: Grant for Scientific Research 2018/2019

Luísa Lopes e Miguel Remondes (Group Leaders)

Fundo iMM-Laço: A Caminho da Cura (2017 Edition – Announced in 2018)

Sérgio de Almeida (Group Leader)
 Sofia Mensurado (Bruno Silva-Santos Lab)
 Rui Martinho (Carmo-Fonseca Lab)

Fundo iMM-Laço: A Caminho da Cura (2018 Edition – Announced in 2019)

Sérgio de Almeida (Group Leader)
 Marc Veldhoen (Group Leader)

Sanofi – Institut Pasteur 2018 Awards: Biomedical Research (International Mid-Career Award)

Maria Mota (Group Leader)

H2020 FETOpen: NOVIRUSES2BRAIN Project

Miguel Castanho (Group Leader)

H2020 Twinning: ACORN

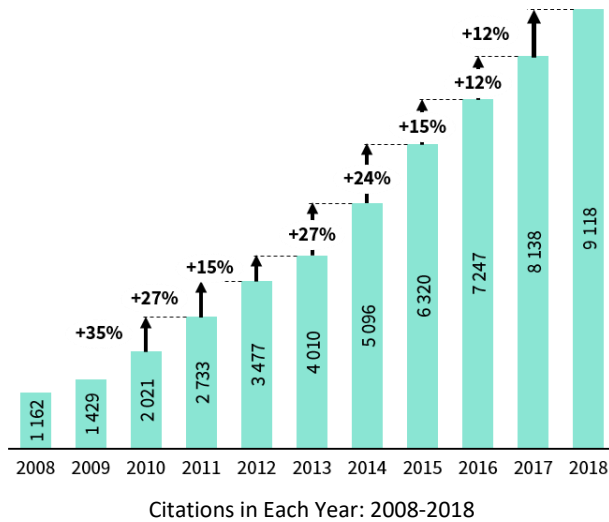
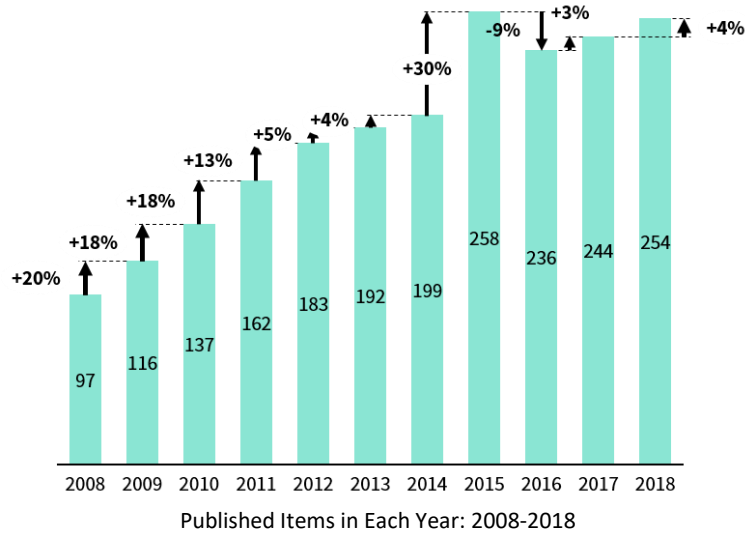
Gonçalo Bernardes (Group Leader)

Productivity at a Glance

	2017	2018
Total Publications International Journals	244	254
Publications in Journals with Impact Factor > 10	23	53
Communications in International Conferences	274	561
Communications in National Conferences	375	316
Seminars and Invited Lectures	344	372
Organisation of Conferences	78	104
PhD Thesis Completed	16	23
MSc Thesis Completed	48	65
Prizes, Honours and Awards	75	96

iMM Publications in International Journals

(Source: Web of Science™)



Papers in 2018: 254

Papers since 2008: 2.078

Sum of the times cited: 43.370

Average citations per item: 19.87

h-index: 82

Query: ADDRESS: (Inst Med Molec SAME Portugal) OR ADDRESS: (Mol Med Inst SAME Portugal) OR ADDRESS: (Inst Mol Med SAME Portugal) OR ADDRESS: (Inst Med Mol SAME PORTUGAL)

Refined by: [excluding] DOCUMENT TYPES=(EDITORIAL MATERIAL OR CORRECTION OR MEETING ABSTRACT OR BOOK CHAPTER OR REVIEW)

Timespan: All years. Indexes=SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, ESCI, CCR-EXPANDED, IC.

Note: This data is based on the information available on the Web of Science; hence, it is not an exhaustive analysis of the iMM publications.

10 Most Cited Articles 2002-2018

(Source: Web of Science™)

Healy DG, Falchi M, O'Sullivan SeanS et al (2008). Phenotype, genotype, and worldwide genetic penetrance of LRRK2-associated Parkinson's disease: a case-control study. *LANCET NEUROLOGY*. **7** (7) 583-590. (IF: 27.144, Citations: 684. Source: Web of Science).

Ostrowski M, Carmo NB, Krumeich S et al (2010). Rab27a and Rab27b control different steps of the exosome secretion pathway. *NATURE CELL BIOLOGY*. **12** (1) 19-30. (IF: 19.064, Citations: 682. Souce: Web of Science).

Henry DH, Costa L, Goldwasser F et al (2011). Randomized, Double-Blind Study of Denosumab Versus Zoledronic Acid in the Treatment of Bone Metastases in Patients with Advanced Cancer (Excluding Breast and Prostate Cancer) or Multiple Myeloma. *JOURNAL OF CLINICAL ONCOLOGY*. **29** (9) 1125-1132. (IF: 26.36, Citations: 558. Source: Web of Science).

Lefaucheur J, Andre-Obadia N, Antal A et al (2014). Evidence-based guidelines on the therapeutic use of repetitive transcranial magnetic stimulation (rTMS). *CLINICAL NEUROPHYSIOLOGY*. **125** (11) 2150- 2206. (IF: 3.614, Citations: 520. Source: Web of Science).

Ratziu V, Bellentani S, Cortez-Pinto H et al (2010). A position statement on NAFLD/NASH based on the EASL 2009 special conference. *JOURNAL OF HEPATOLOGY*. **53** (2) 372-384. (IF: 15.04, Citations: 518. Source: Web of Science).

Hansen C, Angot E, Bergstrom AL et al (2011). alpha-Synuclein propagates from mouse brain to grafted dopaminergic neurons and seeds aggregation in cultured human cells. *JOURNAL OF CLINICAL INVESTIGATION*. **121** (2) 715-725. (IF: 13.251, Citations: 420. Source: Web of Science).

Klose CSN, Flach M, Moehle L et al (2014). Differentiation of Type 1 ILCs from a Common Progenitor to All Helper-like Innate Lymphoid Cell Lineages. *CELL*. **157** (2) 340-356. (IF: 31.398, Citations: 384. Source: Web of Science).

Barbosa-Morais NL, Irimia M, Pan Q et al (2012). The Evolutionary Landscape of Alternative Splicing in Vertebrate Species. *SCIENCE*. **338** (6114) 1587-1593. (IF: 41.058, Citations: 380. Source: Web of Science).

Zerr I, Kallenberg K, Summers DM et al (2009). Updated clinical diagnostic criteria for sporadic Creutzfeldt-Jakob disease. *BRAIN*. **132** 2659- 2668. (IF: 10.848, Citations: 379. Source: Web of Science).

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Note: This data is based on the information available on the Web of Science; hence, it is not an exhaustive analysis of the iMM publications.

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Seminars & Workshops

Computational Biology and Bioinformatics Seminars

17th January

“Brain, blood, and functional genomics”

Alexandre Raposo, PhD – Ana Espada Sousa Lab and PRECISE

31st January

“Phase-variable type I restriction-modification systems: A new characterization methodology for high throughput sequencing data”

Catarina Mendes – Mário Ramirez Lab

15th February

“Nextflow: Easily build and deploy scalable pipelines anywhere”

Diogo Silva – Mário Ramirez Lab

28th February

“Transcriptional profile of follicular T helper cells under type 1 and type 2 conditions- Update!”

Saumya Kamar – Luís Graça Lab

21st March

“betAS: beta distribution-based method for differential alternative splicing analyses”

Mariana Ferreira, PhD Student – Nuno Morais Lab

28th March

“Large-scale population studies and link significance in phylogenetic analyses”

Sofia Teixeira, PhD Student - Instituto de Engenharia de Sistemas e Computadores, Investigação e Desenvolvimento em Lisboa

19th April

“Functional impact of alternative splicing across vertebrate tissues, cell types and developmental stages”

Javier Tapial – Nuno Morais Lab

9th May

“Uncovering the regulatory T cell transcriptional signature in the human thymus”

Miguel Dias – Ana Espada de Sousa Lab

29th May

“Metabolic Systems Biology: methods and applications”

Isabel Rocha – Universidade NOVA de Lisboa

15th June

“Amphioxus functional genomics reveals the evolution of vertebrate regulatory traits”

Manuel Irimia – Center for Genomic Regulation

20th June

“A new approach to improve the prediction of deleterious variants in hypertrophic cardiomyopathy disease”

Pedro Barbosa – M. Carmo-Fonseca Lab

4th July

“The need for transparent boxes: Why assembly can be more than meets the eye”
João Carriço – Mário Ramirez Lab

19th September

“Association of the epigenetic mark 5hmC local density with somatic mutations in cancer”
João Agostinho de Sousa – Sérgio de Almeida Lab

10th October

“Discovery of novel mechanisms of centrosome clustering and their therapeutic value in cancer”
Nora Fresman – Nuno Morais Lab

17th October

“Promoter-proximal convergent antisense transcripts (PCATs): a novel class of regulatory non-coding RNAs”
Rui Luís – M. Carmo-Fonseca Lab

14th November

“Finding genomic interfaces using non-pairwise 3C”
Filipe Tavares-Cadete – Claus Azzalin Lab

28th November

“Using proteomics to understand how *T. brucei* adapts to the adipose tissue”
Mariana Sequeira – Luísa Figueiredo Lab

Immunology Club

7th February

“Maintaining and activating intra-epithelial lymphocytes at the intestinal epithelial barriers”
Špela Konjar, PhD – Marc Veldhoen Lab

7th March

“Expansion of activated Tfh following influenza vaccination is abrogated by in-vivo IL-6-blockade”
Ana Água-Doce // Vasco Romão – Luís Graça Lab // João Eurico da Fonseca Lab

04th April

“Role of lymphotoxin alpha in thymic regeneration and homing of peripheral antigen presenting cells”
Noella Lopes, PhD – Centre d'Immunologie de Marseille-Luminy, CIML

10th April

Special Immunology Club: “From the TCR to the MHCII: A PhD”
Julia Merckenschlager – The Francis Crick Institute
Host: Bruno Silva-Santos

18th April

“Mechanisms of Regulatory T Cell Recruitment By Mesenchymal Stem Cells in Vitro”
Rita Azevedo, PhD – João Lacerda Lab

2nd May

“Antibody based therapy for T-Cell acute lymphoblastic leukaemia-targeting IL-7 Receptor”
Padma Akkapeddi, PhD Student – Gonçalo Bernardes Lab and João Barata Lab

16th May

“Blood T follicular helper and regulatory cells in rheumatoid arthritis patients treated with DMARDs”
Vasco Romão, MD, PhD Student – João Eurico da Fonseca Lab

30th May

“Regulating Tissue Resident Memory Cell Differentiation”
Cristina Ferreira, PhD – Marc Veldhoen Lab

18th September

“Age and genetic-dependent variations of thymic development of regulatory T lymphocytes”
Julie Darrigues – CPTP, INSERM

17th October

“Tissue specialization of human TFR cells”
Ricardo Correia – Luís Graça Lab

14th November

“Characterization of protective T cell subsets in the male reproductive tract”
Helena Brigas – Bruno Silva-Santos Lab

28th November

“Revealing a polygenic variant landscape in human inborn immunodeficiency”
Pedro Rosmaninho – Ana Espada de Sousa Lab

12th December

“Activation and regulation of intestinal intraepithelial lymphocytes”
Birte Blankenhaus – Marc Veldhoen Lab

Internal Seminars

3rd January

“HIV and CD4 T cell interplay”
Ana Espada de Sousa – Group Leader, iMM

17th January

“From mouse studies on T cell subsets to patient stratification in autoimmunity”
Luís Graça – Group Leader, iMM

31st January

“From Onco to Neuro: unanticipated findings on tissue-resident gamma-delta T cells”
Bruno Silva-Santos – Group Leader, iMM

14th February

“Competing interests in vascular morphogenesis”
Cláudio Franco – Group Leader, iMM

7th March

“Measuring forces at the nanoscale for cardiovascular risk evaluation”
Nuno Santos – Group Leader, iMM

21st March

“Single-molecule imaging of transcription at damaged chromatin”
Sérgio de Almeida – Group Leader, iMM

4th April

“Maintaining and activating resident T lymphocytes”
Marc Veldhoen – Group Leader, iMM

16th May

“The problem of not being good whiskey: IL-7R in leukemia”
João Barata – Group Leader, iMM

30th May

“Adipose tissue: a safe haven for parasites?”
Luísa Figueiredo – Group Leader, iMM

27th June

“Phase I/II clinical trial of donor Treg administration in steroid-refractory chronic GvHD: Case report, review of diagnostic criteria and interim clinical trial results”
João Lacerda – Group Leader, iMM

18th July

“Insights into Cancer Treatment Resistance: Macro or Micro (perspectives)”
Luís Costa – Group Leader, iMM

25th July

“Manipulating gene expression to revert ageing”
M. Carmo-Fonseca – Group Leader, iMM

3rd October

“Alternative Lengthening of Telomeres: survival strategies of telomerase-negative cancer cells”
Claus Azzalin – Group Leader, iMM

17th October

“Regulation of humoral responses”
Luís Graça – Group Leader, iMM

31st October

João Eurico da Fonseca – Group Leader, iMM

5th December

María Mota – Group Leader, iMM

19th December

“Plasmodium liver infection and anti-malarial strategies”
Miguel Prudêncio – Group Leader, iMM

Metabolism Club

10th May

“Basics of Energy Metabolism”

Miguel Castanho – Group Leader, iMM

7th June

“Methionine Metabolism in health and disease... and Plasmodium infection”

Vanessa Zuzarte-Luís – Maria Mota Lab

28th June

“Metabolic control of body mass and obesity”

Nuno Santos – Group Leader, iMM

6th September

“Experimental Models of Metabolic Dysregulation and Associated Phenotyping Options”

Philipp Scherer – Touchstone Diabetes Center, University of Texas Southwestern Medical Center

4th October

“Measure Mitochondria Function - Back to Basics”

Vanessa Morais – Group Leader, iMM

8th November

“The role of mitochondrial metabolism in breast cancer aggressiveness induced by hypercholesterolemia”

Sandrina Pereira – Sérgio Dias Lab

6th December

“Trypanosoma brucei Infection of Adipose Tissue”

Sandra Trindade – Luísa Figueiredo Lab

Monday Lecture

8th January

“Consequences of short telomeres to the organism”

Miguel Godinho Ferreira, Instituto Gulbenkian de Ciência

Host: Claus Azzalin

15th January

“An iron hand over cancer stem cells”

Raphael Rodriguez, Institut Curie

Host: Gonçalo Bernardes

22nd January

“A molecular atlas of the brain vasculature revealed by single cell RNA sequencing”

Christer Betsholtz – Karolinska Institute

Host: Cláudio Franco

29th January

“Efficacy through flexibility: the case of natural anticoagulants”

Pedro Pereira – i3S

Host: Nuno Santos

5th February

“Tracking cellular migration in vivo to test tissue residency”

David Withers – University of Birmingham

Host: Marc Veldhoen

12th February

“Mechanisms of sexual differentiation in malaria parasites”

Matthias Marti – University of Glasgow

Host: Luísa Figueiredo, Maria Mota and Miguel Prudêncio

19th February

“Auditory and motor contributions to speech perception”

Helen Nutall – Lancaster University

Host: Diana Prata

26th February (Monday Lecture/CAML Rheumatology Series)

“Synovial markers of response to therapy in rheumatoid arthritis”

Bernard Lauwerys – Université Catholique de Louvain

Host: João Eurico da Fonseca

5th March

“Telomeric chromatin analysis: insights into damage protection”

Joachim Lincher – École Polytechnique Fédérale de Lausanne

Host: Claus Azzalin

12th March

“Molecular insights into how the microtubule motor dynein is recruited to cargo”

Reto Gassmann - i3S

Host: Edgar Gomes

19th March

“Mechanistic Insight into Vascular Changes in the Pathogenesis of Diabetic Retinopathy”

Sayon Roy – Boston University, School of Medicine

Host: Miguel Castanho

26th March

“Profiling the incidence and spread of antimicrobial resistance in the human microbiome”

Robert Beiko – Faculty of Computer Science, Dalhousie University

Host: João Carriço (Mário Ramirez Lab)

9th April

“Taking apart the nuclear envelope during open mitosis”

Ulrike Kutay – ETH Zurich

Host: Claus Azzalin

16th April

“Genetic compensation and transcriptional adaptation”

Didier Stainier – Max Planck Institute for Heart and Lung Research

Host: Leonor Saúde

30th April

“Once upon a time: the role of circadian rhythms in malaria infection”

Sarah Reece – School of Biological Sciences, University of Edinburgh

Host: Luísa Figueiredo

7th May

“Kinase-controlled phase transition of membrane-less organelles during mitosis”

Lucas Pelkman – Department of Molecular Life Sciences, University of Zurich

Host: Gonçalo Bernardes

14th May

“Brain endothelial surface charge – an important element of the blood-brain barrier”

Maria A. Deli – Biological Research Centre, Hungarian Academy of Sciences

Host: Miguel Castanho

21st May

“Extraembryonic hematopoiesis and antibody export”

Marc Bajenoff – Centre d'Immunologie de Marseille-Luminy, Marseille

Host: Karine Serre (Bruno Silva-Santos Lab)

28th May

“Transcriptional control of epithelial plasticity and the tumor niche”

Paul Coffey – Center for Molecular Medicine & Regenerative Medicine Center, University Medical Center Utrecht

Host: Bruno Cardoso (João Barata Lab)

4th June

“Keeping mitochondria in shape: a matter of life and death”

Luca Scorrano – University of Padova

Host: Vanessa Morais

11th June (Monday Lecture/TwinnToInfect Seminar)

“Physics of epithelial folding”

Guillaume Salbreux – The Francis Crick Institute

Host: Cláudio Franco

18th June (Monday Lecture/ReTuBi Seminar)

“DNA:RNA triplexes – a liaison between regulatory RNAs and chromatin”

Ingrid Grummt – Molecular Biology of the Cell, German Cancer Research Center (DKFZ)

Host: Luísa Figueiredo

25th June

“Link between gut microbiota and intestinal epithelium through chromatin dynamics”

Patrick Varga-Weisz – School of Biological Sciences, University of Essex

Host: Marc Veldhoen

2nd July (Monday Lecture/ReTuBi Seminar)

“The dark side of the genome: pervasive they said”

Antonin Morillon – Institut Curie

Host: Claus Azzalin

9th July

“Centrosome and Cilia Biogenesis in Development and Disease”

Mónica Bettencourt-Dias – Instituto Gulbenkian de Ciência

Host: Inês Bento (Maria Mota Lab)

16th July (Monday Lecture/ReTuBi Seminar)

“High dimensional analysis of immune cells in breast tumor-draining lymph nodes”

Eliane Piaggio – Institut Curie

Host: Luís Graça

23rd July (Monday Lecture/ ReTuBi Seminar)

“Somatic Evolution and Early Detection”

Angela Gonçalves – DKFZ

Host: Nuno Morais

10th September

“CRISPR mouse models for neurodevelopmental disorders”

Paul Thomas – The University of Adelaide

Host: Domingos Henrique

17th September (Monday Lecture/ReTuBi Seminar)

“Mechanisms generating copy number variations: consequences in development and disease”

Renata Basto – Institut Curie

Host: Edgar Gomes

24th September

“Is there a role for immunotherapy in neuroendocrine tumors?”

Kjell Öberj – Uppsala University

Host: Luís Costa

15th October

“Immune Regulation by Helminth Parasites: Novel Modulators and Targets for Immunity”

Rick Maizels – University of Glasgow

Host: Marc Veldhoen

22nd October

“In vivo STED microscopy”

Katrin Willig – Max Planck Institute of Experimental Medicine

Host: Luísa Lopes

29th October

“Nonsense-mediated mRNA decay and human disease: Genome guardian and executor”

Lynne Maquat – University of Rochester

Host: Nuno Morais

5th November (Monday Lecture/TwinnToInfect Seminar)

“SUMO and chromatin”

Anne Dejean-Assémat – Institut Pasteur and Inserm

Host: M. Carmo-Fonseca

12th November

“Untangling the role of RNA interference factors during mouse early development”

Constance Ciaudo – ETH Zurich

Host: Claus Azzalin

19th November

“Enhancing heart regeneration”

Kenneth Poss – Duke University Medical Center

Host: Leonor Saúde

26th November

“PI3King the vascular compartment”

Mariona Graupera – Bellvitge Biomedical Research Institute (IDIBELL)

Host: Cláudio Franco

3rd December

“Molecular mechanisms at the respiratory air-liquid interface”

Jesus Perez-Gil – Universidad Complutense de Madrid

Host: Nuno Santos

10th December

“Malaria vaccine efficacy and design through the lens of Plasmodium falciparum genetic and transcriptional”

Joana Carneiro da Silva – University of Maryland School of Medicine

Host: Miguel Prudêncio

17th December

“Why there is more to gene evolution than protein function: splicing, dual coding sequence and why it matters”

Laurence Hurst – University of Bath

Host: M. Carmo-Fonseca

Neurosciences Seminars

8th January

“BDNF effect upon hippocampal basal synaptic transmission after an ischemia event”

Irene Bull, Master Student – Ana Sebastião Lab

15th January

“Interaction between adenosine A2A receptors and cannabinoid CB1 receptors at the hippocampus: consequences for memory and plasticity”

Francisco Mouro, PhD Student – Ana Sebastião Lab

22nd January

“Effects of adenosine A2A receptor antagonism on the depressive phenotype induced by chronic cannabinoid exposure during adolescence”

Miguel Ferreira, Master Student – Ana Sebastião Lab

19th February

“Unravelling longitudinal mitochondrial DNA mutations in Multiple Sclerosis: association with disease activity and progression”

Filipe Figueiredo, PhD Student – Vanessa Morais Lab

26th February

“NLRP3 inflammasome as a target to reduce epileptiform activity in organotypic slices”

Leonor Rodrigues, Master Student – Ana Sebastião Lab

5th March

“Intracerebroventricular injection of A β 1-42 peptide in rat behaviour and hippocampal neurogenesis”

Sara Paulo, Master Student – Ana Sebastião Lab

12th March

“Risk factors in Parkinson’s Disease - From sugar stress to aging”

Hugo Miranda, PhD – CEDOC

19th March

“PINK1, a link between Mitochondria and Parkinson's Disease”

Filipa Gonçalves, PhD Student – Vanessa Morais Lab

26th March

“Hippocampal time”

Marcelo Dias, PhD Student – Miguel Remondes Lab

9th April

“On Neuroaesthetic”

Kay Young – University of California

16th April

“The relevance of hippocampal neurogenic reserve for aging and Alzheimer’s disease”

Elisabete Ferreiro, PhD – Center for Neuroscience and Cell Biology, University of Coimbra

30th April

“How rats turn the way they do?”

Emanuel Fernandes, PhD Student – Miguel Remondes Lab

7th May

“Enlightening Precision Medicine: Identification of mitochondrial DNA mutations on stroke patients”

Filipa Carvalho, Postdoc – Vanessa Morais Lab

14th May

“The role of SEPT5 on amyloid precursor protein and on synaptic function”

Catarina Beatriz Ferreira, PhD Student – Ana Sebastião Lab

21st May

“Bioengineering Strategies for Neural Differentiation of Human Induced Pluripotent Stem Cells - Applications in Neural Disease Modelling and Toxicology Assays”

Margarida Diogo, PhD - Department of Bioengineering and Institute for Bioengineering and Biosciences, IST, University of Lisbon

28th May

“LRRK2 and Parkinson's - reading between the hieroglyphs”

Patrick Lewis – Associate Professor in Cellular and Molecular Neuroscience, School of Pharmacy, University of Reading

4th June

“Chalk talk: A2A regulation in aging”

Luísa Lopes – Group Leader, iMM

11th June

“Estimating the proportion of neurons in brain tissue samples from their mRNA: when dry and wet labs meet up”

Marie Bordone, PhD Student – Nuno Morais Lab

18th June

“Using concept typicality to explore semantic representations and control”

Mara Alves, PhD Student – Faculty of Psychology of the University of Lisbon

25th June

“Nose-to-brain delivery of oxytocin in humans. Challenges and potentials”

Yannis Paloyelis – Department of Neuroimaging, The Institute of Psychiatry, Psychology, & Neuroscience (IoPPN), King's College London

2nd July

“The interplay between loss of BDNF signaling and cognitive dysfunction in schizophrenia”

Sara Tanqueiro, PhD Student – Faculty of Psychology of the University of Lisbon

23rd July

“Developing stem cells therapies for Friedreich's Ataxia”

Anwasha Ghosh, MD, MSc – University of Bristol

3rd September

“Role of adenosine A2A receptors in multiple sclerosis: neural stem cells as potential targets”

Marta Alonso Gomes, Master Student – Ana Sebastião Lab

10th September

“The role of SEPT5 on amyloid precursor protein and on synaptic function”

Catarina Beatriz Ferreira, PhD Student – Ana Sebastião Lab

17th September

“Screening and validation of molecules with therapeutic properties in in vivo models of Parkinson's disease”

Rita Vaz, PhD Student – Technophage SA

24th September

“BDNF receptor cleavage: where are we now and where are we going”
João Gomes, PhD Student – Ana Sebastião Lab

1st October

“Role of non-psychoactive cannabinoids in neural stem cell differentiation: Relevance for Neurodegenerative Diseases”
Diogo Lourenço, PhD Student – Ana Sebastião Lab

8th October

“Emotional processing in migraine; potential trigger and neural correlates”
Amparo Ruiz-Tagle – Isabel Pavão, Estudos da Linguagem Lab, FML/iMM

“Cingulate-Hippocampal interactions during memory guided choices”
Ana Sofia Carvalho Cruz – Miguel Remondes Lab

15th October

“Kyotorphin versus Amidated-kyotorphin”
Rita Belo, PhD Student – Ana Sebastião Lab

22nd October

“Neuronal cultures to study de- and regeneration of the brain”
Marit Anne Vink, Master Student – Ana Sebastião Lab and Luísa Lopes Lab

29th October

“Human genetics in Movement disorders, ALS and Dementia - a link between clinics and basic science”
Gabriel Miltenyi, PhD – Mamede de Carvalho Lab

19th November

“Characterizing the role of mitochondrial dynamics in adult neural stem cells differentiation”
Rita Soares, MSc – Ana Sebastião Lab and Vanessa Morais Lab

26th November

“Mechanisms underlying the physiological roles of APP in glutamatergic synapses”
Joana Saraiva, PhD Student – Luísa Lopes Lab

3rd December

“Neuronal Plasticity changes in non-motor synapses of Amyotrophic Lateral Sclerosis mice model (SOD1G93A) along disease progression”
Nádia Rei, PhD Student – Ana Sebastião Lab

10th December

“Encoding of contextual cues in drug-seeking behavior”
Joana Ribeiro, PhD Student – Luísa Lopes Lab and Miguel Remondes Lab

17th December

“Role of cannabinoid type 2 receptor and physical exercise in subventricular zone neurogenesis”
João Moreira, MSc Student – Ana Sebastião Lab

Oncobiology Club

17th January

“Traceless release of BET bromodomain inhibitors for selective cancer therapy”

Rui Traquete – Gonçalo Bernardes Lab

28th February

“Investigating the impact of a gain of function IL7R mutation in lymphoid leukemogenesis”

Afonso Almeida, PhD – João Barata Lab

14th March

“Unveiling the functional implications of CELF2-isoform switch in Colorectal Cancer progression”

Lina M. Gallego-Paez – Nuno Morais Lab

28th March

“What you don't know about RAMBO”

André Mansinho – Luís Costa Lab and Oncology Division (Santa Maria Hospital)

11th April

“Cytotoxic targeting of acute myeloid leukemia by highly polyclonal Delta One T cells”

Biagio Di Lorenzo and André Simões – Bruno Silva-Santos Lab

22nd May

“Dual role of NRARP in Notch and Wnt signaling differentially impacts T-cell acute lymphoblastic leukemia development”

Rita Fragoso – João Barata Lab

6th June

“Pan-cancer analysis of a Centrosome Amplification transcriptomic signature”

Bernardo Almeida – Nuno Morais Lab

4th July

“The impact of the metastatic compartment on bone biomarkers and bone outcomes in patients with breast or prostate cancer and bone metastases in trial NCT00321464 of denosumab vs. zoledronic acid”

Arlindo Ferreira, MD – Luís Costa Lab and Oncology Division (Santa Maria Hospital)

26th September

“How systemic cholesterol affects the entry of tumor cells in circulation”

Ana Magalhães, Postdoc – Sérgio Dias Lab

24th October

“From Prostate Cancer to B-cell malignancies: Derivatizations in the chemicals playground”

João Seixas, Postdoc – Gonçalo Bernardes Lab

21st November

“Dissecting functional signatures of anti-tumour myeloid cells in vivo”

Ana Raquel Lopes, Master Student – Bruno Silva-Santos Lab

Other Events

16th January

SynaNet Satellite Symposium

17th-18th January

SynaNet H2020: 2nd Annual Scientific Meeting

19th January

Pharmacology Series: “Anfetaminas e Perturbação de Hiperatividade e Deficit de Atenção”
 Carlos Filipe, Regente de Neurociências - NOVA Medical School – Faculdade de Ciências Médicas UNL e Centro de Apoio ao Desenvolvimento Infantil

24th January

“Utilização do zebrafish adulto como método animal complementar aos roedores para a busca de novos compostos para o tratamento da dor orofacial”
 Adriana Rolim – Fortaleza University

26th January

“Desenvolvimento de Biossimilares: Impacto na eficácia e segurança clínicas “
 João Gonçalves – Faculty of Pharmacy of the University of Lisbon

30th January

CAML Rheumatology Series: “Challenges to classification and diagnosis of systemic vasculitis”
 Raashid Luqmani – Nuffield Department of Orthopedics Rheumatology and Musculoskeletal Sciences, University of Oxford

5th February

SynaNet Lecture: “The Iproteos story: From bench to bedside”
 Teresa Tarragó, Chief Scientific Officer – Iproteos

5th February

EPHAR Lecture: “Preparing to prescribe medicines: delivering better training to the next generation of doctors”
 Simon Maxwell – University of Edinburgh

6th February

“Intracellular adenosine – opportunities for epilepsy prevention”
 Detlev Boison – University of Cologne

16th February

LisbonBioMed Seminar: “Regulation of parasite differentiation by the AMPK α 1-TOR4 pathway”
 Miguel Navarro – Instituto de Parasitología y Biomedicina López
 Host: Luísa Figueiredo

20th February

2nd Edition of the Career Development and Soft Skills for Young Scientists - From Lisbon to the World Workshop
 Francisco Cruzalegui, Oncology Precision Medicine Director – Pierre Fabre R&D Centre
 Colby Benari, Head of the Academic Careers Office – University College of London

20th February

CAML Rheumatology Series: “The response of the retina to injury, inflammation and degeneration”

Andrew Dick – Biomedical Research Centre, Moorfields Eye Hospital and UCL-Institute of Ophthalmology

21st February

2nd Edition of the Career Development and Soft Skills for Young Scientists - From Lisbon to the World Workshop

João Cordeiro, Prof. of Health Law and Ethics – ENSP-UNL

Graça Raposo, Head of Training Unit and Group Leader – Institut Curie

28th February

“Do you think you know all about qPCR?”

Steve Hawkins – Bioline

2nd March

Mini-Symposium on Regulation of Antibody Production in Humans and Mice: “Regulation of B cell Responses by the Immune System”

Peter Sage – Brigham and Women’s Hospital, Harvard Medical School

Host: Luís Graça

2nd March

Mini-Symposium on Regulation of Antibody Production in Humans and Mice: “Human follicular helper T cell subsets”

Hideki Ueno – Icahn School of Medicine at Mount Sinai

Host: Luís Graça

12th March

Pharmacology Series: “ACOVIDA: Agressividade dos Cuidados Oncológicos em fim de Vida: estudo nacional de corte”

Diogo Martins Branco – Serviço de Oncologia - Instituto Português de Oncologia de Lisboa Francisco Gentil, E.P.E

13th March

Lição de Abertura do Tronco de Neurociências: “GABAA receptors in human neuropathologies”

Eleonora Palma – Department Physiology and Pharmacology University of Rome La Sapienza

15th March

TREGeneration Seminar: “Expansion of Treg in vivo with low dose IL-2”

Jerome Ritz – Dana-Farber Cancer Institute, Harvard Medical School

Host: João Lacerda

16th March

“Fronteiras da Cirurgia”

Nuno Figueiredo, Surgeon – Champalimaud Foundation

Host: Sociedade das Ciências Médicas de Lisboa

20th March

“A new paradigm for Type 1 Diabetes”

Anil Bhushan – Diabetes Center, University California San Francisco

22nd March

ReTuBi Lecture: “Mechanics of blastocyst morphogenesis”
Jean-Léon Maître – Institut Curie
Host: Cláudio Franco

6th April

“Reversing the fate of glioblastoma? New therapeutic opportunities”
Adília Hormigo, MD, PhD – Icahn School of Medicine at Mount Sinai and The Tisch Cancer Institute
Host: M. Carmo-Fonseca

6th April

Fundo iMM-Laço | 2017 Projects Presentation

9th April

Pharmacology Series: “Tratamento farmacológico do estado de mal epiléptico”
Nuno Canvas – Ana Sebastião Lab

12th April

“Innovative publishing for the good of science with ScienceMatters”
Amani Said – Deputy Editor of ScienceMatters

22nd-23rd April

iMM Scientific Retreat: Group Leaders Talks

24th April

iMM Scientific Retreat: PhD and Postdoc Short Talks

26th April

ReTuBi Lecture: “Role of actin- and microtubule- dependent motor proteins in Golgi positioning and trafficking”
Kristine Schauer – Institut Curie
Host: Edgar Gomes

7th May

Pharmacology Series: “TNFa and Subarachnoid Hemorrhage: Building bridges between imaging and molecules”
Isabel Fragata - Neuroradiology Department Centro Hospitalar Lisboa Central Faculdade Ciências Médicas, Nova Medical School, Lisboa

7th May

“The influence of cell-intrinsic processes on mutation rate”
Benjamin Schuster-Böckler – Ludwig Institute for Cancer Research, University of Oxford
Host: Sérgio de Almeida

9th May

“Beyond the bench: working as an editor for Nature Research”
Véronique Gebala – Associate Editor at Nature Communications
Host: Cláudio Franco

16th May

“Human erythrocyte as a model for screening of biological activity of natural and synthetic compounds”

Lucyna Mrówczyńska – Institute of Experimental Biology, Faculty of Biology, Adam Mickiewicz
Host: Ana Silva-Herdade (Miguel Castanho Lab)

23rd-25th May

XII CAML PhD Students Meeting

24th May

“Linking basic science with the clinical results of immunosuppressive approaches (including ruxolitinib) in Graft vs Host Disease”

Robert Zeiser, Director of the Section for Tumor Immunology – University of Freiburg
Host: João Lacerda

30th May

Symposium: Biomarkers for Alzheimer’s disease / Master/PhD in Neurosciences

4th June

Pharmacology Series: “Falência Respiratória por Fármacos”

Fernando Vale – Ana Sebastião Lab

2nd July

Pharmacology Series: “Thyroid Tumorigenesis”

Ana Luísa Silva - Grupo de Investigação em Tumores Endócrinos e Sinalização, Serviço de Endocrinologia Diabetes e Metabolismo, Hospital de Santa Maria

11th July

StartUp Research Program Presentation: “StartUp Research Program Presentation, a new ITQB NOVA and NOVA SBE venture available for IMM researchers”

Miguel Santos, Invited Principal Investigator, StartUp Research Coordinator – ITQB Nova
Host: Pedro Silva (Technology Transfer Office)

12th July

“Mechanical Properties of Fibrin Fibers and Electrospun Protein-nanofibers”

Martin Guthold – Wake Forest University

Host: Filomena Carvalho (Nuno Santos Lab)

3rd August

“Clonal and cellular dynamics of germinal center selection”

Gabriel Victora, Laboratory of Lymphocyte Dynamics – Rockefeller University

Host: Maria Mota

10th September

Pharmacology Series: “Contemporary hormonal contraception and the risk of breast cancer”

Cristóvão Ferreira – Instituto de Farmacologia e Neurociências, FMUL and IPO Lisboa

13th September

Master/PhD in Neurosciences and PhD Programme in Integrative Neurosciences (NeurULisboa)

Opening Lecture: “When memory and motivation fade in brain disorders: New ways to study old problems”

Masud Husain – University of Oxford

24th September

CAML Rheumatology Series: “The ARBITRATE study: taking the arbitrariness out of the treatment of Rheumatoid Arthritis”

Mihir Wechalekar – Flinders University

28th September

European Researchers’ Night: “Science in the City”

10th October

Master/PhD in Neurosciences Lecture: “Modulation of AMPA receptor recycling: molecular aspects”

Ana Luísa Carvalho – FCTUC, CNC

17th October

“Neuronal regeneration”

Mónica Sousa - UP

17th October

“Genetic dysfunction in motor neuron diseases”

Margarida Gama-Carvalho – Faculty of Sciences of the University of Lisbon

25th October

Master/PhD in Neurosciences Lecture: “Apoptosis and neuronal death”

Cecília Rodrigues – Faculty of Pharmacy of the University of Lisbon

30th October

Master/PhD Neurosciences Lecture: “Neuroinflammation and Microglia: functions and dysfunction in neurodegenerative diseases”

Dora Brites – Faculty of Pharmacy of the University of Lisbon

31st October

Master/PhD Neurosciences Lecture: “Genetic approaches to fight neurodegenerative diseases”

Luís Pereira de Almeida – Faculty of Pharmacy of the University of Coimbra

31st October

Master/PhD Neurosciences Lecture: “Molecular dysfunctions in multiple sclerosis”

Adelaide Fernandes – Faculty of Pharmacy of the University of Lisbon

31st October

Master/PhD Neurosciences Lecture: “The ubiquitin/proteasome system and control of neuronal death”

Carlos Duarte – FCTUC, CNC

31st October

Master/PhD Neurosciences Lecture: “Driving Cell Death Machinery towards Neural Differentiation”

Susana Solá – Faculty of Pharmacy of the University of Lisbon

16th-17th November

iMM Summit – Building Partnerships Between Research and Industry

20th November

Master/PhD Neurosciences Lecture: “Brain rhythms: Local field potentials, EEG/MEG, (fMRI) to BCI and Cognitive functions”

Fernando Lopes da Silva – University of Amsterdam/FMUL/IST

21st November

Master/PhD Neurosciences Seminar Lecture: “Peptidergic innervation of the mammalian vascular system”

Sérgio Gulbenkian – FG/FMUL

5th December

Master/PhD Neurosciences Lecture: “Artificial Intelligence: a view on Morality, or artificial agents with qualities”

Hélder Coelho – Faculty of Sciences of the University of Lisbon

10th December

Pharmacology Series: “Novas estratégias no tratamento de infeções por Gram-negativos multirresistentes”

Carla Mimoso Santos – Serviço de Doenças Infecciosas e grupo de coordenação local do PPCIRA, CHLN

12th December

Master/PhD Neurosciences Lecture: “Neuromarketing and Law”

Fernando Araújo – Faculty of Law of the University of Lisbon

12th December

Master/PhD Neurosciences Lecture: “Reciprocal inputs between Neuroscience and Robotics”

José Santos Víctor – IST

19th December

“Design and development of antimicrobial peptides”

Universidade Católica de Brasília

Out of Our Box

25th January

“Using biology to make sense of sci-fi monsters/Using sci-fi monsters to make sense of biology”

Hugo Almeida, Artist and Postdoc Researcher – Faculty of Science and Technology of Universidade NOVA de Lisboa

Host: Leonor Saúde

28th June

“2017 Nobel Prize in Physics for a discovery that (literally) shook the world”

Francisco Lobo – Instituto de Astrofísica e Ciência do Espaço

Host: Robert M. Martin (Sérgio de Almeida Lab)

Parasitology Clubs

9th January

“Circumsporozoite protein ubiquitination by the UPS system”

Sara Baptista – Maria Mota Lab

16th January

“Adipose tissue: a reservoir of Trypanosoma brucei parasites throughout infection”

Sara Trindade – Luísa Figueiredo Lab

23rd January

“Clock parasites. Circadian rhythms in malaria parasite”

Inês Bento – Maria Mota Lab

14th February

Masterclass

Tânia Carvalho – Histology and Comparative Pathology Laboratory

20th February

“You are what you host: Microbiome modulation of severe Malaria”

Debanjan Mukherjee – Maria Mota Lab

27th February

“Breaking and entering: how Plasmodium sporozoites invade the hepatocyte”

João Vieira – Maria Mota Lab

13th March

Catarina Gadelha – University of Nottingham

27th March

“Adipose tissue metabolism during Trypanosoma brucei infection”

Henrique Machado – Luísa Figueiredo Lab

3rd April

Idálio Viegas – Luísa Figueiredo Lab

10th April

“3D hepatic models – an innovative platform for the screening of anti-plasmodial drugs”

Diana Fontinha – Miguel Prudêncio Lab

17th April

“Nutritional supplementation enhances innate immune response against Plasmodium liver stage parasites”

Patrícia Meireles – Miguel Prudêncio Lab

8th May

Raquel Azevedo – Miguel Prudêncio Lab

15th May

“Metabolic Oligosaccharide Engineering - A tool for Malaria infection?”

Annabel Kitowski – Gonçalo Bernardes Lab

22nd May

“APPL1 and EEF: Liver stage Plasmodium`s affinity to host signaling endosomes”
Aparajita Lahree – Maria Mota Lab

29th May

Margarida Vaz – Luísa Figueiredo

5th June

“Plasmodium berghei dynamics in vivo: insights from multi-modal imaging approaches”
Mariana de Niz – University of Glasgow (Matthias Marti Lab)

12th June

“A Multi-Stage Whole-sporozoite Vaccine Against Malaria”
Francisca Reis – Miguel Prudêncio Lab

19th June

“Molecular aspects of iron regulation in Plasmodium”
Ksenjia Slavic – Maria Mota Lab

26th June

“Pre-erythrocytic malaria and the hepatic methionine metabolism”
Vanessa Zuzarte-Luís – Maria Mota Lab

3rd July

“Functional lncRNA genes in Trypanosoma brucei”
Fabien Guegan – Luísa Figueiredo Lab

10th July

“Early insights on the Phase I/IIa of PbVac, a new whole-sporozoite vaccine against malaria”
António Mendes – Miguel Prudêncio Lab

17th July

“The marvellous world of trypanosome variant antigen profiling: from field to lab ... and back again?”
Sara Pereira – University of Liverpool
Host: Luísa Figueiredo

24th July

“The CHMI model as a fit-for-purpose tool – The development of a transmission model and a novel diagnostic tool”
Isaie Reuling – Radboud University Medical Center

11th September

Denise Francisco – Miguel Prudêncio Lab

25th September

“Hosting PbVAC: cellular immune responses to the novel cross-species malaria vaccine”
Helena Cabaço – Miguel Prudêncio Lab

2nd October

“A hybrid computational/experimental procedure to improve malaria vaccine design”
Cristina Arias – Maria Mota Lab

9th October

“Diminazene Uptake and Resistance in *Trypanosoma congolense*”

Jane Munday – University of Glasgow

Host: Luísa Figueiredo

“*Theileria annulata* in different bovine host types: epidemiology, transmission-blocking antigens and mechanisms of breed susceptibility”

Stephen Larcombe – University of Edinburgh

Host: Luísa Figueiredo

16th October

Back to the Future Seminar

Luísa Figueiredo – Group Leader iMM

23rd October

Master Students Seminars: “Effect of underlying metabolic diseases, diet and metabolites on the growth of blood stage parasites: *Plasmodium falciparum*”

Ana Branco – Mário Ramirez Lab/Thomas Hanscheid Lab

Master Students Seminars: “Mechanisms of inhibition of *Plasmodium* liver infection by amino acid supplementation”

Daniela Brás – Miguel Prudêncio Lab

30th October

Master Students Seminars: “New insights into interferon-mediated immune responses elicited by *Plasmodium* liver stage infection”

Diana Moita – Miguel Prudêncio Lab

Master Students Seminars: “Cryopreservation of *Plasmodium* sporozoites for whole organism vaccination against malaria”

Rafael Sousa – Miguel Prudêncio Lab

6th November

“Investigation of artemisinin-resistance using human and mouse model of artemisinin-resistant malaria”

Maria Rebelo – QIMR Berghofer Medical Research Institute

Host: Luísa Figueiredo

13th November

“You is smart, you is kind, you is important”, The role of *Plasmodium* liver-stage in severe malaria”

Ângelo Chora – Maria Mota Lab

20th November

Back to the Future Seminar

Maria Mota – Group Leader iMM

27th November

“UIS3 LC3 interaction: a new drug target for malaria prophylaxis?”

Sonali Setua – Maria Mota Lab

11th December

“Targeting erythrocyte mechanical properties to block malaria parasite transmission”
Catherine Lavazec – Group Leader, INSERM

18th December

“Circumsporozoite Protein Ubiquitination by the host hepatocyte”
Sara Baptista – Maria Mota Lab

Pizza Seminars

9th January

“Inhibition of Plasmodium Liver Infection by Amino Acid Supplementation”
Patrícia Meireles, PhD – Miguel Prudêncio Lab

“Carbon Monoxide as a Metabolic and Brain-Blood Barrier Modulator with Protective Effects Following Stroke - A MRI and Behavioural Study”
Sara Oliveira – Edgar Gomes Lab

23rd January

“Looking for new human V δ 1+ TCR ligands - A NGS based approach”
Biagio Di Lorenzo, PhD Student – Bruno Silva-Santos Lab

6th February

“Regulation of skeletal muscle function by nuclei positioning”
Graciano Leal, PhD – Edgar Gomes Lab

20th February

“Microfluidic lab-on-chip devices for high-throughput and point-of-use applications”
Catarina Oliveira, PhD Student - INESC-MN, Instituto Superior Técnico

6th March

“Peptide nanoparticles for the inhibition of measles virus infection”
Tiago Figueira – Miguel Castanho Lab

20th March

“Role of neuroregulators in adipose tissue ILC2s”
Ana Filipa Cardoso, PhD Student – Champalimaud Foundation (Veiga Fernandes Lab)

“Stepping out of my comfort zone: dipping my toes into bioremediation using waste-based materials”
Inês Albuquerque, PhD Student – Gonçalo Bernardes Lab

17th April

“Depression and suicidal behavior after first-episode psychosis”
Ricardo Coentre, PhD Student – Clínica Universitária de Psiquiatria, Faculty of Medicine of the University of Lisbon

15th May

“In search of synaptic mitochondria’s fingerprint”

Andreia Pereira, PhD Student – Vanessa Morais Lab

“Mutant IL-7 receptor cooperates with Myc and activated Notch to accelerate T-cell leukemogenesis in zebrafish”

Mariana Oliveira, PhD Student – João Barata Lab

29th May

“ $\gamma\delta 17$ T cells home to the male reproductive tract and expand at puberty to keep pathogens at bay”

Helena Brigas, PhD Student – Bruno Silva-Santos Lab and Luísa Lopes Lab

“On the road of TrkB receptors”

João Gomes, PhD Student – Ana Sebastião Lab

12th May

“On the path to create artificial astrocytes”

Ana Armada-Moreira, PhD Student – Ana Sebastião Lab

“A bumpy ride in Multiple Sclerosis research: from the taboo of failure to a fresh start”

Filipe Figueiredo, PhD Student – Vanessa Morais Lab

26th June

“New Antibacterial Peptides Derived from Viral Capsid Proteins”

Susana Dias, PhD Student – Miguel Castanho Lab

“EEF(Eve) and APPL (Apple): Plucking a fruit of host signalling endosome”

Aparajita Lahree, PhD Student – Maria Mota Lab

25th September

“Authenticity recognition in laughter and crying: An ERP study”

Mónica Costa – Faculty of Medicine of the University of Lisbon

“Unveiling the role of mitochondrial dynamics in the differentiation of postnatal neural stem cells”

Rita Soares – Ana Sebastião Lab and Vanessa Morais Lab

9th October

“Comparative study on the physiological dynamics evoked by different lead exposure profiles”

Liana Shvachiy, MSc Student – Centro Cardiovascular da Universidade de Lisboa

“Properties of long-term depression upon aging”

Mariana Temido-Ferreira, PhD Student – Luísa Lopes Lab

23rd October

“The influence of a schizophrenia polygenic risk score on white matter microstructure in schizophrenia, bipolar disorder and health”

Beatriz Simões, MSc Student – Faculty of Sciences of the University of Lisbon

“Nanoparticle-based medicine for CVD related diseases”

Patrícia Carvalho, PhD Student – Nuno Santos Lab

20th November

“Modulation of TRPV2 by piperlongumine in glioblastoma”

Charlotte Baker, PhD Student – Gonçalo Bernardes Lab

“Unveiling mechanotransduction during collective cell migration”

Isabela Fortunato, MSc Student – Cláudio Franco Lab

4th December

“Crystal Structure of Bone Marrow Tyrosine Kinase in Chromosome X with covalent ligands”

Bárbara Sousa, MSc Student – Gonçalo Bernardes Lab

“Keeping telomeric R-loops in check: unravelling new functions of human TRF1 in chromosome end protection”

Patrícia Abreu, PhD Student – Claus Azzalin Lab

18th December

“Developing new molecular tools and models to study astroglialogenesis”

Ricardo Vilela, PhD Student - Structure and Dynamics Laboratory, ITQB-NOVA

“Biophysical changes on erythrocytes from stroke patients”

Catarina Lopes, PhD Student – Nuno Santos Lab

Special Seminars

24th August

“Cap-independent translational activation of short proto-oncogenic isoforms in cancer and mouse epidermis”

Marco Candeias, Junior PI – Kyoto University

Host: M. Carmo-Fonseca

10th September

“The beauty of the invisible – The secret life of cells”

Tom Kirchhausen – Harvard Medical School

Host: M. Carmo-Fonseca

8th October

“Mechanisms of immune modulation to improve regeneration in aging”

Joana Neves, PhD – Buck Institute for Research on Aging

“New mechanisms driving stem cell aging”

Pedro Sousa-Victor, PhD – Buck Institute for Research on Aging

23rd October

“Studying membrane traffic and organelle biogenesis by systems microscopy”

Rainer Pepperkok – European Molecular Biology Laboratory

TwinnToInfect // EXCELLtoINNOV Seminars

27th February

“Genomics of Tolerance”

Christophe Benoist – Harvard Medical School

Host: Bruno Silva-Santos

19th March

Seminars: TwinnToInfect Spring School

Luísa Figueiredo, Luís Graça, Ana Espada de Sousa, Miguel Prudêncio, Pedro Simas, Marc Veldhoen and Bruno Silva-Santos – Group Leaders, IMM

27th April

“Subversion of infection associated macropinosomes determines the intracellular niche formation of Shigella and Salmonella”

Jost Enninga – Institut Pasteur

Host: Edgar Gomes

5th July

“T-B interactions and the germinal center response”

Hai Qi – Tsinghua University

Host: Luís Graça

6th September

“Systemic Contributions of the Adipocyte in Diabetes, Obesity and Infectious Disease”

Philipp Scherer – Touchstone Diabetes Center, University of Texas Southwestern Medical Center

5th November

“CD8 Tregs and transplantation tolerance”

Carole Guillonnet, Director of Research – University of Nantes

Host: Luís Graça

22nd November

“Establishing a road map of the developmental program leading to infectivity in African trypanosomes”

Christian Tschudi – Yale School of Public Health

Host: Luísa Figueiredo

iMM Career Development

The iMM is strongly committed to providing the best training for success in science to researchers at different stages in their careers. Overall, the integrated management of ongoing and new Master, PhD and Postdoctoral Programmes further enriches our scientific environment promoting multidisciplinary and facilitating the development of research projects within the areas of Biomedicine and Clinical Medicine.

Team

Executive Manager: Filipa Nunes, PhD

Executive Committee: Leonor Saúde, PhD (Chair); Vanessa Morais, PhD; Edgar Gomes, PhD

LisbonBioMed PhD Program Director: Domingos Henrique, PhD

Advanced Training in Numbers

	2018
Postdoctoral Fellows	120
Started in 2018	28
PhD Students	142
Started in 2018	44
MSc Students	112
Started in 2018	60

Together with Faculdade de Medicina da Universidade de Lisboa (FMUL) and with Hospital de Santa Maria (HSM), iMM is part of the Lisbon Academic Medical Center (CAML), a consortium that provides an integrated form of education and training in Biomedicine and Clinical Research, combining multidisciplinary and internationalisation.

In pair with high-level research-centered training, our MSc/PhD students and Postdoctoral researchers benefit from a varied curricular offer organised into several thematic Advanced Courses - scientific and thematic courses, complementary skills courses and workshops - distributed along each academic year.

The majority of iMM PhD students belong to the CAML PhD Programme that runs in the campus since 2010. In addition, iMM also hosts students from other PhD programmes (e.g. GABBA).

In 2013, iMM was awarded FCT funding to create the Lisbon Biomedical and Clinical Research PhD Programme – **LisbonBioMed**, and in January 2018, we welcomed the new 10 PhD students

from the programme's fifth edition. Furthermore, iMM is a partner in five other multi-institutional FCT PhD Programmes: the PhD Programme in Bioengineering - Cell Therapies and Regenerative Medicine (**CTRM**), the PhD Programme in Molecular Biosciences - Biology at the Host Microbe Interface (**B@HMI, or INTERFACE**), the Lisbon University Doctoral Programme in Integrative Neuroscience (**NeurULisboa**), the Medicinal Chemistry PhD Programme (**MedChemTrain**), and the Medical Biochemistry and Biophysics (**M2B-PhD**) Doctoral Programme.

In 2018, iMM hosted students enrolled in 9 different **FCT PhD Programmes**:

- LisbonBioMed: 47
- MedChemTrain: 2
- INTERFACE: 4
- GABBA: 1
- M2B-PhD: 15
- PGCD: 4
- NeurULisboa: 10
- MIT-Portugal: 4
- CTRM: 5

Three **Innovative Training Networks (ITN)** from the European Commission programme Marie Skłodowska-Curie Actions (MSCA) anchored 5 PhD students at iMM.

Besides CAML PhD students, iMM hosted **13 PhD students from other Institutions/Universities**: Universidade Federal de Ciências da Saúde de Porto Alegre, Brazil (1), Universidade do Porto (1), Universidade de Coimbra (2), Instituto Superior Técnico (9), Universidade de Lisboa.

In the **2018 FCT Call for PhD Scholarships**, 7 doctoral fellowships were granted to iMM as host institution.

In 2018, **20 iMM students concluded their PhD theses**, 18 of which were attributed by Faculdade de Medicina da Universidade de Lisboa (FMUL).

Advanced Courses

A total of 11 Advanced Courses were organised

8 Courses organised under the CAML PhD Programme in 2018

Towards a Creative and Critical Mind

Organiser: Domingos Henrique

Date: 8th January to 2nd March (15 ECTS)

The course aims to promote student integration, creates an informal welcoming, fosters team bonding, interaction with putative supervisors, introduces complementary skills training, and raises awareness to transversal competences needed for a successful scientific career.

Statistics for Beginners

Organiser: Domingos Henrique

Date: 12th January to 15th March, every Thursday (1 ECTS)

This is an introductory course to statistical methods applied to biological research, aimed at providing participants with basic concepts on statistics, and how these can be used in daily research activities, with particular emphasis on how to design experiments and how to deal with the limits of statistical methods. Participants are encouraged to bring their experimental questions to be discussed. This course provides the basis for further courses, aimed at more advanced statistical methods, targeted at specific needs from researchers at CAML.

Graphical design: How to tell a story with a picture (Workshop)

Organiser: Workshop group of the PhD Students Committee

Date: 1st March

Speaker: Gil Costa, Research Graphic Designer

The aim of this workshop is to provide insight into the visual and graphic characteristics of scientific publication and outreach. Students will have the opportunity to learn technical skills on how to improve scientific illustrations using adequate software, better present their research and hypothesis, and also communicate with society through the aid of graphical support.

Scientific Writing: Preparing a hypothesis-driven research paper

Organiser: Filipa Nunes

Date: 8th March to 17th May, every Thursday (1 ECTS)

The goal of the course is for students to be able to write a full hypothesis-driven research paper based on data that are provided to them (which should be considered as real and genuine data). The students will build and write each section of the research paper (Introduction, Materials and Methods, Results and Discussion) and will learn how to navigate through the steps involved in producing and publishing a research paper.

Fundamental Concepts in Statistics

Organiser: Domingos Henrique

Date: 15th March to 10th May, every Thursday (1 ECTS)

This is an introductory course to statistical methods applied to biological research, aimed at providing participants with basic concepts on statistics, and how these can be used in daily research activities, with particular emphasis on how to design experiments and how to deal with the limits of statistical methods. Participants are encouraged to bring their experimental questions to be discussed. This course provides the basis for further courses, aimed at more advanced statistical methods, targeted at specific needs from researchers at CAML.

LINK yourself INTO the online job market (Workshop)

Organiser: Workshop group of the PhD Students Committee

Date: 9th April

Speaker: Jean Branan, Programme Coordinator at The Scripps Research Institute in La Jolla.

The aim of this workshop is to provide the students with the skills to get the most out of LinkedIn tools and the strategies for highlighting skills and presenting themselves as professionals online. The students will be prepared to use LinkedIn and other social media to build and maintain professional relationships.

Laboratory Animal Science

Organiser: Iolanda Moreira and Lara Carvalho

Date: 8th October to 24th November (6 ECTS)

The course was organised under the CONGENTO-harmonised programme and was targeted to Function A (former FELASA Category B). The course provides theoretical and practical training for the use of animal models (rodents and fish) in scientific research. This course is a requirement to be able to work with animal models.

Motivation, Focus and Self-coaching (Workshop)

Organiser: Workshop group of the PhD Students Committee

Date: 24th October

Speaker: James Hayton, PhD coaching

This workshop aims to provide tools to improve PhD students' capacity of focusing, filtering and mastering their mind in order to be more productive and to cope with stress in science.

1 Course organised under the "Research in Tumour Biology – ReTuBi" European project

2nd Edition of the Career development and soft skills for young scientists – from Lisbon to the World

Organiser: ReTuBi project

Date: 20-21th February

This 2-day workshop was focused on the 2 main themes: career development in academia and beyond; and research ethics & scientific integrity.

Other iMM Courses

Laboratory Animal Science

Organiser: Iolanda Moreira and Lara Carvalho

Date: 14th March to 6th April

The course was organised under the CONGENTO-harmonised programme and was targeted to Function A (former FELASA Category B). The course provides theoretical and practical training for the use of animal models (rodents and fish) in scientific research. This course is a requirement to be able to work with animal models.

Writing your research paper in 5 sessions

Organiser: Filipa Nunes

Date: 23th March to 17th April (five classes of three hours each)

Teaching Staff: Marcia Triunfol

In this hands-on course each participant writes his/her own research paper. Participants receive guidance on how to build each section of the research paper and one-to-one assistance. The course also focuses on how to produce a clear, succinct and objective scientific text, enabling efficient disseminating of knowledge and publishing of the produced manuscript.

Other Events

2nd LisbonBioMed Scientific Retreat

Organiser: LisbonBioMed PhD Programme

Date: 10-12th April

Venue: Mafra, Portugal

During the 2-day retreat, all LisbonBioMed PhD students make a progress report of their PhD work in an oral presentation. There are also seminars/discussions with invited participants. The External Advisory Board meets with the students. The programme includes also dedicated time for team-building and social activities.

Open Afternoon at iMM (targeted to 1st year Master students)

Organiser: Career Development

Date: 18th April

The goal of this event is to introduce iMM to Master students (1st year of the 2nd cycle of studies) and to disseminate iMM's Master projects/vacancies. The event includes presentations by the group leaders, round table discussions, visit to the labs/facilities, and social gathering with the iMM community.

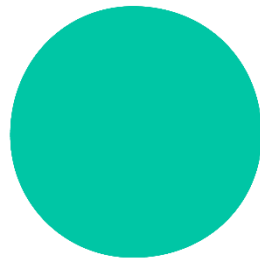
Lisbon Area PostDoctoral Meeting

Organiser: Postdoctoral Association (PDA)

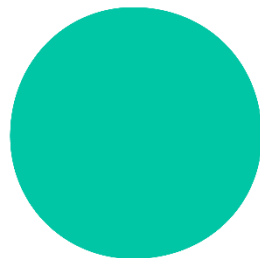
Date: 15th November

Venue: Museu do Oriente, Lisbon

The Lisbon Area PostDoctoral Meeting was co-organised by the Postdoc Associations of iMM, Champalimaud Foundation, LAQV & UCIBIO (FCT-NOVA) and ITQB/iBET (FCT-NOVA). This one-day meeting welcomes Postdocs from all fields of research to share their work with their peers, being a great opportunity for professional development and networking within the postdoctoral community.



Research Activity



The mission of *Instituto de Medicina Molecular João Lobo Antunes* is to foster basic, clinical and translational biomedical research with the aim of contributing to a better understanding of disease mechanisms, developing novel predictive tests, improving diagnostics tools and developing new therapeutic approaches.

Research Labs:

Ana Espada de Sousa Lab
Ana Sebastião Lab
Bruno Silva-Santos Lab
Carlota Saldanha Lab
Cláudio Franco Lab
Claus Azzalin Lab
Diana Prata Lab
Domingos Henrique Lab
Edgar Gomes Lab
Gonçalo Bernardes Lab
João Barata Lab
João Eurico da Fonseca Lab
João Lacerda Lab
Joaquim Ferreira Lab
José Ferro Lab
Leonor Saúde Lab
Luís Costa Lab
Luís Graça Lab
Luísa Figueiredo Lab
Luísa Lopes Lab
Mamede de Carvalho Lab
Marc Veldhoen Lab
Maria Carmo-Fonseca Lab
Maria Mota Lab
Mário Ramirez Lab
Miguel Castanho Lab
Miguel Prudêncio Lab
Miguel Remondes Lab
Nuno Morais Lab
Nuno Santos Lab
Paulo Filipe Lab
Pedro Simas Lab
Sérgio de Almeida Lab
Sérgio Dias Lab
Vanessa Morais Lab

Ana Espada de Sousa Lab

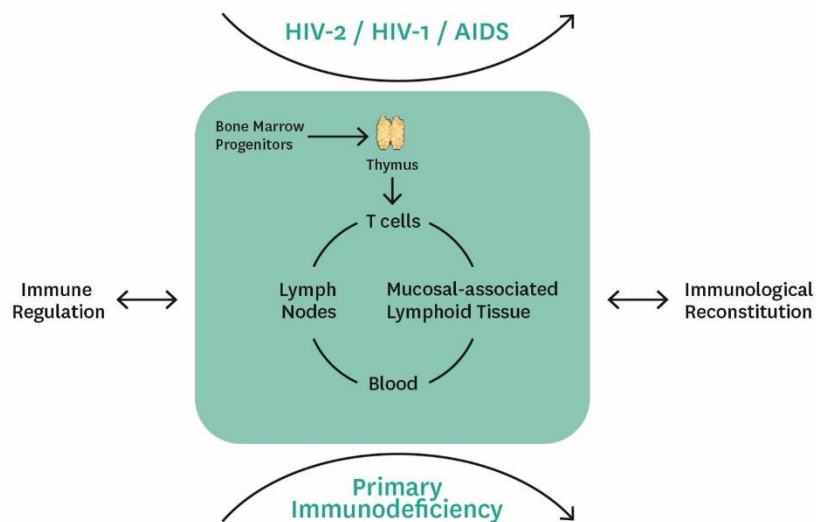
Major Interests / Objectives

- The Human Immunodeficiency & Immune Reconstitution Lab research focuses on human T-cell homeostasis and immune regulation with the ultimate goal of identifying new strategies for immunological reconstitution and targets for immune-based therapies.
- An important part of the Human Immunodeficiency & Immune Reconstitution Lab research effort is centred on HIV/AIDS immunopathogenesis, mainly through the study of HIV-2 infection, a naturally attenuated form of HIV disease.
- Human Immunodeficiency & Immune Reconstitution Lab prioritises the “bedside to the bench” approach and, given the transversal nature of Clinical Immunology, brings together physician/clinical researchers, from different medical areas, and basic researchers.

Head of Laboratory

Ana Espada de Sousa, MD, PhD

Graphical Abstract



Team

Alexandre Augusto da Silva Figueiredo e Raposo	PhD	Senior Post-Doctoral Researcher
Amelia Chiara Trombetta	PhD	Junior Post-Doctoral Researcher (Started October)
Ana Berta da Fonseca Vieira Álvares e Sousa Ferrand de Almeida	PhD	Clinical Researcher
Ana Catarina de Castro Chinita	Graduate	Junior Technician (Started May)
Ana Catarina Taborda Godinho dos Santos	PhD	Junior Post-Doctoral Researcher
Ana Cláudia Viseu Varandas	Master	Trainee (Started February)
Ana Cristina Costa Santos Ferreira de Oliveira Dias	Graduate	Clinical Researcher
Ana Filipa Potes Semião	Master	Lab Technician (Started February)
Ana Isabel Gouveia Costa da Fonseca Lopes	PhD	Clinical Researcher
Carlos José Cordeiro Lopes	Graduate	Clinical Researcher
Diana Isabel Feliciano dos Santos	Graduate	Lab Manager (Started September)
Diogo Miguel Rosa Tomaz	Master	Lab Technician (Started November)
Emília de Jesus da Encarnação Valadas	PhD	Clinical Researcher
Inês Filipa dos Santos Martins	Master	Consultant
Inês Moranguinho Bastardo Moura	Master	PhD Student (Started February)
Isabel Cristina e Castro de Menezes Esteves	Graduate	Clinical Researcher
João Manuel Henriques Felício Moniz	Graduate	MSc Student (Started January)
José Gonçalo Duque Pereira Monteiro Marques	Graduate	Clinical Researcher
Leandro Joel Barros Fernandes	Master	PhD Student (Started June Left June)
Maria Catarina Mota da Silva	PhD	Clinical Researcher
Maria da Conceição Galvão Barata Pinto Pereira dos Santos	PhD	Clinical Staff Scientist
Mariana Gaspar Fonseca	PhD	Clinical Researcher (Left January)
Miguel Ângelo Simão Dias	Graduate	MSc Student (Left September)
Miguel Forte Tenreiro	Graduate	MSc Student (Started September Left September)
Pedro Mota Prego Rosmaninho	PhD	Junior Post-Doctoral Researcher (Started March)
Robert Alfred Badura	Master	Clinical Researcher
Rui Manuel Martins Victorino	PhD	Clinical Staff Scientist
Sara Branco Pereira da Silva	Graduate	Clinical Researcher
Susana Clara Barão Lopes da Silva dos Anjos	PhD	Clinical Staff Scientist (Started January)
Susana Mendes Fernandes	PhD	Clinical Staff Scientist (Started January)
Vitória Rafaela Costa Curto	Master	PhD Student
Weronika Anna Samón	Undergraduate	Trainee (Left June)

Laboratory Keywords / Research Areas

Human T-cell homeostasis, T-cell development in the human thymus, Immune regulation, HIV/AIDS immunopathogenesis, HIV-2 infection, Primary immunodeficiencies, Immunological reconstitution.

Major Scientific Achievements

We showed for the first time that HIV-2-infected individuals feature no significant loss of mucosal CD4 T-cells and preserve gut integrity. These data provide a possible explanation for the relatively benign course of HIV-2 infection, and suggest new strategies for the design of therapies to foster gut recovery in treated HIV-1-infected subjects.

In line with our previous work and taking advantage of a natural model of intermittent exposure to bee-venom in non-allergic beekeepers, we generated *in vivo* evidence that bee-venom promotes the expansion of FOXP3-expressing CD4 T-cells, supporting a possible therapeutic use of bee-venom in clinical settings that benefit from transient regulatory T-cell boost.

We pursued our goal of contributing to the design and validation of human immunology tests, and reported, in collaboration with an international consortium, the first data of the distribution of different subclass isotypic subsets of memory B-cells and plasma cells throughout life in healthy subjects.

Selected Publications

Markert ML, Marques JG, Neven B, Devlin BH, McCarthy EA, Chinn IK, Albuquerque AS, Silva SL, Pignata C, de Saint Basile G, Victorino RM, Picard C, Debre M, Mahlaoui N, Fischer A, Sousa AE (2011). First use of thymus transplantation therapy for FOXP3 deficiency (nude/SCID): a report of 2 cases. *Blood* 117, 688. (IF: 15.132, Citations: 35. Source: Web of Science).

Azevedo RI, Soares MV, Barata JT, Tendeiro R, Serra-Caetano A, Victorino RM, Sousa AE (2009). IL-7 sustains CD31 expression in human naive CD4+ T cells and preferentially expands the CD31+ subset in a PI3K-dependent manner. *Blood* 113, 2999. (IF: 15.132, Citations: 47. Source: Web of Science).

Pereira-Santos MC, Baptista AP, Melo A, Alves RR, Soares RS, Pedro E, Pereira-Barbosa M, Victorino RMM, Sousa AE (2008). Expansion of circulating FoxP3+CD25^{bright} CD4+ T cells during specific venom immunotherapy. *Clinical & Experimental Allergy* 38, 291. (IF: 5.158, Citations: 48. Source: Web of Science).

Sousa AE, Carneiro J, Meier-Schellersheim M, Grossman Z, Victorino RM (2002). CD4 T cell depletion is linked directly to immune activation in the pathogenesis of HIV-1 and HIV-2 but only

indirectly to the viral load. *J Immunol* 169, 3400. (IF: 4.539, Citations: 348. Source: Web of Science).

Grossman Z, Meier-Schellersheim M, Sousa AE, Victorino RM, Paul WE (2002). CD4+ T-cell depletion in HIV infection: are we closer to understanding the cause? *Nature Medicine* 8, 319. (IF: 32.621, Citations: 337. Source: Web of Science).

Ongoing Research Projects

2018/2021: HIV2CURE: Células T foliculares no cerne da infecção HIV. Coordinator: Ana Espada de Sousa. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: HIV2CURE - LISBOA-01-0145-FEDER-030474. Amount: € 239 999,01. Total Amount: € 239 999,01.

2018/2019: Transmissão VIH-1 na infecção aguda: evolução dos reservatórios em casais com terapêutica precoce. Coordinator: Robert Badura. Funding Agency: Gilead Sciences. Reference: Programa Gilead GÉNESE. Amount: € 32 000,00. Total Amount: € 32 000,00.

2016/2018: Preservation of human thymic T cell production mediated by host restriction factors during HIV infection. Coordinator: Helena Cabaço. Funding Agency: Gilead Sciences. Reference: PGG/009/2015. Amount: € 30 000,00. Total Amount: € 30 000,00.

2015/2018: HIV-2 Infection: Clinical and Biological Repository. Coordinator: Ana Espada de Sousa. Funding Agency: Gilead Sciences. Reference: PGG/054/2014. Amount: € 20 000,00. Total Amount: € 20 000,00.

2015/2018: HIV-2 impact on Lymph Nodes. Coordinator: Susana Fernandes. Funding Agency: Gilead Sciences. Reference: PGG/059/2014. Amount: € 20 000,00. Total Amount: € 20 000,00.

2014/2018: Mye-EUNITER: European Network of Investigators Triggering Exploratory Research on Myeloid Regulatory Cells. Coordinator: Ana Espada de Sousa. Funding Agency: European Commission. Reference: COST BM1404. Amount: Not Applicable. Total Amount: € 645 550,00.

Other Projects

2018/2021: Estudos quantitativos de latência no VIH. Coordinator: Ruy Ribeiro. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MAT-APL/31602/2017. Amount: € 52 500,00. Total Amount: € 239 766,06.

2018/2021: Explorando o papel de microRNAs na função de células T e defesa anti-HIV. Coordinator: Margarida Gama-Carvalho. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIA-CEL/29257/2017. Amount: € 41 187,50. Total Amount: € 239 911,12.

2017/2019: ONEIDA: Plataforma Ómica para prevenção e controlo de infeções e de resistência aos antimicrobianos. Coordinator: Mário Ramirez. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: LISBOA-01-0145-FEDER-016417. Amount: € 696 698,00. Total Amount: € 2 459 635,55.

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

2016/2018: TwinToInfect: Unleash iMM's research excellence in immunity and infection through twinning to infect Lisbon and Portugal with its increase in competitiveness and innovation. Coordinator: Maria Manuel Mota. Funding Agency: European Commission. Reference: TWINNING 692022. Amount: € 893 500,00. Total Amount: € 999 996,25.

2015/2019: ENLIGHT-TEN: European Network linking informatics and genomics of helper T cells. Coordinator: Luís Graça. Funding Agency: European Commission. Reference: MSCA ITN 675395. Amount: € 433 512,72. Total Amount: € 3 354 685,20.

Publications in Peer Review Journals

Fernandes SM, Pires AR, Matoso P, Ferreira C, Nunes-Cabaço H, Correia L, Valadas E, Poças J, Pacheco P, Veiga-Fernandes H, Foxall RB, Sousa AE (2018). HIV-2 infection is associated with preserved GALT homeostasis and epithelial integrity despite ongoing mucosal viral replication. *Mucosal Immunology* 2018 Jan; 11:236-248. DOI: 10.1038/mi.2017.44. (IF: 7.36, Citations: 0. Source: Web of Science).

Santos MCP, Serra-Caetano A, Pedro E, Melo A, Caramalho I, Barbosa MP, Victorino RMM, Sousa AE (2018). Expansion of FOXP3+ regulatory CD4 T-cells upon exposure to hymenoptera venom during the beekeeping season. *Allergy*. 2018 Dec 28. DOI: 10.1111/all.13713. [Epub ahead of print] (IF: 6.048, Citations: 0. Source: Web of Science).

Dorhoi A, Glaría E, Garcia-Tellez T, Nieuwenhuizen NE, Zelinskyy G, Favier B, Singh A, Ehrchen J, Gujer C, Münz C, Saraiva M, Sohrabi Y, Sousa AE, Delputte P, Müller-Trutwin M, Valledor AF (2018). MDSCs in infectious diseases: regulation, roles, and readjustment. *Cancer Immunology Immunother.* 2018 Dec 19. DOI: 10.1007/s00262-018-2277-y. [Epub ahead of print] (IF: 4.225, Citations: 0. Source: Web of Science).

Blanco E, Pérez-Andrés M, Arriba-Méndez S, Contreras-Sanfeliciano T, Criado I, Pelak O, Serra-Caetano A, Romero A, Puig N, Remesal A, Torres Canizales J, López-Granados E, Kalina T, Sousa AE, van Zelm M, van der Burg M, van Dongen JJM, Orfao A; EuroFlow PID group (2018). Age-associated distribution of normal B-cell and plasma cell subsets in peripheral blood. *J Allergy Clin Immunol.* 2018 Jun;141(6):2208-2219.e16. DOI: 10.1016/j.jaci.2018.02.017. (IF: 13.258, Citations: 1. Source: Web of Science).

Ornelas C, Caiado J, Melo A, Pereira Barbosa M, Castells M, Pereira dos Santos MC (2018). Contribution of Basophil Activation Test in Diagnosis of Hypersensitivity Reactions to Oxaliplatin. *International Archives of Allergy and Immunology* 24:1-7 DOI: 10.1159/000490313 (IF: 2.437, Citations: 0. Source: Web of Science).

Ornelas C, Caiado J, Lopes A, Pereira dos Santos MC, Pereira Barbosa M (2018). Anaphylaxis to Long-Acting Release Exenatide. *Journal of Investigational Allergology and Clinical Immunology* 28[5]. DOI 10.18176/jiaci.0274. (IF: 3.457, Citations: 0. Source: Web of Science).

Ornelas C, Duarte RF, Pereira dos Santos MC, Pereira Barbosa M (2018). Multiple Food Allergy – Unexpected Culprits. *Asia Pacific Allergy* 8(3): e30. DOI.org/10.54157apa.2018.8.e30. (IF: 1.366, Citations: 1. Source: Web of Science).

Duarte RF, Ornelas C, Silva S, Morgado R, Pereira D, Escalera D, Moreira S, Valença J, Pedro E, Branco Ferreira M, Pereira Santos MC, Pereira Barbosa M (2018). Contribution of in vivo and in vitro testing for the diagnosis of local allergic rhinitis. *Journal of Investigational Allergology and Clinical Immunology* 29(1). DOI: 10.18176/jiaci.0321. [Epub ahead of print]. (IF: 3.457, Citations: 0. Source: Web of Science).

Cosme J, Spinola Santos A, Pereira Santos MC, Pereira Barbosa M (2018). Salmon roe as an emergent allergen in western countries. *Journal of Investigational Allergology and Clinical Immunology* 29[2]. DOI 10.18176/jiaci.0347. [Epub ahead of print]. (IF: 3.457, Citations: 0. Source: Web of Science).

Carneiro I, Pereira A, Pinto S, Prata F, Faria C, Marques JG (2018). Propionibacterium acnes: Cause of Cerebrospinal Fluid Shunt Infection. *Pediatr Infect Dis J* 37: e168-9. (IF: 2.305, Citations: 0. Source: Web of Science).

Nobre de Jesus G, Freitas F, Fernandes SM, Alvarez A (2018). Post-intubation tracheal laceration. *Intensive Care Medicine*. Nov [Epub ahead of print]. (IF: 15.008, Citations: 0. Source: Scopus).

Other International Publications

Lopes AI, Azevedo S (2018). "Current Topics in Anemia" in Book Chapter Anemia and IBD: Current Status and Future Perspectives. Edited by Jesmine Khan, ISBN 978-953-51-3775-7, Print ISBN 978-953-51-3774-0, InTech, February 2, 2018.

Other National Publications

Pereira Santos MC, Spinola Santos A, Postigo I, Martinez J (2018). Quantificação de alergénios major de *Dermatophagoides pteronyssinus* em extractos para imunoterapia com alergénios por via sublingual. *Revista Portuguesa de Imunoalergologia* 26(4):255-261.

Franco C, Castilho S, Graça A, Marques JG (2018). Transmissão de infeções pelo aleitamento materno. *Acta Pediátrica Port* 49:243-52.

Lopes AI (2018). Eliminar a Hepatite C: Missão Impossível. In *Hepatite C. O futuro começou aqui*. Edição do HSM-CHULN, December.

Invited Lectures and Seminars

Marques JG. Vacinação antigripal - como evoluir? 7ª Reunião Vigilância epidemiológica da gripe e de outros vírus respiratórios em Portugal, Instituto Nacional de Saúde Doutor Ricardo Jorge, Lisbon, Portugal, October 12, 2018.

Sousa AE. Lessons learned from FOXP1 deficiency. 18th Biennial Meeting of the European Society for Immunodeficiencies (ESID 2018), Lisbon, Portugal, October 24-27, 2018.

Silva SL. PID by pattern recognition. 18th Biennial Meeting of the European Society for Immunodeficiencies (ESID 2018), Lisbon, Portugal, October 24-27, 2018.

Marques JG. Chair of the session PIDs in New-borns and Infants. 18th Biennial Meeting of the European Society for Immunodeficiencies (ESID 2018), Lisbon, Portugal, October 24-27, 2018.

Fernandes SM. Inflammation is the key in ARDS. Jornadas de Medicina Intensiva, Porto, Portugal, October 2018.

Sousa AE. Chair of the Mye-EUNITER session Cellular Plasticity. 1st European Symposium on Myeloid Regulatory Cells in Health and Disease (ESMRC 2018), Essen, Germany, November 2, 2018.

Silva SL. Exploring the genetic basis for severe/extreme clinical phenotypes in COVID. 20th EUROFLOW-PID Meeting, Kiel, Germany, November 5-6, 2018.

Silva SL. Imunodeficiência como manifestação de defeito de ativação do complemento. VIII Simpósio do Núcleo de Estudos de Doenças Raras, Porto, Portugal, December 1, 2018.

Communications in International Conferences

Antão A, Pires AR, Ferreira C, Nunes-Cabaço H, Mauricio S, Rocha C, Matoso P, Victorino RMM, Fernandes SM, Sousa AE. HIV-2 impact on lymphoid organs: evidence of viral replication and tissue disruption. 2018 Conference on Retroviruses and Opportunistic Infections (CROI), Boston, USA, March 4-7, 2018. (Poster Presentation). Project: PAC ONEIDA.

Godinho-Santos A, Antão A, Tavares B, Ferreira T, Serra-Caetano A, Matoso P, Rocha C, Foxall RB, Sousa AE. T Follicular helper cells are major HIV-2 reservoirs and support productive infection. 2018 Conference on Retroviruses and Opportunistic Infections (CROI), Boston, USA, March 4-7, 2018. (Poster Presentation). Project: PAC ONEIDA.

Cosme J, Spínola-Santos A, Branco-Ferreira M, Lopes da Silva S, Pereira-Barbosa M, Pereira-Santos MC. Molecular allergens contribution in the selection of grass and/or olive immunotherapy. XXXVII Congress of the European Academy of Allergy and Clinical Immunology, Munich, Germany, May 26-30, 2018. (Poster Presentation).

Cosme J, Spínola-Santos A, Bartolomé B, Branco-Ferreira M, Pereira-Santo MC, Pereira-Barbosa M. Salmon roe: An emerging allergen from the East to the West. XXXVII Congress of the European Academy of Allergy and Clinical Immunology, Munich, Germany, May 26-30, 2018. (Poster Presentation).

Marcelino J, Aguiar P, Costa A.C, Neto M, Silva S, Duarte FC, Lopes A, Ferreira R, Pereira-Barbosa M, Pereira-Santos MC. Clinical characteristics of patients with autoimmune chronic spontaneous urticaria and predictors of positivity of basophil activation test. XXXVII Congress of the European Academy of Allergy and Clinical Immunology, Munich, Germany, May 26-30, 2018. (Poster Presentation).

Lourenço T, Lopes A, Pedro E, Pereira Barbosa M, Pereira Santos MC. Contribution of molecular diagnosis of bee venom allergic patients with systemic reactions during venom immunotherapy. XXXVII Congress of the European Academy of Allergy and Clinical Immunology, Munich, Germany, May 26-30, 2018. (Poster Presentation).

Fernandes M, Lopes A, Spínola Santos A, Pereira Santos MC, Pereira Barbosa M. Chlorhexidine: A life-threatening hidden allergen. XXXVII Congress of the European Academy of Allergy and Clinical Immunology, Munich, Germany, May 26-30, 2018. (Poster Presentation).

Sequeira AT, Lourenço R, Santos MM, Farinha RR, Pinto S, Marques JG. Intracranial complications of acute sinusitis and mastoiditis, a 14-year review of 25 cases. 36th Annual Meeting of the ESPID, Malmo, Sweden, May 28-June 2, 2018. (Poster Presentation).

Ângelo-Dias M, Godinho-Santos A, Tokunaga Y, Serra-Caetano A, Nunes-Cabaço H, Sousa AE, Raposo AASF. Uncovering the regulatory T cell transcriptional signature in the human thymus. 5th European Congress of Immunology (ECI 2018), Amsterdam, Netherlands, September 2-5, 2018. (Oral Presentation). Project: PAC Precise.

Figueiredo V, Moniz J, Jesus G, Silva D, Gouveia J, Alvarez A, Fernandes SM. High C-reactive protein as a marker of prognosis in ARDS patients. 31st Annual Congress of European Society of Intensive Care, Paris, France, October 20-24, 2018. (Poster Presentation).

Bernardo P, Fernandes SM, Pinto D, Jesus G, Silva D, Pereira A, Alvarez A, Gouveia J. Antifungal treatment in peritonitis: do we need it? 31st Annual Congress of European Society of Intensive Care, Paris, France, October 20-24, 2018. (Poster Presentation).

Ângelo-Dias M, Godinho-Santos A, Tokunaga Y, Serra-Caetano A, Nunes-Cabaço H, Sousa AE, Raposo AASF. Transcriptional Signature of Thymic-committed Human Regulatory T-cells. 18th Biennial Meeting of the European Society for Immunodeficiencies (ESID 2018), Lisbon, Portugal, October 24-27, 2018. (Oral Presentation). Project: PAC Precise.

Rosmaninho P, Raposo AASF, Abolhassani H, Hammarström L, Sousa AE, Silva SL. Mining the multigenic landscape underlying Common Variable Immunodeficiency Disorders. 18th Biennial Meeting of the European Society for Immunodeficiencies (ESID 2018), Lisbon, Portugal, October 24-27, 2018. (Poster Presentation). Project: PAC Precise.

Fonseca M, Serra-Caetano A, Pereira M, Silva S, Hammarstrom L, Carvalho MG, Silva SL, Sousa AE. Polygenic burden in common variable immunodeficiency? A monozygotic twin pair study. 18th Biennial Meeting of the European Society for Immunodeficiencies (ESID 2018), Lisbon, Portugal, October 24-27, 2018. (Poster Presentation). Project: PAC Precise.

Pereira da Silva S, Barbosa F, Varandas AC, Ferreira R, Laiges M, Lopes da Silva S, Pereira Barbosa M. Quality of life in Primary antibody deficiencies. 18th Biennial Meeting of the European Society for Immunodeficiencies (ESID 2018), Lisbon, Portugal, October 24-27, 2018. (Poster Presentation).

Perez-Andres M, Blanco E, Arriba-Mendez S, Serrano C, Pino-Molina L, Silva SL, Criado I, Madruga I, Serra-Caetano A, Contreras-Sanfeliciano T, Sala F, Martin A, Bastida JM, Lorente F, Prieto C, Davila I, Marcos M, Kalina T, Vlkova M, Bonroy C, Philippé J, Lopez-Granados E, Sousa AE, Burg M, Dongen JV, Orfao A. Analysis of memory B-cell and plasma cell subsets expressing different immunoglobulin subclasses defines subgroups of CVID and Ig-subclass deficiencies based on the underlying B-cell defect. 18th Biennial Meeting of the European Society for Immunodeficiencies (ESID 2018), Lisbon, Portugal, October 24-27, 2018. (Poster Presentation).

Marques L, Fernandes A, Teixeira C, Lopes-da-Silva S, Silva S, Esteves I, Marques JG, Cordeiro A, Neves J, Regateiro F, Lemos S, Faria E. X-linked agammaglobulinemia: a Portuguese national survey. 18th Biennial Meeting of the European Society for Immunodeficiencies (ESID 2018), Lisbon, Portugal, October 24-27, 2018. (Poster Presentation).

Coelho M, Guedes M, Marques JG, Silva SL, Neves J, Lemos S, Regateiro F, Faria E, Vitor B, Neves E, Vasconcelos J, Marques L. Chronic granulomatous disease in Portugal 2018 – a multicentre study. 18th Biennial Meeting of the European Society for Immunodeficiencies (ESID 2018), Lisbon, Portugal, October 24-27, 2018. (Poster Presentation).

Communications in National Conferences

Duarte C, Mota M, Ribeiro M, Forno A, Marques JG, Pinto S, Mouzinho A, Prata F, Faria C, Santos MM. Ventriculite crónica por Mycobacterium abscessus. XXIV Jornadas de Pediatria, Centro Hospital Lisboa Norte, Lisbon, Portugal, February 7-9, 2018. (Oral Presentation).

Antão A, Pires AR, Ferreira C, Nunes-Cabaço H, Mauricio S, Rocha C, Matoso P, Victorino RMM, Sousa AE, Fernandes SM. HIV-2 impact on lymphoid organs: evidence of viral replication and tissue disruption. XLIV Meeting of the Portuguese Society for Immunology (SPI), Lisbon, Portugal, June 27-29, 2018. (Poster Presentation). Project: PAC ONEIDA.

Godinho-Santos A, Antão A, Tavares B, Ferreira T, Serra-Caetano A, Matoso P, Rocha C, Foxall RB, Sousa AE. Follicular helper cells are major HIV-2 reservoirs and support productive infection. XLIV Meeting of the Portuguese Society for Immunology (SPI), Lisbon, Portugal, June 27-29, 2018. (Poster Presentation). Project: PAC ONEIDA.

Ângelo-Dias M, Godinho-Santos A, Tokunaga Y, Serra-Caetano A, Nunes-Cabaço H, Sousa AE, Raposo AASF. Uncovering the regulatory T cell transcriptional signature in the human thymus. XLIV Meeting of the Portuguese Society for Immunology (SPI), Lisbon, Portugal, June 27-29, 2018. (Poster Presentation). Project: PAC ONEIDA.

Varandas AC, Silva SP, Barbosa RR, Serra-Caetano A, Barbosa MP, Sousa AE, Silva SL. Autoimunidade e linfoproliferação: fenótipos distintos ou progressão da Imunodeficiência Comum Variável? XXXIX Meeting of the Portuguese Society for Allergology and Clinical Immunology (SPAIC), Figueira da Foz, Portugal, September 28-30, 2018. (Oral Presentation). Project: PAC Precise.

Varandas AC, Serra-Caetano A, Antão A, Machado H, Santos MC, Sousa AE, Silva SL. Impacto da imunoterapia específica em rush por via subcutânea nas subpopulações de células B circulantes em doentes com alergia respiratória. XXXIX Meeting of the Portuguese Society for Allergology and Clinical Immunology (SPAIC), Figueira da Foz, Portugal, September 28-30, 2018. (Poster Presentation). Project: FCT.

Pereira da Silva S, Barbosa F, Varandas AC, Ferreira R, Laiges M, Lopes da Silva S, Pereira Barbosa M. Qualidade de vida nos defeitos primários de produção de anticorpos. XXXIX Meeting of the Portuguese Society for Allergology and Clinical Immunology (SPAIC), Figueira da Foz, Portugal, September 28-30, 2018. (Oral Presentation). Project: PAC Precise.

Marcelino J, Costa C, Aguiar P, Neto M, Silva S, Duarte F, Lopes a, Duarte RF, Lourenço T, Pereira Barbosa M, Pereira Santos MC. Preditores de positividade do teste de ativação de basófilos em doentes com urticária crónica espontânea. XXXIX Meeting of the Portuguese Society for Allergology and Clinical Immunology (SPAIC), Figueira da Foz, Portugal, September 28-30, 2018. (Oral Presentation).

Carvalho S, Cabral Duarte F, Costa C, Pereira Barbosa M, Pereira Santos MC. Contributo do diagnóstico molecular no prognóstico de aquisição de tolerância ao ovo. XXXIX Meeting of the Portuguese Society for Allergology and Clinical Immunology (SPAIC), Figueira da Foz, Portugal, September 28-30, 2018. (Oral Presentation).

Cosme J, Spinola Santos A, Bartolomé B, Branco Ferreira M, Pereira Santos MC, Pereira Barbosa M. Ovas de salmão: alérgeno emergente do oriente para o ocidente. XXXIX Meeting of the Portuguese Society for Allergology and Clinical Immunology (SPAIC), Figueira da Foz, Portugal, September 28-30, 2018. (Oral Presentation).

Lourenço T, Lopes A, Pedro E, Pereira Barbosa M, Pereira Santos MC. Contribuição do diagnóstico molecular em doentes alérgicos ao veneno de abelha com reações sistémicas durante o ultra-rush. XXXIX Meeting of the Portuguese Society for Allergology and Clinical Immunology (SPAIC), Figueira da Foz, Portugal, September 28-30, 2018. (Oral Presentation).

Fernandes M, Lopes A, Spinola Santos A, Pereira Santos MC, Pereira barbosa M. Clorohexidina: alérgeno oculto potencialmente fatal. XXXIX Meeting of the Portuguese Society for Allergology and Clinical Immunology (SPAIC), Figueira da Foz, Portugal, September 28-30, 2018. (Poster Presentation).

Martins IC, Asseiceira I, Policarpo S, Carolino E, Prata F, Mouzinho A, Marques JG. Nutritional Status, Physical Activity and Quality of Life in children and adolescents with Human Immunodeficiency Virus (HIV) infection. XX Congresso Anual da Apnep, Lisbon, Portugal, October 13-16, 2018. (Best Oral Presentation).

Gouveia C, Moeda S, Caldeira LE, Henriques R, Prata F, Mouzinho A, Marques JG. Osteomielite por *Enterobacter cloacae*. 19º Congresso Nacional de Pediatria, Estoril, Portugal, October 24-26, 2018. (Poster Presentation).

Organisation of Conferences

Sousa AE. XLIV Annual Meeting Sociedade Portuguesa de Imunologia (SPI 2018), Lisbon, Portugal, June 27-29, 2018.

Marques JG, Silva SL, Silva SP and Sousa AE. 18th Biennial Meeting of the European Society for Immunodeficiencies (ESID 2018), Lisbon, Portugal, October 24-27, 2018.

Sousa AE. 1st European Symposium on Myeloid Regulatory Cells in Health and Disease (ESMRC 2018), Essen, Germany, November 1-3, 2018.

Internationalisation

Sousa AE. Part of the EuroFlow International Consortium on Primary Immunodeficiency. <http://euroflow.org/>

Sousa AE. National Coordinator and Member of the Management Committee of the COST Action BM1404 “European Network of Investigators Triggering Exploratory Research on Myeloid Regulatory Cells (Mye-EUNITER)”. 2014/2018. Agency: European Commission. Reference: COST BM1404. <http://www.mye-euniter.eu/>

Sousa AE. Member of ENLIGHT-TEN - European Network Linking Informatics and Genomics of Helper T cells comprising TEN beneficiaries. 2015/2019 – ETN funded by the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No.: 675395. <http://www.enlight-ten.eu/>

Sousa AE. Member of the EFIS-Immunology Letters (IL) Study Group titled “T_CELL_CONNECT_EUROPE”, European Federation of Immunology Societies (EFIS). <https://www.efis.org/efis-support/efis-il-study-groups/index.html>

Sousa AE. Expert panel member for the Norway Research Council for grant reviews in the area of Immunology and Infection.

Prizes, Honours and Awards

Marcelino J, Aguiar P, Costa AC, Neto M, Silva S, Duarte FC, Lopes A, Ferreira R, Pereira-Barbosa M, Pereira-Santos MC. Clinical characteristics of patients with Autoimmune Urticaria and predictors of positivity of basophil activation test. Best Oral Communication, EAACI 2018. XXXVII

Congress of the European Academy of Allergy and Clinical Immunology, Munich, Germany, May 26-30, 2018.

Cosme J, Spínola-Santos A, Branco-Ferreira M, Lopes da Silva S, Pereira-Barbosa M, Pereira-Santos MC. Molecular allergens contribution in the selection of grass and/or olive immunotherapy. Best Poster EAACI 2018. XXXVII Congress of the European Academy of Allergy and Clinical Immunology, Munich, Germany, May 26-30, 2018.

Industry Contract Research

Multicentric Clinical trial entitled: “A phase 3 Randomized double blinded Study Comparing TR-701 FA and Linezolid in Ventilated Gram-positive Nosocomial Pneumonia”. Funded by Cubic. PI at CHLN: Susana M. Fernandes.

Government / Organisation Contract Research

Sousa AE. Member of the National Ethics Committee for Clinical Research (CEIC).

Sousa AE. Member of the Executive Committee of the National Ethics Committee for Clinical Research (CEIC).

Sousa AE. Member of the “Comissão de Avaliação de Tecnologias de Saúde (CATS)”. INFARMED — Autoridade Nacional do Medicamento e Produtos de Saúde, I. P. (INFARMED, I. P.).

Sousa AE. Coordinator of the GAPIC - Department for promotion of scientific research for medical students and MDs. Faculty of Medicine, University of Lisbon.

Sousa AE. Member of the Board of the FCT PhD programme LisbonBioMed, IMM/FM/UL.

Sousa AE. Member of the Executive Board of the FCT PhD programme “Biology at the Host Microbe Interface” (INTERFACE for short), ITQB/IGC/IMM.

Sousa AE. Member of the Comissão Científica de Biociências da Santa Casa da Misericórdia de Lisboa.

Victorino RMM, Sousa AE, Lopes AI. Members of the Scientific Council. Faculty of Medicine, University of Lisbon.

Victorino RMM, Sousa AE. Members of the Scientific Board of the PhD Programme of the Lisbon Academic Medical Centre.

Victorino RMM. Member of the Scientific Council of the Fundação Pulido Valente.

Victorino RMM. Member of the Clinical Research Committee from University Hospital Santa Maria.

Silva SL, Marques JG. Members of the Comissão Técnica de Vacinação da Direção-Geral de Saúde.

Marques JG. Member of the Comissão Nacional de Verificação da Eliminação do Sarampo e da Rubéola.

Marques JG. Member of the Centro Hospital Lisboa Norte Local Coordination Group of the Programme for the Prevention and Control of Infections and Resistance to Antimicrobials.

Marques JG. Coordination of the *Haemophilus influenzae* Invasive Disease Study Group in the Child.

Lopes AI. Member of the Working Group for Clinical Curriculum Review. Faculty of Medicine, University of Lisbon.

Lopes AI. Member of the Board of the Pediatric Gastroenterology College - Portuguese Medical Association (Ordem dos Médicos).

Lopes AI. Member of the Ethical Committee of Hospital Santa Maria and Lisbon Academic Medical Centre.

Lopes AI. Member of the Lisbon University College “Food, Farming and Forestry” (F3).

Lopes AI. President of Endoscopy Pediatric Section of Portuguese Endoscopy Society (SPED).

Fernandes SM. Member of the GAPIC - Department for promotion of scientific research for medical students and MDs. Faculty of Medicine, University of Lisbon.

Advanced Teaching

Sousa AE, Pereira-Santos MC, Victorino RMM, Silva SL, Fernandes SM. Clinical Immunology teaching in the core curriculum for Medical Students, Area: Medicine 2, 5th year. Faculty of Medicine, University of Lisbon.

Sousa AE, Pereira-Santos MC, Victorino RMM, Silva SL, Fernandes SM, Mota C, Godinho-Santos A. Teaching of the optional discipline of Clinical Immunology of the 4th and 5th year of the Degree in Medicine. Faculty of Medicine, University of Lisbon.

Pereira Santos MC. Specialty in Immunoallergology: Supervision of the Clinical Immunology Laboratory training period for the final degree (Ordem dos Médicos/Ministry of Health).

Sousa AB, Sousa AE. Collaboration in the teaching of Immunology in the core curriculum for Medical Students, 2nd year. Faculty of Medicine, University of Lisbon.

Fernandes SM. Teaching of the Discipline of Intensive Care Medicine of the 4th and 5th year of the Degree in Medicine. Faculty of Medicine, University of Lisbon.

Lopes AI. Regency and Teaching of the Discipline of Pediatrics (Module VI II), core curriculum, 5th year of the Degree in Medicine. Faculty of Medicine, University of Lisbon.

Lopes AI. Regency of the Elective Discipline Clinical Procedures in Pediatrics. 5th year of the Degree in Medicine. Faculty of Medicine, University of Lisbon.

Lopes AI. Coordination of the Pediatric Module of the Master Programme in Clinical Nutrition. Faculty of Medicine, University of Lisbon.

Marques JG. Teaching of the Discipline of Pediatrics (Module VI II), core curriculum, 5th year of the Degree in Medicine. Faculty of Medicine, University of Lisbon.

Marques JG. Coordination of the Seminar on Vaccination of the Discipline of Pediatrics (Module VI II), core curriculum, 4th year of the Degree in Medicine. Faculty of Medicine, University of Lisbon.

Esteves I. Teaching of the Discipline of Pediatrics (Module VI I), core curriculum, 4th year of the Degree in Medicine. Faculty of Medicine, University of Lisbon.

Marques JG. Exantemas Infecciosos. 13º Curso de Infecçologia Pediátrica, Coimbra, Portugal, January 25-26, 2018.

Lopes AI. Infecção por *H. pylori* em Idade Pediátrica. Perspetiva Atual. Annual Pediatric Meeting, Hospital Cuf Descobertas. Lisbon, Portugal, February 1, 2018.

Sousa AE. Mecanismos Efetores e Reguladores do Sistema Imune - dos estudos laboratoriais aos casos clínicos. 1ª Edição do Curso de Imunologia para Clínicos Janssen, Porto, Portugal, February 3, 2018.

Marques JG. Vacinação contra Meningococos na Adolescência. Simpósio nas XXIV Jornadas de Pediatria, Centro Hospitalar Lisboa Norte, Lisbon, Portugal, February 7-9, 2018.

Marques JG. Amigdalite e Otite Média Aguda. Curso Pediatria na Urgência, Centro de Formação do Centro Hospitalar Lisboa Norte, Lisbon, Portugal, February 23, 2018.

Marques JG. Vacinas em Circunstâncias Especiais, Grupos de Risco. Vaccines Academy, MSD, Paço de Arcos, Portugal, February 23-24, 2018.

Marques JG. Perguntas Frequentes em Vacinação – Colóquio. Vaccines Academy, MSD, Paço de Arcos, Portugal, February 23-24, 2018.

Marques JG. Vacinas Influenza: novas gerações. Curso de Atualização em Vacinas da Sociedade de Infecçologia Pediátrica da SPP, Porto, Portugal, March 15-16, 2018.

Marques JG. Painel de Peritos: perguntas frequentes sobre vacinação. Curso de Atualização em Vacinas da Sociedade de Infecçologia Pediátrica da SPP, Porto, Portugal, March 15-16, 2018.

Lopes AI. Pancreatite Crónica em Idade Pediátrica. Perspetiva Atual. Annual Meeting of Portuguese Society of Pediatric Gastroenterology and Nutrition, Costa da Caparica, Portugal, March 22-23, 2018.

Lopes AI. Immuno-Training e o papel da Microbiota Intestinal. Simpósio Danone. Annual Meeting of Portuguese Society of Pediatric Gastroenterology and Nutrition, Costa da Caparica, Portugal, March 22-23, 2018.

Marques JG. Vacinas contra Meningococos. 11º Encontro Nacional Pfizer Vaccines, Albufeira, Portugal, April 28, 2018.

Marques JG. Vacinas extra-PNV. 1º Curso de Pós-Graduação de Infecciologia Pediátrica do HDE, Lisbon, Portugal, April 20, 2018.

Marques JG. Vacinação: que Mitos e que Modas. 11ª Jornadas da Família, Lisbon, Portugal, May 3, 2018.

Marques JG. Doença Meningocócica. XIX Jornadas de Pediatria de Évora, Évora, Portugal, May 10, 2018.

Marques JG. Lesões cutâneas na doença infecciosa. XIX Jornadas de Pediatria de Évora, Évora, Portugal, May 10, 2018.

Marques JG. Antibióticos no local de infeção. VI Curso de Antimicrobianos da Sociedade de Infecciologia Pediátrica da SPP, Coimbra, Portugal, May 17-18, 2018.

Sousa AE. HIV Pathogenesis: from Acute through Chronic Infection. 3rd Edition of the "Advanced Course in HIV Therapeutic Management", HPCA, Lisbon, Portugal, May 24-25, 2018.

Lopes AI. Impacto nefasto do álcool em Idade Pediátrica. Annual ACSM Meeting, Lisbon, Portugal, June 26, 2018.

Marques JG. Hesitação em vacinar – como abordar. Conversas com Especialistas. Hospital de S. Bernardo, Setúbal, Portugal, June 8, 2018.

Marques JG. BCG ou não BCG? Curso Desafios na Comunidade: Pneumonia Aguda e Tuberculose na Criança, Lisbon, Portugal, June 22, 2018.

Lopes AI. Novas Fórmulas na Prevenção da Alergia Alimentar. Hospital Prof. Doutor Fernando da Fonseca, Amadora, Portugal, July 16, 2018.

Marques JG. Sarampo. V Congresso do Internato Médico José de Mello Saúde, Lisbon, Portugal, September 13, 2018.

Silva SL. Imunodeficiências primárias: Mecanismos moleculares e celulares. Classificação. 29th Educational Meeting Internato Complementar de Genética Médica, Lisbon, Portugal, October 19, 2018.

Marques JG. Imunodeficiências primárias: Apresentação e abordagem clínica. 29th Educational Meeting Internato Complementar de Genética Médica, Lisbon, Portugal, October 19, 2018.

Sousa AB. Organization of the 29th Educational Meeting Internato Complementar de Genética Médica, Lisbon, Portugal, October 19, 2018.

Marques JG. Antibioterapia em pediatria. 10^o Curso de Antibioterapia do Hospital da Luz, Lisbon, Portugal, November 19-20, 2018.

Marques JG. Hesitação em vacinar – o que fazer? 2^o Curso básico de vacinas, Coimbra, Portugal, November 21, 2018.

Marques JG. Perguntas frequentes sobre vacinas (Painel). 2^o Curso básico de vacinas, Coimbra, Portugal, November 21, 2018.

Marques JG. Exantemas Infecciosos na Criança. 25^a Jornadas de Pediatria de Leiria e Caldas da Rainha, Leiria, Portugal, November 30, 2018.

Marques JG. Vacinação Anti Meningocócica. 25^a Jornadas de Pediatria de Leiria e Caldas da Rainha, Leiria, Portugal, November 30, 2018.

Science and Society

Silva SL. Medical Advisor for Associação Portuguesa de Doentes com Imunodeficiências Primárias.

Badura R. SIDA em Portugal, TV show Sociedade Civil, RTP2, November 29, 2018.

Marques JG. Vacinas, TV show Sociedade Civil, RTP2, April 5, 2018.

MSc Thesis Completed

Rui Pedro Miranda Alves, 23/07/2018, “Adenocarcinoma Gástrico em Doentes com Imunodeficiência Comum Variável”. Mestrado Integrado de Medicina, Faculty of Medicine, University of Lisbon. Supervisor: Susana L Silva.

Miguel Angelo Simão Dias, 10/09/2018, “Uncovering the regulatory T-cell transcriptional signature in the human thymus”. Mestrado em Biologia Molecular e Celular, University of Coimbra. Supervisor: Alexandre ASF Raposo. Co-Supervisor: Ana E. Sousa.

Internships:

Weronika Anna Samoń, September 2017 to July 2018. Project: Characterisation of human follicular helper T-cells. Traineeship Programme for Undergraduate students from Faculty of Medicine and Dentistry in Plymouth University, England. Supervisor: Catarina Godinho-Santos. Co-Supervisor: Ana Espada de Sousa.

Miguel Tenreiro, September 1-30, 2018. Project: Comparative Transcriptomics of Human Conventional CD4+ T cell subsets in the Periphery. Estágio de 3ºano de Engenharia Biomédica, IST, UL. Supervisor: Alexandre Raposo.

Clinical Immunology Laboratory training period for the final degree (Ordem dos Médicos/Ministry of Health):

Sara Patricia Abreu Carvalho, MD, January 1 to March 31, 2018. Project: Basophil Activation Test in the diagnosis of immediate hypersensitivity to iodinated contrast media. Serviço de Imunoalergologia, Centro Hospitalar Universitário Lisboa Norte, Hospital Santa Maria. Supervisor: MC Pereira Santos.

Mara Fernandes, MD, October 1 to December 31, 2018. Project: Perfil de sensibilização a alérgenos moleculares de epitélios de animais. Serviço de Imunoalergologia, Centro Hospitalar Universitário Lisboa Norte, Hospital Santa Maria. Supervisor: MC Pereira Santos.

João Moniz, January to December 2018. GAPIC Project: IL-22 pathway as a mark of epithelia regeneration after ARDS. Reference: PEC21/20180028. Mestrado Integrado de Medicina, Faculty of Medicine, University of Lisbon. Supervisor: Susana M Fernandes.

Ana Sebastião Lab

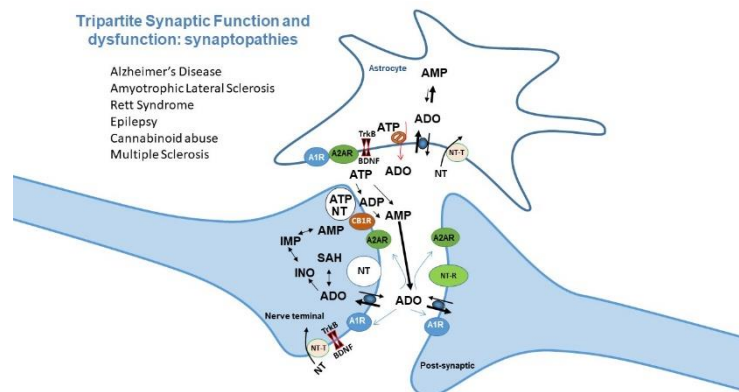
Major Interests / Objectives

Correct abnormal synaptic function is a main challenge to Neurosciences since it impacts in the possibility to fight neurologic and psychiatric diseases. Our team aims to elucidate how the neuronal and glial components of the tripartite synapse are fine-tuned under normal and dysfunctional situations. How endogenous modulators affect synaptic signalling, neuronal excitability, neuronal and glial maturation, degeneration, renewal and repair, under normal and pathological conditions, are our current goals of research. We focus on neurotrophic factors, on adenosine and on endocannabinoids, as major endogenous neuromodulators. As disease models we have been focusing on those involving neurodegeneration and/or dysregulated excitability, from newborn to ageing.

Head of Laboratory

Ana M. Sebastião, PhD, Full Professor

Graphical Abstract



Team

Amaya Nicole Clark	Undergraduate	Trainee (Started June, Left July)
Ana Cristina Santos Barcelos	MSc	Visiting Researcher
Ana Filipa Ferreira da Cunha Ribeiro	PhD	Junior Post-Doctoral Researcher
Ana Iolanda D'Armada Moreira	MSc	PhD Student
Ana Margarida Garção Godinho	BSc	MSc Student (Started September)
Ana Marta Alonso Gomes	MSc	Trainee (Started November)
Ana Rita Carreira Baptista Gomes	MSc	PhD Student (Started July)
Antónia Sofia Fortunato Ribeiro	BSc	MSc Student (Started September)
Anwesh Ghosh	MSc	Trainee (Started September)

Armando Dulcídio da Silva Cruz	MSc	PhD Student
Beatriz Montalto e Frade de Alves	Undergraduate	BSc Student (Started March, Left June)
Carolina de Campos Pina	BSc	MSc Student (Started June)
Catarina Beatriz Silva Ferreira	MSc	PhD Student
Catarina Isabel Carvalhas de Almeida	BSc	MSc Student (Left October)
Catarina Miranda Lourenço	MSc	PhD Student
Cláudia Alexandra dos Santos Valente de Castro	PhD	Senior Post-Doctoral Researcher
Cláudia Sofia Beltrão Cavacas	MSc	Trainee (Left February)
Cristina Maria de Oliveira Varandas	Undergraduate	Administrative Technician
Daniela Cristina Melo Magalhães	MSc	PhD Student
Diogo Gomes da Cruz	BSc	MSc Student (Left December)
Diogo Miguel da Palma Lourenço	MSc	PhD Student (Started April)
Diogo Miguel Santos Rombo	PhD	Junior Post-Doctoral Researcher
Francisco Melo Albuquerque Saraiva Mouro	PhD	Junior Post-Doctoral Researcher
Giulia Viganí	MSc	MSc (Started October)
Inês Ferreira de Sousa	BSc	MSc Student (Started April, Left July)
Irene Bulli	BSc	MSc Student (Left February)
Jéssica Lúcia Albuquerque Rosa	BSc	MSc Student
Joana Filipa Gonçalves Ribeiro	MSc	Trainee (Started October)
Joana Isabel Ferreira da Graça Gomes	BSc	MSc Student
Joana Moura Mateus	MSc	Trainee (Started September)
João Baptista Moreira	BSc	MSc Student (Started February)
João Filipe Fonseca Gomes	MSc	PhD Student
João Jorge Pedro Baião	Undergraduate	Senior Technician
Joaquim Alexandre Ribeiro	PhD	Staff Scientist
Jorge Miguel Farinha Ferreira	BSc	MSc Student
Leonor Pedro Oliveira Ribeiro Rodrigues	MSc	Trainee (Started July)
Maria Alexandra Pereira Botelho	Undergraduate	Administrative Technician
Maria José de Oliveira Diógenes Nogueira	PhD	Staff Scientist
Miranda Mele	PhD	Junior Post-Doctoral Researcher
Nádia Raquel Henriques Rei	MSc	PhD Student
Oksana Savchak	Undergraduate	BSc Student (Started February, Left July)
Oriana Weronika Piskorz	BSc	MSc Student (Started February, Left April)
Rita Alexandra Figueira Belo	MSc	PhD Student
Rita Isabel Pedro Aroeira	PhD	Junior Project Manager
Robertta Silva Martins	MSc	PhD Student (Started October)
Rui Miguel Silva Rodrigues	MSc	PhD Student
Sandra Cristina Henriques Vaz	PHD	Senior Post-Doctoral Researcher
Sara Alves Xapelli	PhD	Staff Scientist
Sara Luísa Ramalho Tanqueiro	MSc	PhD Student
Sara Raquel Landeira Nabais do Paulo	MSc	Trainee (Started July)
Tatiana Pinto Morais	MSc	PhD Student
Valéria Beatriz Patrocínio Martins	Undergraduate	BSc Student (Started March, Left June)
Vanda Cristina Simões Nogueira	BSc	MSc Student (Started October)

Laboratory Keywords / Research Areas

Tripartite synapse mechanisms, Neuronal excitation/inhibition balance, Neurodegenerative mechanisms, Neuroinflammation, Epilepsy, Cannabinoid abuse.

Major Scientific Achievements

In line with our objectives of understanding modulation of neuronal communication under normal and pathological conditions, our main findings in 2018 were:

1. Action of cannabinoids:

a) Cannabinoid intake alters brain connectivity between areas involved in memory as well as in affective behaviour (Mouro *et al.*, *J Neurochem*). This work was invited for a press release in the Society for Neuroscience Meeting in San Diego.

b) Cannabinoids interact with brain derived neurotrophic factor (BDNF) to control post-natal neurogenesis (Ferreira *et al.*, *Front Cell Neurosc*). Adult neurogenesis can also be modulated by tauroursodeoxycholic acid (TUDCA), (Soares *et al.*, *Mol Neurobiol*), a study that we carried out in collaboration with the Faculty of Pharmacy of the University of Lisbon. Taken together, these two studies highlight the tight control of adult neurogenesis by a number of endogenous molecules.

2. Modulation of NMDA activity, synaptic plasticity and neurodegeneration:

a) Synaptic, but not extra-synaptic, NMDA receptors are modulated by A2AR in young rats (Mouro *et al.*, *Br J Pharmacol*). This post-synaptic action of A2AR may contribute to the facilitatory action of A2A receptors in synaptic plasticity, is in line with our previous finding that AMPA receptors are also modulated by A2AR, and further challenges the concept that A2AR in young animals are only pre-synaptically located.

b) Extra-synaptic NMDA receptors mediate the impairment of BDNF signalling induced by β -amyloid peptide (Tanqueiro *et al.*, *Front Pharmacol*), a study that further elucidated the mechanism of neurodegeneration in Alzheimer's Disease.

Homeostatic plasticity, a form of plasticity that allows neurons to regulate their own excitability relative to network activity, is facilitated by erythropoietin (Dias *et al.*, *Cerebral Cortex*), a study that further clarifies the impact of the synaptic actions of this glycoprotein (most known by its action to stimulate erythropoiesis).

3. Control of excitability by glial cells and its impact in diseases:

- a) An *ex vivo* model to identify neuroinflammatory markers in epilepsy was characterised in detail (Magalhães *et al.*, J Neuroinflammation).
- b) Downregulation of microglia was identified as an early stage of Amyotrophic Lateral Sclerosis (ALS), a study made in collaboration with the Faculty of Pharmacy (Cunha *et al.*, Mol Neurobiol).
- c) Dysfunction of GABA transport into astrocytes of the Globus Pallidus contributes to the pathophysiology of Parkinson Disease, a study done in collaboration with the University of Bordeaux (Chazalon *et al.*, Cell Rep).
- d) A role for Glycine receptors in astrocytes was identified (Morais *et al.*, Front Molec Neurosci).
- e) Microreactors constructed to mimic astrocytic functions (Armada-Moreira *et al.*, Advanced Biosystems), which were able to ameliorate the effects of excitotoxicity in cell cultures (Armada-Moreira *et al.*, ACS Appl Mater Interface), highlighting the possibility to engineer structures with neuroprotective potential.

Selected Publications

Mouro FM, Batalha VL, Ferreira DG, Coelho JE, Baqi Y, Müller CE, Lopes LV, Ribeiro JA, Sebastião AM (2017). Chronic and acute adenosine A2A receptor blockade prevents long-term episodic memory disruption caused by acute cannabinoid CB1 receptor activation. *Neuropharmacology*, 117:316-327. (IF: 4.249, Citations: 7. Source: Web of Science).

Diógenes MJ, Neves-Tomé R, Fucile S, Martinello K, Scianni M, Theofilas P, Lopatár J, Ribeiro JA, Maggi L, Frenguelli BG, Limatola C, Boison D, Sebastião AM (2014). Homeostatic Control of Synaptic Activity by Endogenous Adenosine is mediated by Adenosine Kinase. *Cereb Cortex* 24, 67-80. (IF: 6.308, Citations: 30. Source: Web of Science).

Rocha, MC, Pousinha PA, Correia AM, Sebastião AM, Ribeiro JA (2013). Early changes of neuromuscular transmission in the SOD1 (G93A) mice model of ALS start long before motor symptoms onset. *PLOS ONE* 8, e73846. <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0073846>. (IF: 2.766, Citations: 62. Source: Web of Science).

Dias RB, Rombo DM, Ribeiro JA, Henley JM, Sebastião AM (2013). Adenosine: setting the stage for plasticity. *Trends in Neuroscience* 36, 428-257. (IF: 11.439, Citations: 61. Source: Web of Science).

Diogenes MJ, Costenla AR, Lopes LV, Jerónimo-Santos A, Sousa VC, Fontinha BM, Ribeiro JA, Sebastião AM (2011). Enhancement of LTP in aged rats is dependent on endogenous BDNF. *Neuropsychopharmacology* 36, 1823-1836. (IF: 6.544, Citations: 64. Source: Web of Science).

Fontinha BM, Diógenes MJ, Ribeiro JA, Sebastião AM (2008). Enhancement of long-term potentiation by BDNF requires adenosine A2A receptor activation by endogenous adenosine. *Neuropharmacology* 54:924-933. (IF: 4.249, Citations: 70. Source: Web of Science).

Ongoing Research Projects

2018/2021: Restabelecimento dos níveis de Adenosina: nova abordagem para o tratamento da Síndrome de Rett. Coordinator: Maria José Diógenes. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: AdoRett - LISBOA-01-0145-FEDER-031929. Amount: € 208 541,35. Total Amount: € 239 791,35.

2018/2021: Astrossomas: Astrócitos Artificiais como reguladores da comunicação neuronal. Coordinator: Sandra Vaz. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BTM-SAL/32147/2017. Amount: € 239 677,82. Total Amount: € 239 677,82.

2018/2021: Na procura do mecanismo de ação de um novo e seletivo fármaco antiepiléptico. Coordinator: Ana M Sebastião. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MED-FAR/30933/2017. Amount: € 239 867,80. Total Amount: € 239 867,80.

2018/2021: Regulação da homeostase e polarização pró-inflamatória da microglia Rac1. Coordinator: Ana M. Sebastião. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: POCI-01-0145-FEDER-031318. Amount: € 15 000,00. Total Amount: € 224 179,81.

2018/2021: Titanic- CYP46A1 as new Therapeutic Target in Niemann-Pick Type-C disease. Coordinator: Maria José Diógenes. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MED-NEU/29455/2017- TITANIC. Amount: € 12 500,00. Total Amount: € 237 017,12.

2018/2021: Controlo mecanístico e optogenético da astrogliã para reparaçãõ neuronal. Coordinator: Ana M. Sebastiãõ. Funding Agency: Fundaçãõ para a Ciênciã e a Tecnologia. Reference: PTDC/MED-NEU/31417/2017. Amount: € 21 250,00. Total Amount: € 239 884,80.

2018/2020: Novel therapeutic strategy and new biomarker for Alzheimer's Disease based on BDNF receptor cleavage. Coordinator: Maria José Diógenes. Funding Agency: Santa Casa da Misericórdia de Lisboa. Reference: Prémio Santa Casa M^a José Diógenes. Amount: € 152 388,90. Total Amount: € 198 951,40.

2017/2019: New therapeutics strategy for Rett Syndrome. Coordinator: Maria José de Oliveira Diógenes Nogueira. Funding Agency: L'Association Française du Syndrome de Rett. Reference: Rett MJDiógenes. Amount: € 30 000,00. Total Amount: € 30 000,00.

2016/2019: Synaptic, mechanisms involved in the brain cannabinoid actions and their modulation by adenosine receptors: implications for memory and mood control. Coordinator: Ana Sebastiãõ. Funding Agency: Fundaçãõ para a Ciênciã e a Tecnologia. Reference: PTDC/DTP-FTO/3346/2014. Amount: € 189 900,00. Total Amount: € 199 900,00.

2016/2019: Optogenetic dissection of neural circuits controlling adiposity. Coordinator: Ana M. Sebastiãõ. Funding Agency: Fundaçãõ para a Ciênciã e a Tecnologia. Reference: PTDC/BIM-MET/3750/2014. Amount: € 19 800,00. Total Amount: € 199 999,00.

2016/2019: Relationship between adenosine and chromosomal instability: a new perspective to understand the oncogenic mechanism in glioblastoma. Coordinator: Ana M. Sebastiãõ. Funding Agency: Fundaçãõ para a Ciênciã e a Tecnologia. Reference: PTDC/BIMONC/7121/2014. Amount: € 25 000,00. Total Amount: € 155 000,00.

2016/2018: SynaNet: Neurologic and Psychiatric disorders: from synapses to networks. Coordinator: Ana M Sebastiãõ. Funding Agency: European Commission. Reference: TWINNING 692340. Amount: € 525 437,50. Total Amount: € 999 996,25.

Publications in Peer Review Journals

Mouro FM*, Rombo DM*, Dias RB, Ribeiro JA, Sebastiãõ AM (2018). Adenosine A2A Receptors Facilitate Synaptic NMDA Currents in CA1 Pyramidal Neurons. *Br J Pharmacol.*, 175: 4386-4397

*Co-first authors. (IF 6.810, Citations: 0. Source: Web of Science and Scopus).

Dias RB, Rodrigues TM, Rombo DM, Ribeiro FF, Rodrigues J, McGarvey J, Orcinha C, Jeremy M. Henley JM, Sebastião AM (2018). Erythropoietin Induces Homeostatic Plasticity at Hippocampal Synapses. *Cerebral Cortex*, 28: 2795–2809. (IF 6.308, Citations: 2. Source: Web of Science).

Mouro FM, Ribeiro JA, Sebastião AM*, Dawson N* (2018). Chronic, intermittent treatment with a cannabinoid receptor agonist impairs recognition memory and brain network functional connectivity. *J Neurochem.*, 47:71-83. *co-senior authors. (IF 4.609, Citations: 1. Source: Web of Science).

Ferreira FF, Ribeiro FF, Rodrigues RS, Sebastião AM, Xapelli S (2018). Brain-Derived Neurotrophic Factor (BDNF) Role in Cannabinoid-Mediated Neurogenesis. *Front Cell Neurosci.*, eCollection, doi: 10.3389/fncel.2018.00441. (IF: 4.300, Citations: 0. Source: Web of Science and Scopus).

Magalhães DM, Pereira N, Rombo DM, Beltrão-Cavacas C, Sebastião AM, Valente CA (2018). Ex vivo model of epilepsy in organotypic slices-a new tool for drug screening. *J Neuroinflammation.*, 15:203. doi: 10.1186/s12974-018-1225-2. (IF 5.193, Citations:-- . Source: Web of Science).

Chazalon M, Paredes-Rodriguez E, Morin S, Martinez A, Cristóvão-Ferreira S, Vaz S, Sebastiao A, Panatier A, Boué-Grabot E, Miguez C, Baufretton J (2018). GAT-3 Dysfunction Generates Tonic Inhibition in External Globus Pallidus Neurons in Parkinsonian Rodents. *Cell Rep.*, 23:1678-1690. (IF: 8.032, Citations: 0. Source: Web of Science).

Tanqueiro SR, Ramalho RM, Rodrigues TM, Lopes LV, Sebastião AM, Diógenes AM (2018). Inhibition of NMDA receptors prevents the loss of BDNF function induced by amyloid β . *Front Pharmacol*, 9:237, doi: 10.3389/fphar.2018.00237, eCollection 2018. (IF: 3.831, Citations 2. Source: Web of Science).

Cunha C, Santos C, Gomes C, Fernandes, A, Correia AM, Sebastião AM, Vaz AR, Brites D (2018). Downregulated glia interplay and increased miRNA-155 as promising markers to track early ALS stage. *Mol Neurobiol.*, 55:4207-4224. (IF 5.076, Citations: 6. Source: Web of Science).

Soares R, Ribeiro FF, Xapelli S, Genebra T, Ribeiro MF, Sebastião AM, Rodrigues CMP, Solá S. (2018). Tauroursodeoxycholic Acid Enhances Mitochondrial Biogenesis, Neural Stem Cell Pool, and Early Neurogenesis in Adult Rats. *Mol Neurobiol.*, 55:3725-3738. (IF 5.076, Citations: 2. Source: Web of Science and Scopus).

Armada-Moreira A, Taipaleenmäki E, Baekgaard-Laursen M, Schattling PS, Sebastião AM, Vaz SH, Städler B (2018). Platinum Nanoparticle-Based Microreactors as Support for Neuroblastoma Cells. *ACS Appl Mater Interfaces.*, 10:7581-7592. (IF 8.097, Citations: 3. Source: Web of Science).

Armada-Moreira A, Andreassen K, Sebastião AM, Vaz SH, Städler B. (2018). On the assembly of microreactors with complex enzymatic pathways. *Advanced Biosystems*, 2(5). <https://doi.org/10.1002/adbi.201700244>. (IF:--, Citations: 2. Source: Web of Science).

Morais, TP; Coelho, D; Vaz, SH; Sebastião, AM; Valente, CA (2018). Glycine Receptor Activation Impairs ATP-Induced Calcium Transients in Cultured Cortical Astrocytes. *Front Molec Neurosci.*, 10:444. (IF: 3.902, Citations: 1. Source: Web of Science and Scopus).

Ferreira MF, Castanheira L, Sebastião AM, Telles-Correia D (2018). Depression assessment in clinical trials and pre-clinical tests: a critical review. *Curr Top Med Chem*. [Epub ahead of print]. (IF: 3.374, Citations: 0. Source: Web of Science and Scopus).

Castanheira L, Ferreira MF, Sebastião AM, Telles-Correia D (2018). Anxiety assessment in pre-clinical tests and in clinical trials: a critical review. *Curr Top Med Chem*. [Epub ahead of print]. (IF: 3.374, Citations: 0. Source: Web of Science and Scopus).

Sebastião AM, Rei NH, Ribeiro JA (2018). Amyotrophic Lateral Sclerosis (ALS) and Adenosine Receptors. *Front Pharmacol.*, 9:267, doi: 10.3389/fphar.2018.00267, eCollection. (IF 3.831, Citations: 0. Source: Web of Science and Scopus).

Other International Publications

Rombo DM, Ribeiro JA, Sebastião AM (2018). Role of denosine receptors in epileptic seizures. In: *The Adenosine Receptors, The Receptors 34*, https://doi.org/10.1007/978-3-319-90808-3_13. ed Borea et al., Humana Press, pp. 309-350.

Ribeiro JA (2018) Neurological News from Portugal VI: Neurosciences at the Campus of the Faculty of Medicine of the University of Lisbon. News Blog of the European Academy of Neurology.

<https://www.eanpages.org/2018/06/01/neurological-news-from-portugal-vi-neurosciences-at-the-campus-of-the-faculty-of-medicine-of-the-university-of-lisbon/>

Invited Lectures and Seminars

Xapelli S. Neuropeptide Y and endocannabinoids: relevance for neurodegenerative disorders. Satellite Symposium of Second Annual Scientific Meeting of Synanet H2020, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, January 2018.

Ribeiro JA. Artificial Intelligence: Neurobiology Complexities and Neuroethics Challenges. 4nd International Conference on Neuroethics. Universidade Católica Portuguesa, Porto, Portugal, April 27, 2018.

Vaz SH. On the role of astrocytes in synaptic plasticity. Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, April 2018.

Sebastião AM. Synaptic targets for adenosine to control excitability and plasticity. Purines 2018 Meeting, Foz de Iguaçu, Brazil, June 2018.

Sebastião AM. Presynaptic receptors and neuromuscular transmission. XV International Congress on Neuromuscular Diseases, Vienna, Austria, July 2018.

Ribeiro JA. Participação no painel “O Enquadramento Ético do Desenvolvimento da Inteligência Artificial na Conferência “Os Desafios da IA no Diálogo de Saberes” Universidade Católica, Lisbon, Portugal, November 12, 2018.

Sebastião AM. As Neurociências e a Psiquiatria: a visão de um Neurocientista. Palestra proferida no Ciclo de Conferências de Outono, organizada pelo Serviço de Psiquiatria e Saúde Mental do Hospital de Santa Maria, Lisbon, Portugal, November 2018.

Fonseca-Gomes J, Vaz SH, Manso N, Belo B, Tanqueiro S, Miranda-Lourenço C, Enguita FJ, Loureiro J, Haapasalo A, Hiltunen M, Castrén E, Pereira MC, Duarte CB, Sebastião AM, de Mendonça A, Diógenes MJ. Novel therapeutic strategy and new biomarker for Alzheimer’s Disease based on Brain –derived neurotrophic factor receptor cleavage. 32^a Reunião do Grupo de Estudos de Envelhecimento e Demência (GEECD), Fundação da Cidade de Lisboa.

Communications in International Conferences

Armada-Moreira A, Taipaleenmäki E, Baekgaard-Laursen M, Schattling P, Sebastião AM, Vaz SH, Städler B. Platinum nanoparticle-Based Microreactors as Support for Neuroblastoma Cells. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Afonso C, Ribeiro FF, Sebastião AM, Xapelli S. The role of adenosine A2A receptors in SVZ-derived oligodendrogenesis. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Almeida CC, AM Sebastião, CA Valente. Relevance of astrocytes/microglia communication for NLRP3 signalling in the CNS – proof of concept in an ex vivo model of epilepsy. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018.

Belo R, Gomes J, Vaz SH, Perez-Peinado C, Valle J, Andreu D, Sebastião A, Neves V, Castanho M, Diógenes MJ. Deciphering the effects of Kyotorphin on the brain. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Cavacas C, DM Magalhães, AM Sebastião, CA Valente. Potencial role of NLRP3-induced pyroptosis in epileptogenesis. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018.

Ferreira C, Kaisa M, Paldanius A, Mäkinen P, Sebastião AM, de Mendonça A, Diógenes MJ, Hiltunen M. SEPT5 as a potential player in the APP processing and A β peptide production in SH-SY5Y-APP751 neuroblastoma cells. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Oral Presentation).

Ferreira C, Kaisa M, Paldanius A, Mäkinen P, Sebastião AM, de Mendonça A, Diógenes MJ, Hiltunen M. Role of SEPT5 in the APP processing and A β peptide production in SH-SY5Y-APP751 neuroblastoma cells. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from

synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Freire JA, Rombo DR, Sebastião AM. Interference of the adenosinergic system in endocannabinoid signalling at the hippocampus. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Gomes J, Jesus J, Sebastião AM, Vaz SH. Astrocytes, BDNF and LTP: are gliotransmitters the key to control synaptic plasticity? 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Magalhães DM, M Mampay, GK Sheridan, CA Valente. Interplay between the systemic immune system and CNS – effects of FTY720 in Social Isolated mice. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Mateus J, Soares R, Paulo S, Chora AF, Sebastião AM, Xapelli S. Adult oligodendrogenesis in a mouse model of MS - role of A2A receptor activation. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Miranda-Lourenço C, Ferreira S, Sebastião AM, Diógenes MJ. TrkB receptors and Adenosine Kinase changes in Mecp2 KO mouse brain. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Mouro FM, Ribeiro, JA, Sebastião AM, Dawson N. Chronic intermittent treatment with WIN 55,212-2 impairs cognition and thalamo-hippocampal-prefrontal functional connectivity. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018.

Paulo SL, Rodrigues RS, Ribeiro FF, Fonseca-Gomes J, Shvachiy L, Coelho JE, Diógenes MJ, Solá S, Sebastião AM, Xapelli S. Effect of an intracerebroventricular injection of A β 1-42 peptide on adult hippocampal neurogenesis. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders:

from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Paulo SL, Rodrigues RS, Ribeiro FF, Fonseca-Gomes J, Shvachiy L, Coelho JE, Diógenes MJ, Solá S, Sebastião AM, Xapelli S. Effect of an intracerebroventricular injection of A β 1-42 peptide on adult hippocampal neurogenesis. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Rei N, Ribeiro JA, Sebastião AM, Vaz SH. Neuronal Plasticity changes in ALS. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Rei N, Ribeiro JA, Sebastião AM, Vaz SH. (2018). Neuronal Plasticity changes in ALS. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Ribeiro FF, Ferreira F, Rodrigues RS, Soares R, NevesTomé R, Assaife-Lopes N, Santos TE, Armada-Moreira A, Solá S, Mira H, Sousa MM, Sebastião AM, Xapelli S. Adenosine A2A receptors role in postnatal neurogenesis neurite outgrowth. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Ribeiro J, Sebastião AM, Vaz SH. The role of CB1 receptor activation upon calcium signaling and glutamate transport in rat cortical astrocytes. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Ribeiro-Rodrigues L, DM Rombo, S Loppi, AM Sebastião, T Malm, CA Valente (2018). NLRP3 inflammasome activation in organotypic slices and its effects upon epileptiform activity. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018.

Rodrigues RS, Ribeiro FF, Ferreira FF, Vaz S, Sebastião AM, Xapelli S. Crossmodulation of cannabinoid type 1 and type 2 receptors regulating postnatal neurogenesis. 2nd SynaNet Annual

Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Soares R, Xapelli S, Morais VA. Exploring how mitochondrial dynamics change during postnatal neural stem/progenitor cell differentiation. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Tanqueiro SR, Dawson N, Sebastião AM, Diógenes MJ. BDNF signaling and adenosinergic system alterations in a mice model of schizophrenia. 2nd SynaNet Annual Meeting, Neurologic and Psychiatric Disorders: from synapses to networks, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 16-18, 2018. (Poster Presentation).

Armada-Moreira A, Schattling P, Taipaleenmäki E, Sebastião AM, Vaz SH, Städler B. Platinum nanoparticle-based microreactors as support for neuroblastoma cells. International Astrocyte School, Bertinoro, Italy, April 17, 2018. (Oral Presentation).

Rodrigues RS, Armada-Moreira A, Ribeiro FF, Sebastião AM, Xapelli S. The role of adenosine A2A receptors on cannabinoid-promoted neurogenesis. FENS-SfN Summer School on “Neural Stem Cells, Brain Organoids and brain Repair”, Bertinoro, Italy, June 3-9, 2018. (Poster Presentation).

Almeida CC, AM Sebastião, CA Valente. Is astrocytes/microglia communication relevant for NLRP3 signalling in the brain? 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018.

Armada-Moreira A, Taipaleenmäki E, Baekgaard-Laursen M, Schattling PS, Sebastião AM, Vaz SH, Städler B. Platinum nanoparticles-based microreactors as support for neuroblastoma cells. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Belo R, Fonseca-Gomes J, Vaz SH, Sebastião A, Neves V, Castanho M, Diógenes MJ. Effects of Kyotorphin and Amidated-kyotorphin in the Brain. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Chazalon M, Paredes-Rodriguez E, Morin S, Martinez A, Cristóvão-Ferreira S, Vaz SH, Sebastião AM, Panatier A, Boué-Grabot E, Cristina Miguez C, Baufreton J. GAT-3 dysfunction generates tonic inhibition in external Globus Pallidus neurons in Parkinsonian rodents. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Ferreira C, Kaisa M, Paldanius A, Mäkinen P, Sebastião AM, de Mendonça A, Diógenes MJ, Hiltunen M. Elucidation of SEPT5 in APP processing and A β peptide production in vitro. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Fonseca-Gomes J, Jerónimo-Santos A, Belo R, Vaz SH, Rodrigues TM, Marttinen M, Mäkinen P, Takalo M, Lesnikova A, Casarotto P, Umemori J, Miranda HV, Outeiro TF, Haapasalo A, Hiltunen M, Castrén E, Duarte CB, Sebastião AM, Diógenes MJ (2018). Detection of BDNF receptor cleavage in Alzheimer's disease human brain samples and development of a novel therapeutic strategy. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Gomes J, Jesus J, Sebastião AM, Vaz SH. Astrocytic signalling on the modulation of BDNF action upon synaptic plasticity. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Magalhães DM, M Mampay, Ana M Sebastião, GK Sheridan, CA Valente. Interplay between Central Nervous System and Systemic Immune System – effects of FTY720 in Social Isolated mice. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018.

Mateus J, Soares R, Paulo S, Chora AF, Sebastião AM, Xapelli S. A2A receptor modulation of adult oligodendrogenesis in a mouse model of Multiple Sclerosis. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Miranda-Lourenço C, Palminha C, Duarte ST, Gaspar C, Colino-Oliveira M, Rosa J, Gomes R, Xapelli S, Ferreira S, Rodrigues TM, Lopes LV, Sebastião AM, Diógenes MJ. Adenosine augmentation therapy as a possible strategy for Rett Syndrome. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Paulo SL, Rodrigues RS, Ribeiro FF, Fonseca-Gomes J, Shvachiy L, Coelho JE, Diógenes MJ, Solá S, Sebastião AM, Xapelli S. A β 1-42 peptide intracerebroventricular injection in rat behaviour and hippocampal neurogenesis. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Rei N, Ribeiro JA, Sebastião AM, Vaz SH. Neuronal Plasticity changes in ALS. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Ribeiro FF, Ferreira F, Rodrigues R, Soares R, Armada-Moreira A, Solá S, Mira H, Sebastião AM, Xapelli S. Postnatal hippocampal neurogenesis: regulation by adenosine A2A receptors FENS, A018.340. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Ribeiro J, Morais T, Savchak O, Meneses C, Sebastião AM, Vaz SH. CB1 receptor activation modulates intracellular calcium oscillations, triggering a potentiation of glutamate transporters in rat cortical astrocytes. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Ribeiro-Rodrigues L, DM Rombo, AM Sebastião, CA Valente. NLRP3 inflammasome targeting can reduce epileptiform activity in organotypic slices. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018.

Rodrigues RS, Armada-Moreira A, Ribeiro FF, Sebastião AM, Xapelli S. Cannabinoids and adenosine A2A receptors: an intimate interaction regulating postnatal neurogenesis. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Tanqueiro SR, Almeida-Silva G, Dawson N, Sebastião AM, Diógenes MJ. Interplay between the loss of BDNF signalling and cognitive dysfunction in schizophrenia?: Insights from the subchronic phencyclidine model. 11th FENS Forum of Neuroscience – Federation of European Neuroscience Societies, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Armada-Moreira A, Schattling P, Taipaleenmäki E, Sebastião AM, Vaz SH, Städler B. Platinum nanoparticle-based microreactors as support for neuroblastoma cells. 41st Meeting of the Japanese Neuroscience Society, Kobe, Japan, July 26 2018. (Oral Presentation).

Gomes A, Fernandes TG, Vaz SH, Xapelli S, Sebastião AM, Cabral JMS, Diogo MM. Production and characterisation of brain region-specific organoids from human induced pluripotent stem cells for modelling of Rett Syndrome. 12th Symposium of the European Society of Biochemical Engineering Sciences, Lisbon, Portugal, September 9-12, 2018. (Oral Presentation).

Branco MA, Cotovio J, Rodrigues CAV, Vaz SH, Fernandes TG, Moreira LM, Cabral JMS, Diogo MM. Novel size-controlled 3D aggregate platform for cardiac differentiation of hiPSCs for toxicology assays. 6th International Conference on Stem Cell Engineering 2018, Lisbon, Portugal, September 9-12, 2018.

Silva TP, Fernandes TG, Bekman E, Vaz SH, Rodrigues CAV, Hashimura Y, Wesselschmidt R, Lee B, Carmo-Fonseca M, Joaquim M. S. Cabral JMS. Scalable generation of mid-hindbrain organoids from human pluripotent stem cells. EMBO/EMBL Symposium: Organoids - Modelling organ development and disease in 3D culture, Heidelberg, Germany, September 10-13, 2018.

Ferreira MF, Mouro FM, Sebastião AM. Are not all cannabinoids are created equally? Results from a preliminary study on the adult depressive-like phenotype induced by chronic exposure to HU-210 during adolescence. 13th Young European Scientists Meeting (YESMeeting), Faculty of Medicine, University of Porto, Porto, Portugal, September 2018. (Poster Presentation).

Ferreira MF, Martins V, Pereira B, Sebastião AM. Chronic adolescent administration of the cannabinoid receptor agonist HU-210 does not induce an adult depressive like-phenotype in female rats. Quantitative Approaches to Behavior and Neural Systems Symposium, Champalimaud Centre for the Unknown, Lisbon, Portugal, October 2018. (Poster Presentation).

Armada-Moreira A, Taipaleenmäki E, Baekgaard-Laursen M, Schattling P, Thingholm B, Andreassen K, Sebastião AM, Städler B, Vaz SH. Organic and inorganic-based microreactors as a therapeutic approach against excitotoxicity. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Barcelos AC, Mouro FM, Sebastião AM. Age affects social interaction and social novelty seeking in mice. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018.

Belo R, Fonseca-Gomes J, Miranda HV, Outeiro TF, Sebastião A, Neves V, Castanho M, Diógenes MJ. The neuroprotective role of Amidated-Kyotorphin on Alzheimer's Disease pathophysiology. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Ferreira MF, Mouro FM, Sebastião AM. (Un)like two peas in a pod? Unexpected results from a preliminary study on the persistent depressive-like phenotype induced by chronic exposure to cannabinoid agonist HU-210 during adolescence in female rats. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Ferreira C, Kaisa M, Paldanius A, Mäkinen P, Sebastião AM, de Mendonça A, Diógenes MJ, Hiltunen M. Role of SEPT5 in the molecular pathogenesis of Alzheimer's disease. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Fonseca-Gomes J, Jerónimo-Santos A, Belo R, Vaz SH, Rodrigues TM, Marttinen M, Mäkinen P, Takalo M, Lesnikova A, Casarotto P, Umemori J, Miranda HV, Outeiro TF, Haapasalo A, Hiltunen M, Castrén E, Duarte CB, Sebastião AM, Diógenes MJ. BDNF receptor cleavage in Alzheimer's disease: quantification in human brain samples and molecular consequences. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Magalhães DM, M Mampay, Ana M Sebastião, GK Sheridan, CA Valente. Effects of a nootropic and immunomodulator drug in a mice model of social isolation. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018.

Miranda-Lourenço C, Palminha C, Duarte ST, Gaspar C, Colino-Oliveira M, Rosa J, Gomes R, Xapelli S, Ferreira S, Rodrigues TM, Lopes LV, Sebastião AM, Diógenes MJ. Adenosinergic system dysfunction in Rett Syndrome. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Mouro FM, Ribeiro JA, Sebastião AM, Dawson N. Prolonged cannabinoid intake leads to memory impairment and to changes in brain metabolism and brain connectivity in mice. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018.

Rei N, Ribeiro JA, Sebastião AM, Vaz SH. Dysfunction of VEGF-mediated mechanisms at different disease stages of SOD1G93A mice model. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Ribeiro FF, Ferreira F, Rodrigues RS, Soares R, Solá S, Mira H, Sebastião AM, Xapelli S. Regulation by adenosine A2A receptors. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Ribeiro J, Morais T, Savchak O, Meneses C, Sebastião AM, Vaz SH. CB1R activation increases GLAST activity in a PLC dependent pathway. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Rodrigues RS, Armada-Moreira A, Ribeiro FF, Sebastião AM, Xapelli S. Crosstalk between cannabinoid and adenosine A2A receptors modulating postnatal neurogenesis. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Rosa J, Miranda-Lourenço C, Sebastião AM, Diógenes MJ. Characterisation of the adenosinergic system and the BDNF-mediated signalling in heterozygous females of a Rett syndrome model. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Sebastião AM, Mouro FM, Rombo DM, Raquel AD, Ribeiro JA. Facilitation of synaptic, but not extrasynaptic, NMDA Currents CA1 pyramidal neurons by adenosine A2A receptors in young adult rats. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Tanqueiro SR, Almeida-Silva G, Mouro, FM, Dawson N, Sebastião AM, Diógenes MJ. Interplay between the loss of BDNF signalling and cognitive dysfunction in the subchronic phencyclidine model of schizophrenia. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Xapelli S, Ribeiro FF, Ferreira F, Rodrigues RS, Soares R, Vaz SH, Solá S, Mira H, Sebastião AM. Postnatal subventricular zone neurogenesis: Regulation by adenosine A2A receptors. 48th Annual Society for Neuroscience Meeting, San Diego, California, USA, November 3-7, 2018. (Poster Presentation).

Branco MA, Cotovio J, Rodrigues CAV, Vaz SH, Fernandes TG, Moreira LM, Cabral JMS, Diogo MM. Transcriptomic analysis of 3D Cardiac Differentiation of Human Induced Pluripotent Stem Cells Reveals Faster Maturation Compared to 2D Culture. 6th International Conference on Stem Cell Engineering 2018, Los Angeles, California, December 5-7, 2018.

Rodrigues RS, Armada-Moreira A, Ribeiro FF, Vaz S, Sebastião AM, Xapelli S. Cannabinoid and Adenosine receptor actions on Postnatal Neurogenesis. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018. (Oral Presentation).

Soares R, Sebastiao AM, Xapelli S, Morais VA. Mitochondrial dynamics: a target for neural stem fate modulation. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018. (Oral Presentation).

Ribeiro-Rodrigues L, DM Rombo, AM Sebastião, CA Valente. MCC950 as a potential antiepileptic drug - a study in organotypic slices. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018.

Ribeiro J, Morais T, Savchak O, Meneses C, Sebastião AM, Vaz SH. Interaction of CB1R with GLAST transporters and Adenosine A2AR in cortical astrocytes. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018. (Poster Presentation).

Almeida CC, AF Ribeiro, AM Sebastião, CA Valente. Microglia-dependent activation of NLRP3 inflammasome within astrocytes. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018.

Paulo SL, Miranda-Lourenço C, Belo R, Rodrigues RS, Tanqueiro SR, Fonseca-Gomes J, Gonçalves-Rosa N, Nunes-da-Silva C, Sebastião AM, Xapelli S, Diógenes MJ. High sugar intake during aging: consequences for synaptic plasticity and rat behaviour performance. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018. (Poster Presentation).

Alonso Gomes M, Mateus J, Sebastião AM, Xapelli S. Adenosine A2A Receptors in Multiple Sclerosis: Enhancement of Remyelination through oligodendrogenesis. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018. (Poster Presentation).

Armada-Moreira A, Taipaleenmäki E, Baekgaard-Laursen M, Schattling P, Thingholm B, Andreassen K, Sebastião AM, Städler B, Vaz SH. Inorganic-based microreactors as a therapeutic approach against excitotoxicity. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018. (Oral Presentation).

Ferreira MF, Fonseca-Gomes J, Rei N, Mouro FM, Sebastião AM. Of rats, cannabinoids and the blues: contradictory effects of chronic adolescent exposure to HU-210 on depressive-like behavior. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018. (Poster Presentation).

Gomes J, Fonseca-Gomes J, Vicente Miranda H, Sebastião AM, Diógenes MJ, Vaz SH. Role of astrocytes upon amyloid- β (A β) neurotoxic pathways. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018. (Poster Presentation).

Lourenço DM, Rodrigues RS, Sebastião AM, Xapelli S. Role of non-psychoactive cannabinoids in neural stem cell differentiation: relevance for neurodegenerative disorders. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018. (Poster Presentation).

Magalhães DM, M Mampay, AM Sebastião, GK Sheridan, CA Valente. Crosstalk modulation between the systemic immune system and CNS in a Social Isolation mice model. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018.

Vink MA, Lourenço DM, Rodrigues RS, Sebastião AM, Lopes LV, Xapelli S. The Influence of Caffeine on Subventricular Zone and Dentate Gyrus Neurogenesis. 3rd Annual Meeting of SynaNet, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal December 12-15, 2018. (Poster Presentation).

Belo R, Fonseca-Gomes J, Miranda HV, Outeiro TF, Sebastião A, Neves V, Castanho M, Diógenes MJ. Amidated-Kyotorphin as a neuroprotective drug for Alzheimer's Disease. 8th Alzheimer Symposium, Technopolis, University of Eastern Finland, Kuopio, Finland, 2018. (Poster Presentation).

Ferreira C, Kaisa M, Paldanius A, Mäkinen P, Sebastião AM, de Mendonça A, Diógenes MJ, Hiltunen M. Role of SEPT5 in the APP processing in SH-SY5Y-APP751 neuroblastoma cells. 8th Alzheimer Symposium, Technopolis, University of Eastern Finland, Kuopio, Finland, 2018. (Poster Presentation).

Fonseca-Gomes J, Jerónimo-Santos A, Belo R, Vaz SH, Rodrigues TM, Marttinen M, Mäkinen P, Takalo M, Lesnikova A, Casarotto P, Umemori J, Miranda HV, Outeiro TF, Haapasalo A, Hiltunen M, Castrén E, Duarte CB, Sebastião AM, Diógenes MJ. Novel therapeutic strategy to prevent the loss of BDNF signalling in Alzheimer's Disease. 8th Alzheimer Symposium, Technopolis, University of Eastern Finland, Kuopio, Finland, 2018. (Poster Presentation).

Fonseca-Gomes J, Marttinen M, Mäkinen P, Takalo M, Haapasalo A, Hiltunen M, Sebastião AM, Diógenes MJ. "Assessment of TrkB-FL and TrkB-ICD receptor levels in Alzheimer's Disease human samples". SynaNet H2020 Annual Scientific Meeting, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, 2018. (Oral Presentation).

Fonseca-Gomes J, Vaz SH, Rodrigues TM, Marttinen M, Mäkinen P, Takalo M, Haapasalo A, Hiltunen H, Vicente-Miranda H, Outeiro TF, Sebastião AM, Diógenes MJ. Identification of traces of BDNF receptor cleavage in Alzheimer's Disease human brain samples and development of a novel therapeutic strategy. SynaNet H2020 Annual Scientific Meeting, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, 2018.

Communications in National Conferences

Tanqueiro SR, Ramalho RM, Sebastião AM, Diógenes MJ. NMDA receptors play a key role in Amyloid Beta-mediated BDNF loss of function. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Soares R, Sebastião AM, Xapelli S, Morais VA. Unveiling the role of Mitochondrial dynamics in the Regulation of neural stem cell fate. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Rodrigues RS, Armada-Moreira A, Ribeiro FF, Sebastião AM, Xapelli S. Adenosine A2A receptors' role on Cannabinoid-induced neurogenesis. 48th Annual Meeting of the Portuguese

Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Ribeiro-Rodrigues L, DM Rombo, S Loppi, AM Sebastião, T Malm, CA Valente. Does NLRP3 inflammasome inhibitor decrease epileptiform activity in organotypic slices? 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Ribeiro FF, Ferreira F, Rodrigues RS, Soares R, Neves-Tomé R, Assaife-Lopes N, Santos TE, Armada-Moreira A, Solá S, Mira H, Sousa MM, Sebastião AM, Xapelli S. Adenosine A2A receptor modulation in postnatal neurogenesis and neuronal Maturation. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Rei N, Ribeiro JA, Sebastião AM, Vaz SH. Neuronal plasticity changes in ALS. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Paulo SL, Rodrigues RS, Ribeiro FF, Fonseca-Gomes J, Shvachiy L, Coelho JE, Diógenes MJ, Solá S, Sebastião AM, Xapelli S. Intracerebroventricular injection of a β 1-42 peptide in adult hippocampal neurogenesis. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Mouro FM, Ribeiro, JA, Sebastião AM, Dawson N. Cognitive impairment and brain connectivity changes due to prolonged cannabinoid intake. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018.

Miranda-Lourenço C, Palminha C, Duarte ST, Gaspar C, Colino-Oliveira M, Gomes R, Ferreira S, Rodrigues TM, Lopes LV, Sebastião AM, Diógenes MJ. Deregulation on adenosinergic system and on BDNF signalling in Rett syndrome. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Gomes J, Jesus J, Sebastião AM, Vaz SH. Astrocytic purinergic signalling modulates BDNF effect upon hippocampal synaptic plasticity. 48th Annual Meeting of the Portuguese Pharmacological

Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Armada-Moreira A, Taipaleenmäki E, Baekgaard-Laursen M, Schattling PS, Sebastião AM, Vaz SH, Städler B. Platinum nanoparticles-based microreactors as support for neuroblastoma cells. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Bulli I, Vaz SH, Sebastião AM. Calcium Permeable AMPA receptors are required for the hypoxia-induced facilitatory action of BDNF upon synaptic transmission. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Cavacas C, DM Magalhães, AM Sebastião, CA Valente. Is NLRP3-induced pyroptosis a major contributor for epileptogenesis? 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Ferreira C, Kaisa M, Paldanius A, Mäkinen P, Sebastião AM, de Mendonça A, Diógenes MJ, Hiltunen M. Role of SEPT5 in the APP processing and A β peptide production in SH-SY5Y-APP751 neuroblastoma cells. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Belo R, Fonseca-Gomes J, Vaz SH, Perez-Peinado C, Valle J, Andreu D, Sebastião A, Neves V, Castanho M, Diógenes MJ. Elucidating the effects of kyotorphin on the brain. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Ferreira DG, Temido-Ferreira M, Miranda HV, Coelho JE, Marques-Morgado I, Vaz SH, Rhee JS, Schmitz M, Outeiro TF, Lopes LV. PrPC as a key player in Parkinson's disease synaptic and cognitive deficits. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Fonseca-Gomes J, Vaz SH, Rodrigues TM, Marttinen M, Mäkinen P, Takalo M, Haapasalo A, Hiltunen M, Vicente-Miranda H, Outeiro TF, Sebastião AM, Diógenes MJ. Detection of BDNF

receptor cleavage in Alzheimer's Disease human brain samples and search for novel therapeutic strategy". 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Magalhães DM, M Mampay, G Sheridan, CA Valente. Effects of FTY720 in the depressive and anxiety-like behaviour in Social Isolated mice. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Mateus J, Soares R, Paulo S, Chora AF, Sebastião AM, Xapelli S. Adult oligodendrogenesis in a mouse model of multiple sclerosis. 48th Annual Meeting of the Portuguese Pharmacological Society, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Tanqueiro SR, Almeida-Silva G, Mouro, FM, Dawson N, Sebastião AM, Diógenes MJ. NMDA receptors play a key role in Amyloid Beta-mediated BDNF loss of function. Grupo de Demências do Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 22, 2018. (Oral Presentation).

Almeida CC, AM Sebastião, CA Valente. How does astrocytes/microglia communication impact NLRP3 signalling in the CNS? III Symposium of Portuguese Glial Network, i3S, Porto, Portugal, May 18, 2018.

Soares R, Sebastião AM, Xapelli S, Morais VA. Deciphering the role of mitochondrial dynamics in enhancing lineage-directed differentiation of postnatal neural stem/progenitor cells. III Symposium of Portuguese Glial Network, i3S, Porto, Portugal, May 18, 2018. (Poster Presentation).

Armada-Moreira A, Taipaleenmäki E, Baekgaard-Laursen M, Schattling P, Sebastião AM, Vaz SH, Städler B. Platinum nanoparticle-based microreactors as support for neuroblastoma cells. III Symposium of Portuguese Glial Network, i3S, Porto, Portugal, May 18, 2018. (Poster Presentation).

Rodrigues RA, Ribeiro FF, Ferreira F, Vaz S, Sebastião AM, Xapelli S. Modulation of postnatal neurogenesis: interaction of cannabinoid CB1 and CB2 receptors. III Symposium of Portuguese Glial Network, i3S, Porto, Portugal, May 18, 2018. (Poster Presentation).

Mateus J, Soares R, Paulo S, Chora AF, Sebastião AM, Xapelli S. Adult oligodendrogenesis in a mouse model of Multiple Sclerosis. III Symposium of Portuguese Glial Network, i3S, Porto, Portugal, May 18, 2018. (Poster Presentation).

Ribeiro J, Morais TP, Savchak O, Meneses C, Sebastião AM, Vaz SH (2018) CB1 receptor activation modulate intracellular calcium oscillations, triggering a potentiation of glutamate transporter GLAST in rat cortical astrocytes. III Symposium of Portuguese Glial Network, i3S, Porto, Portugal, May 18, 2018. (Poster Presentation).

Armada-Moreira A, Taipaleenmäki E, Baekgaard-Laursen M, Schattling P, Sebastião AM, Vaz SH, Städler B. Platinum nanoparticle-based microreactors as support for neuroblastoma cells. XII iMM PhD Student Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Tanqueiro SR, Dawson N, Sebastião AM, Diógenes MJ. Scrutinizing the relationship between BDNF signalling impairments and cognitive dysfunction in an animal model of schizophrenia. XII iMM PhD Student Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Belo R, Fonseca-Gomes J, Sebastião A, Neves V, Castanho M, Diógenes MJ. Neuroprotective effect of amidated-Kyotorphin. XII iMM PhD Student Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Lourenço DM, Sebastião AM, Xapelli S. Role of non-psychoactive cannabinoids in neural stem cell differentiation: Relevance for Multiple Sclerosis. XII iMM PhD Student Meeting, Lisbon, Portugal, May 23-25, 2018. (Oral Presentation).

Rodrigues RS, Ribeiro FF, Ferreira F, Vaz S, Sebastião AM, Fitzsimons CP, Xapelli S. Cannabinoid type 2 receptor and exercise synergistic actions upon neurogenesis: a relevant antidepressant strategy? XII iMM PhD Student Meeting, Lisbon, Portugal, May 23-25, 2018. (Oral Presentation).

Mateus JM, Soares R, Paulo SL, Chora AF, Sebastião AM, Xapelli S. Adult oligodendrogenesis as a candidate target for Multiple Sclerosis. iMed Conference 10.0 - Lisbon 2018, Lisbon, Portugal, October 3-7, 2018. (Poster Presentation).

Alonso-Gomes M, Mateus J, Sebastião AM, Xapelli S. Role of Adenosine A2A Receptors in Adult Oligodendrogenesis in a mouse model of Multiple Sclerosis. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Poster Presentation).

Mateus J, Soares R, Paulo S, Chora AF, Sebastião AM, Xapelli S. Unveiling a candidate target for Multiple Sclerosis therapy: role of adult oligodendrogenesis. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Poster Presentation).

Miranda-Lourenço C, Palminha C, Rosa J, Fonseca-Gomes J, Vaz HS, Sebastião AM, Diógenes MJ. Study of the hyperexcitability in hippocampus of Mecp2 KO mice. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Poster Presentation).

Paulo SL*, Miranda-Lourenço C*, Belo R*, Rodrigues RS, Tanqueiro SR, Fonseca-Gomes J, Gonçalves-Rosa N, Nunes-da-Silva C, Sebastião AM, Xapelli S, Diógenes MJ. Impact of a high sugar diet during rat aging on synaptic plasticity, hippocampal neurogenesis and behaviour performance. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Oral Presentation).

Paulo SL*, Miranda-Lourenço C*, Belo R*, Rodrigues RS, Tanqueiro SR, Fonseca-Gomes J, Gonçalves-Rosa N, Nunes-da-Silva C, Sebastião AM, Xapelli S, Diógenes MJ. Impact of a high sugar diet during rat aging on synaptic plasticity, hippocampal neurogenesis and behaviour performance. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Poster Presentation).

Belo R, Fonseca-Gomes J, Miranda HV, Outeiro TF, Sebastião AM, Neves V, Castanho M, Diógenes MJ. A new insight about Amidated-Kyotorphin on Alzheimer's Disease therapy. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Oral Presentation).

Gomes J, Fonseca-Gomes J, Vicente Miranda H, Sebastião AM, Diógenes MJ, Vaz SH. Role of SNARE-dependent gliotransmitters release from astrocytes upon amyloid- β mediated neurotoxicity. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Poster Presentation).

Armada-Moreira A, Taipaleenmäki E, Baekgaard-Laursen M, Schattling P, Thingholm B, Andreassen K, Sebastião AM, Städler B, Vaz SH. Inorganic-based microreactors as a therapeutic approach against excitotoxicity. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Oral Presentation).

Ferreira MF, Fonseca-Gomes J, Vaz SH, Martins V, Pereira B, Mouro FM, Sebastião AM. Not all cannabinoids are created equally: effects of chronic adolescent exposure to HU-210 on adult depressive-like phenotypes. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Poster Presentation).

Fonseca-Gomes J, Jerónimo-Santos A, Belo R, Vaz SH, Rodrigues TM, Marttinen M, Mäkinen P, Takalo M, Lesnikova A, Casarotto P, Umemori J, Miranda HM, Outeiro TF, Haapasalo A, Hiltunen M, Castrén E, Duarte CB, Sebastião AM, Diógenes MJ. Novel therapeutic strategy to prevent the loss of BDNF signalling in Alzheimer's disease. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Oral Presentation).

Magalhães DM, M Mampay, AM Sebastião, GK Sheridan, CA Valente. Effects of FTY720 in a mice model of Social Isolation. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018.

Rei N, Ribeiro JA, Sebastião AM, Vaz SH. Long-Term Potentiation is impaired in symptomatic SOD1G93A mice and the chronic treatment with an A2AR antagonist can recover it. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Oral Presentation).

Ribeiro J, Morais T, Savchak O, Meneses C, Sebastião AM, Vaz SH. CB1R-elicited Ca²⁺ signalling: impact in GLAST activity and interplay with adenosine A2AR. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Poster Presentation).

Ribeiro-Rodrigues L, DM Rombo, AM Sebastião, CA Valente. Is NLRP3 inflammasome selective inhibitor able to decrease epileptiform activity in organotypic slices? 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018.

Rodrigues RS, Armada-Moreira A, Ribeiro FF, Sebastião AM, Xapelli S. Adenosine A2A receptors interaction with cannabinoid receptors modulatory effects on postnatal neurogenesis. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Poster Presentation).

Rosa J, Miranda-Lourenço C, Sebastião AM, Diógenes MJ. Adenosinergic system and BDNF signalling in heterozygous females of the Mecp2 mice model. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Poster Presentation).

Vink MA, Lourenço DM, Rodrigues RS, Sebastião AM, Lopes LV, Xapelli S. The Influence of Caffeine on Subventricular Zone and Dentate Gyrus Neurogenesis. 4th PhD Students Meeting of the Mind-Brain College, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Poster Presentation).

Belo R, Fonseca-Gomes J, Miranda HV, Outeiro TF, Sebastião AM, Neves V, Castanho M, Diógenes MJ. The neuroprotective action of Amidated-kyotorphin on Alzheimer's Disease. 32^a Reunião do Grupo de Estudos de Envelhecimento Cerebral e Demência, Fundação Cidade de Lisboa, Lisbon, Portugal, 2018. (Oral Presentation).

Fonseca-Gomes J, Vaz SH, Manso N, Belo B, Tanqueiro S, Miranda-Lourenço C, Enguita FJ, Loureiro J, Haapasalo A, Hiltunen M, Castrén E, Pereira MC, Duarte CB, Sebastião AM, de Mendonça A, Diógenes MJ. Novel therapeutic strategy and new biomarker for Alzheimer's Disease based on Brain –derived neurotrophic factor receptor cleavage. 32^a Reunião do Grupo de Estudos de Envelhecimento Cerebral e Demência, Fundação Cidade de Lisboa, Lisbon, Portugal, 2018. (Oral Presentation).

Ferreira C, Kaisa M, Paldanius A, Mäkinen P, Sebastião AM, de Mendonça A, Diógenes MJ, Hiltunen M. Unveiling the effect of SEPT5 in amyloid cascade. 32^a Reunião do Grupo de Estudos de Envelhecimento Cerebral e Demência, Fundação Cidade de Lisboa, Lisbon, Portugal, 2018. (Poster Presentation).

Fonseca-Gomes J, Jerónimo-Santos A, Vaz SH, Rodrigues TM, Manso N, Marttinen M, Mäkinen P, Takalo M, Lesnikova A, Casarotto P, Umemori J, Miranda HV, Outeiro TF, Haapasalo A, Hiltunen M, Castrén E, Duarte CB, Sebastião AM, Diógenes MJ. BDNF receptor cleavage in Alzheimer's disease: detection in human brain samples and its prevention as a new therapeutic tool. III Meeting of NeurULisboa Doctoral Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, 2018. (Oral Presentation).

Tanqueiro SR, Almeida-Silva G, Mouro, FM, Dawson N, Sebastião AM, Diógenes MJ. The interplay between loss of BDNF signalling and cognitive dysfunction in schizophrenia. NeurULisboa Annual Retreat, Lisbon, Portugal, 2018.

Organisation of Conferences

1st Meeting of young Pharmacologists, a Satellite of the Annual Meeting of the Portuguese Society of Pharmacology 2018. Organiser at IMM: Vaz S.

Annual Meeting of the Mind-Brain College, University of Lisbon, Lisbon, Portugal, November, 14-15, 2018. Organiser: Aroeira R.

Reunião Sociedade Portuguesa de Farmacologia (5,6 7 de fevereiro de 2018). (279 inscritos, 141 comunicações orais e 3 oradores internacionais convidados): Comissão Organizadora: Maria José Diógenes; Ana M. Sebastião; Sara Xapelli; Sandra Vaz; Rita Aroeira; Cláudia Valente; Fernando Vale; Diogo Rombo.

SynaNet Annual Scientific Meeting, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, January 26-27, 2018. Organiser: Aroeira R.

SynaNet Final Scientific Meeting, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 12-13, 2018. Organiser: Aroeira R.

Training Course on Cell Cultures. Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, December, 3-7, 2018. Organisers: Valente CA, Xapelli S.

Workshop on "Design and Communication in Science", Instituto de Medicina Molecular João Lobo Antunes, June 21-22, 2018. Organizer: Aroeira R.

Annual Meeting of the Integrated Neurociences PhD Programme (NeurULisboa), Faculty of Medicine, University of Lisbon, March 1-2, 2018. Organizers: Aroeira R, Students Committee of the NeurULisboa and Instituto de Formação Avançada (IFA) of the Faculty of Medicine.

Internationalisation

- Participation in European Research Networks:

Twinning H2020 action – SynaNet – Collaboration between several unit members with researchers of the University of Rome, University of Eastern Finland, University of Lancaster. Coordinator: Ana Sebastião.

COST Action BM1402 - Development of A European Network For Preclinical Testing of Interventions in Mouse Models Of Age And Age-Related Diseases (MouseAGE). Management Committee Substitute Member: Sara Xapelli.

- Collaborations in scientific projects:

1) On the action of cannabinoids and of adenosine on synaptic excitability and cognition (Ana Sebastião projects): Cristha E Muller (Bonn, Germany), Karl Jacobson (NIH, Bethesda, USA), Neil Dawson (Lancaster, England), Serge Ferré (Baltimore, USA).

2) On pathophysiological mechanisms in Alzheimers' disease, Rett Syndrome and schizophrenia (Maria José Diógenes projects): Annakaisa Haapasalo (Kuopio, Finland), Christopher Parsons (Frankfurt, Germany), David Blum (Université Lille-Nord de France), Detlev Boison (Portland, USA), Eero Castren (Helsinki, Finland), Mikko Hiltunen (Kuopio, Finland, co-supervision of a PhD Student), Neil Dawson (Lancaster, England, co-supervision of a PhD Student), Tiago Outeiro (Göttingen, Germany).

3) On the role of neurogenesis and oligodendrogenesis in neurologic and psychiatric dysfunctions (Sara Xapelli projects): Carlos Fitzsimons (University of Amsterdam, co-supervision of a PhD Student), Helena Mira (IBV-CSIC, Valencia, Spain).

4) On neuroinflammation and brain dysfunction (Claudia Valente projects): Graham Sheridan, (University of Brighton, England, co-supervision of a PhD Student).

5) On the influence of astrocytes in neuronal function (Sandra Vaz projects): Brigitte Städler - (Aarhus, Denmark, co-supervision of a PhD Student), Jérôme Baufreton (Bordeaux, France), Vincent Crunelli (Cardiff, UK, co-supervision of a PhD Student), Alfonso Araque (University of Minnesota), Gareth Miles (St. Andrews University).

- Participation in international reviewing committees:

Ana M Sebastião: Chair of the Peer-Review Panel 'Mental Disorders' of the ERA-NET NEURON Cofund call on.

Ana M Sebastião: Member of the Peer-Review panel 'Neuroscience' of the Academy of Finland Research Council for Health.

Ana M Sebastião: Expert evaluator of the 2018 call for projects on ALS research, ArisLA, Italy.

Sara Xapelli: Expert evaluator of the Marie Skłodowska-Curie Individual Postdoctoral Fellowships call of H2020 – LIF panel.

Sara Xapelli: International Evaluation Committee of EuroTechPostdoc (Co-funded by Marie Curie Postdoc Fellowships).

Prizes, Honours and Awards

Mateus JM, Soares R, Paulo SL, Chora AF, Sebastião AM, Xapelli S (2018) “Adult oligodendrogenesis as a candidate target for Multiple Sclerosis”, iMed Conference 10.0 - Lisbon 2018, Lisboa (Portugal), 3-7 October - Innovate Poster Award for Basic Research – research grant received from AstraZeneca Foundation.

Advanced Teaching

- International training:

1) Courses organized: Training Course on Cell Cultures. Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, December 3-7, 2018. Organisers: CA Valente and S Xapelli.

2) Supervision of International Internships Piskorz O. ERASMUS+ student (Supervisor: Sara Xapelli). Jagiellonian University, Krakow, Poland.

Borg J. Research Exchange Programme for Medical Students (Supervisors: Sara Xapelli, Sandra Vaz). University of Malta, Malta.

Giulia Vigani. Erasmus plus internship. Università di Firenze, Italy (Supervisor: Cláudia Valente).

Irene Bulli. Erasmus plus internship. Università di Firenze, Italy (Supervisor: Sandra Vaz).

Manale R. Research Exchange Programme for Medical Students (Supervisors: Sara Xapelli, Sandra Vaz). Université Mohammed-V de Rabat, Morocco.

Oksana Savchak, Lab Rotation, Basic Degree in Biochemistry, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa (Supervisor: Sandra Vaz).

Raic J. Research Exchange Program for Medical Students (Supervisors: Sara Xapelli, Sandra Vaz). University of Zagreb School of Medicine, Croatia.

Vink M. ERASMUS+ student (Co-Supervisor: Sara Xapelli). University of Utrecht, Netherlands.

Weekmans T. Research Exchange Programme for Medical Students (Supervisors: Sara Xapelli, Sandra Vaz). KU Leuven, Belgium.

- Directive Roles:

Sebastião AM – Director of the Doctoral Mind-Brain College ‘Mind and Brain’, University of Lisbon, which integrates 7 Schools (Faculdade de Ciências (FCUL), Faculdade de Farmácia (FFUL), Faculdade de Letras (FLUL), Faculdade de Medicina (FMUL), Faculdade de Psicologia (FPUL), Instituto Superior Técnico (IST) e Instituto de Ciências Sociais (ICS), and their corresponding research centres, to promote the interaction between scientific, technical and formative valences to further understand brain and cognition as well as to communicate with and for the main achievements to the society.

Sebastião AM – Director of the Integrated Neurosciences PhD Programme (Supported by FCT) which involves 6 Schools (Faculdade de Ciências (FCUL), Faculdade de Farmácia (FFUL), Faculdade de Letras (FLUL), Faculdade de Medicina (FMUL), Faculdade de Psicologia (FPUL), Instituto Superior Técnico (IST).

Sebastião AM - Member of the Scientific Board of the MScs/PhD in Neurosciences, Faculty of Medicine, University of Lisbon. Sebastião AM - Member of the Scientific Board MSc/PhD Programme in Cognitive Sciences, University of Lisbon, which involves 4 Schools (Faculdade de Ciências (FCUL), Faculdade de Letras (FLUL), Faculdade de Medicina (FMUL), Faculdade de Psicologia (FPUL).

Sebastião AM – Member of the Coordination Board of the Master in Biomedical Engineering, IST/FMUL. Ribeiro JA - Coordinator of the Module on Neuroethics, Ms/PhD in Neurosciences.

Sebastião AM – Coordinator of the following modules of the MSc/PhD in Neurosciences: ‘Cellular and Molecular Neurosciences’, ‘Neuronal Networks’, ‘Neuronal Degeneration and Regeneration’.

- ‘Neuroscience Seminars’ run once per week on Mondays, constituting a forum for discussion of scientific achievements, projects to start or running, as well as to invite members from other institutions to share their ideas on different topics. These seminars are open to the iMM community, but are particularly designed for training of Master and PhD students at the Unit.

The seminars are also open to Medical students as well as to members of the Mind-Brain College of the University of Lisbon. Sandra Vaz, a post-doc of the Unit, is in charge of the seminar scheduling and organisation. Seminars given by members of other iMM Units are not listed to avoid repetition with other Unit reports.

08/01 – Irene Bulli (Master student, Ana Sebastião Lab) “BDNF effect upon hippocampal basal synaptic transmission after an ischemia event”.

15/01 – Francisco Mouro (PhD student, Ana Sebastião Lab) “Interaction between adenosine A2A receptors and cannabinoid CB1 receptors at the hippocampus: consequences for memory and plasticity.”

22/01 – Miguel Ferreira (Master student, Ana Sebastião Lab) “Effects of adenosine A2A receptor antagonism on the depressive phenotype induced by chronic cannabinoid exposure during adolescence”.

26/02 – Leonor Rodrigues (Master student, Ana Sebastião Lab) “NLRP3 inflammasome as a target to reduce epileptiform activity in organotypic slices”.

05/03 – Sara Paulo (Master student, Ana Sebastião Lab) “Intracerebroventricular injection of A β 1-42 peptide in rat behaviour and hippocampal neurogenesis”.

12/03 – Hugo Vicente Miranda (PhD, CEDOC) “Risk factors in Parkinson’s Disease - From sugar stress to aging”.

09/04 – Kay Young (University of California, Santa Barbara) “On Neuroaesthetics”.

16/04 – Elisabete Ferreiro (PhD, CNC, Universidade de Coimbra) “The relevance of hippocampal neurogenic reserve for aging and Alzheimer’s disease”.

21/05 – Margarida Diogo (PhD, Department of Bioengineering and Institute for Bioengineering and Biosciences, IST, Universidade de Lisboa) “Bioengineering Strategies for Neural Differentiation of Human Induced Pluripotent Stem Cells - Applications in Neural Disease Modelling and Toxicology Assays”.

28/05 – Patrick Lewis (Associate Professor in Cellular and Molecular Neuroscience, School of Pharmacy, University of Reading) “LRRK2 and Parkinson's - reading between the hieroglyphs”.

18/06 – Mara Alves (PhD student, FPUL) “Using concept typicality to explore semantic representations and control”.

25/06 – Professor Yannis Paloyelis (Department of Neuroimaging, The Institute of Psychiatry, Psychology & Neuroscience (IoPPN), King's College London) “Nose-to-brain delivery of oxytocin in humans. Challenges and potentials”.

02/07 – Sara Tanqueiro (PhD student, Ana Sebastião Lab) “The interplay between loss of BDNF signalling and cognitive dysfunction in schizophrenia”.

23/07 – Anwesha Ghosh (MD, MSc; University of Bristol) “Developing stem cells therapies for Friedreich’s Ataxia”.

03/09 – Marta Alonso Gomes (Master student, Ana Sebastião Lab) “Role of adenosine A2A receptors in multiple sclerosis: neural stem cells as potential targets”.

10/09 – Catarina Beatriz Ferreira (PhD student, Ana Sebastião Lab) “The role of SEPT5 on amyloid precursor protein and on synaptic function”.

17/09 – Rita Vaz (PhD Student, Technophage SA) “Screening and validation of molecules with therapeutic properties in *in vivo* models of Parkinson's disease”.

24/09 – João Gomes (PhD student, Ana Sebastião Lab) “BDNF receptor cleavage: where are we now and where are we going”.

01/10 – Diogo Lourenço (PhD Student, Ana Sebastião Lab) “Role of non-psychoactive cannabinoids in neural stem cell differentiation: Relevance for Neurodegenerative Diseases”.

15/10 – Rita Belo (PhD student, Ana Sebastião Lab) “Kyotorphin versus Amidated-kyotorphin”.

29/10 – Gabriel Miltenyi (PhD, FMUL) “Human genetics in Movement disorders, ALS and Dementia - a link between clinics and basic science”.

03/12 – Nádia Rei (PhD student, Ana Sebastião Lab) “Neuronal Plasticity changes in non-motor synapses of Amyotrophic Lateral Sclerosis mice model (SOD1G93A) along disease progression”.

17/12 – João Moreira (Master Student, Ana Sebastião Lab) “Role of cannabinoid type 2 receptor and physical exercise in subventricular zone neurogenesis.”

- Seminars at the PhD and Master Courses in Neuroscience. The list below refers to the seminars presented by Unit members or, whenever indicated, by those invited from outside iMM. Seminars given by members of other iMM Units are not listed to avoid repetition with other Unit reports:

13/9 – Basic concepts in Neurosciences: an integrative perspective (Alexandre Castro Caldas, Instituto Ciências Saúde, UCP).

18/09 – Basics of neuronal excitability and neuronal communication: membrane potential, action potential, synaptic potential, integration of the nervous impulse. (Ana M Sebastião).

25/9 – Ion channels. Ionotropic receptors vs metabotropic receptors. G proteins and transducing pathways (Ana M Sebastião).

27/9 – Inhibitory and excitatory synaptic transmission. Different neurotransmitters, their release and inactivation. (Ana M Sebastião).

2/10 – Concept of neuromodulation and main neuromodulators. Concept of co-transmission (Ana M Sebastião).

4/10 – Synaptic plasticity (Raquel Dias).

9/10 – Glial Cells and their ability to control synaptic activity (Sandra Vaz).

11/10 – Neuroanatomy: an overview of structure and function relationships (Lia Neto).

- 19/9** – Receptor quantification assays: relevance for the study of neurodegenerative diseases (Nádia Rei/Rita Belo).
- 3/10** – Evaluation of synaptic activity through electrophysiological recording Techniques (Diogo Rombo).
- 10 /10** – Modulation of AMPA receptor recycling: molecular aspects (Ana Luisa Carvalho, FCTUC, CNC).
- 16/10** – Neurotrophic factors: key molecules for neuronal survival and plasticity (Maria José Diógenes).
- 18/10** – Neuroinflammation in epilepsy (Cláudia Valente).
- 23/10** – Neural Stem cells and its neurogenerative potential (Sara Xapelli).
- 25/10** – Apoptosis and neuronal death (Cecília Rodrigues, FFUL).
- 30/10** – Neuroinflammation and Microglia: functions and dysfunction in neurodegenerative diseases (Dora Brites, FFUL).
- 17/10** – Neuronal regeneration (Mónica Sousa, UP).
- 17/10** – Genetic dysfunction in motor neuron diseases (Margarida Gama-Carvalho, FCUL).
- 17/10** – Constructing artificial astrocytes against excitotoxicity (Ana Moreira).
- 17/10** – BDNF receptor cleavage: relevance for Alzheimer’s Disease pathophysiology (João Gomes).
- 31/10** – Modulation of neuronal maturation and differentiation (Ana Filipa Ribeiro).
- 31/10** – Genetic approaches to fight neurodegenerative diseases (Luis Pereira de Almeida, FFUC).
- 31/10** – Molecular dysfunctions in multiple sclerosis (Adelaide Fernandes, FFUL).
- 31/10** – The ubiquitin/proteasome system and control of neuronal death (Carlos Duarte, FCTUC, CNC).
- 31/10** – Driving Cell Death Machinery towards Neural Differentiation (Susana Solá, FFUL).
- 06/11** – Brain rhythms: Local field potentials, EEG/MEG, (fMRI) to BCI and Cognitive functions (Fernando Lopes da Silva, Univ. Amsterdam).
- 08/11** – Nociceptive pathways and mechanisms involved in the genesis of pain (Fani Neto, FMUP).
- 13/11** – Major neurotransmitter pathways and their role in brain function (Ana M Sebastião).
- 15/11** – Cannabinoid receptors influence upon memory (Francisco Mouro).
- 22/11** – Mechanisms of drug dependence (Alexandre Ribeiro).
- 07/11** – Neuroimaging: an overview (Eduardo Ducla-Soares, FCUL).
- 07/11** – Optogenetic manipulation of neuronal circuits (João Peça, CNC).

21/11 – Peptidergic innervation of the mammalian vascular system (Sérgio Gulbenkian, FG/FMUL).

04/12 – Ethics of Neurosciences and Neurosciences of Ethics (J. Alexandre Ribeiro).

11/12 – Role of an Ethics Committee in a University Hospital (Luisa Figueira).

13/12 – Advanced Directives (António Barbosa).

05/12 – Neuromarketing and Law (Fernando Araújo, FDUL).

05/12 – Ethics and legislation in animal research - Isabel Rocha.

12/12 – Conscious States (Luis Madeira).

12/12 – Artificial Intelligence: a view on Morality, or artificial agents with qualities (Helder Coelho, FCUL).

12/12 – Reciprocal inputs between Neuroscience and Robotics (José Santos Victor, IST).

- Seminars and lectures at other post-graduation courses given by Unit members:

Sebastião AM - Técnicas microelectrofisiológicas. Faculdade de Farmácia, Universidade de Lisboa.

Sebastião AM - Neuronal Communication, Plasticity and Degeneration. Instituto Superior Técnico, Universidade de Lisboa.

Sebastião AM - (Alguns) métodos de estudo do cérebro: abordagem *ex vivo*. Universidade Católica Portuguesa, Lisboa.

Mouro FM - (Alguns) métodos de estudo do cérebro: análise de comportamento animal em laboratório. Universidade Católica Portuguesa, Lisboa.

Valente CA - Neurobiology of inflammation: concepts and relevance in neurological disorders. Lecture integrada na disciplina “Frontiers in Biology”, do Mestrado em Biologia Molecular e Genética. Faculdade de Ciências, Universidade de Lisboa.

Xapelli S – Neurogenesis. University of Algarve.

Xapelli S – Neural stem cells: relevance and potential therapies. Faculdade de Ciências, Universidade de Lisboa.

Science and Society

1) Press Conference in the Society for Neuroscience 2018, San Diego, USA:

Mouro FM, Ribeiro JA, Sebastião AM, Dawson N. Prolonged cannabinoid intake leads to memory impairment and to changes in brain metabolism and brain connectivity in mice. November 6th, 2018. Under invitation by the media).

2) Public talks:

Maria José Diógenes: Oradora na mesa redonda “O impacto dos Prémios SANTA CASA Neurociências e a necessidade da dinamização da Filantropia em Ciência” moderada pelo jornalista Pedro Carvalhas. Composição a mesa: Manuel Heitor, Catarina Resende Oliveira, Maria José Diógenes e Carlos Fiolhais. 28 de novembro.

Maria José Diógenes: Conferência de Abertura “Cérebro Funcional” – II Encontro de Educação Especial da Escola Secundária do Pinhal Novo. 3-5 de julho de 2018.

Maria José Diógenes: Palestra/Ação de formação “O que é a epilepsia e como atuar em situação de crise”. Colégio de São Filipe, Setúbal. Setembro de 2018.

Rita Aroeira and Ana Filipa Ribeiro: palestra na Universidade Senior de Vila Franca de Xira, Portugal, intitulada “Como ter um Cérebro saudável”, 5 de Junho 2018. Audiência: cerca de 50 séniores.

3) Mind-Brain Awareness Week 2018

Included in international initiatives, namely the Brain Awareness Week, members of the Ana Sebastião Lab were deeply involved in Mind-Brain Week events organised by Rita Aroeira and the Mind Brain College of the University of Lisbon in collaboration with the Portuguese National Agency for Scientific and Technological Culture Ciência Viva. The events include the organisation of visits to Basic and Secondary Schools ‘Neurocientistas vão à Escola’ by members of the Ana Sebastião Lab. In the year of 2018, 7 visits to schools were carried out (list below), involving 9 researchers, with the sessions (list below) being held for a total of about 659 students.

- “Neurocientistas na Escola”

Topics discussed:

- a estrutura e funcionamento do cérebro;
- a forma como o cérebro se desenvolve ao longo da idade;
- drogas e o cérebro;

- doenças neurodegenerativas;
- como estudar o cérebro.

Schools visited:

Schools	Number of Students
Escola Básica e Secundária Anselmo de Andrade - Almada	52
Escola Secundária de Santa Maria – Sintra	56
Escola Profissional Gustave Eiffel - pólo do Lumiar (Lisboa)	80
Escola Profissional Alda Brandão de Vasconcelos - Sintra	26
Escola Secundária António Damásio – Olivais, Lisboa	150
Colégio do Sagrado Coração de Maria – Lisboa	100
Escola Básica de Telheiras	195
Total	659

4) Cycles of round tables "Mind-Brain talks":

The fifth session of "Mind-Brain talks", organised by Rita Aroeira, took place on May 21, 2018, and was dedicated to the Cerebral Vascular Accident and had the participation of the neurologist Ana Catarina Fonseca, the cardiologist Daniel Caldeira and the representative of the national association "Portugal AVC - Union of survivors, family and friends", Diana Wong Ramos, with about 40 participants (students, researchers, senior citizens, caregivers, among others).

5) Participation in the European Researchers' Night 2018:

On 2018, the was held. Mind-Brain College and SynaNet were present in the 2018 Lisbon edition of the European Researchers' Night, held on September 28, with activities developed for families. This initiative had the voluntary collaboration of 6 researchers from Ana Sebastião Lab.

6) Collaboration with the parish council of Olivais (Lisbon) 2018:

On June 1, 2018, the parish Council of Olivais organised a series of activities for the children of the parish in the Vale do Silêncio Park in Olivais, in Lisbon. Mind-Brain College and SynaNet were present with activities developed especially for children. This event had the voluntary collaboration of 12 researchers from Ana Sebastião Lab.

MSc Thesis Completed

Joana Amorim Freire, 02/2018, “Interference of Adenosinergic System in Endocannabinoid Signalling at the Hippocampus”, Master in Neurosciences. Supervisor: Ana M Sebastião. Co-Supervisor: Diogo Rombo.

Renata Macau, 05/04/2018, “The influence of astrocytes in synaptic plasticity in mice hippocampal region: modulation by BDNF and adenosine A2A receptors”, Mestrado integrado em Medicina, Faculdade de Medicina, Universidade de Lisboa. Supervisor: Sandra Vaz.

Irene Bulli, 20/04/2018, “BDNF effect upon hippocampal basal synaptic transmission after an ischemia event”, Corso di Laurea Magistrale in Biologia - curriculum biosanitario, Faculdade de Medicina da Universidade de Lisboa and Università degli Studi di Firenze. Supervisor: Sandra Vaz. Co-Supervisor: Ana M. Sebastião.

Leonor Pedro Oliveira Ribeiro Rodrigues, 07/2018, “NLRP3 inflammasome as a target to reduce epileptiform activity in organotypic slices”, Master in Neurosciences, Faculdade de Medicina, Universidade de Lisboa. Supervisor: Cláudia Valente.

Catarina Isabel Carvalhas de Almeida, 09/2018, “Astrocyte/microglia interaction – relevance for NLRP3 signalling in the CNS”, Master in Molecular and Cellular Biology, Faculdade de Ciências e Tecnologia, Universidade de Coimbra. Supervisor: Cláudia Valente.

Joana Moura Mateus, 11/09/2018, “Adult oligodendrogenesis in a Mouse Model of Multiple Sclerosis”, Faculty of Science and Technology, University of Coimbra. Supervisor: Sara Xapelli.

Joana Filipa Gonçalves Ribeiro, 04/10/2018, “Role of CB1 receptor upon GABA and glutamate transporters in astrocytes”, Master’s in Molecular Biology and Genetics, Faculdade de Ciências da Universidade de Lisboa. Supervisor: Sandra Vaz. Co-Supervisor: Carlos Farinha.

Marta Alonso Gomes, 27/11/2018, “Role of Adenosine A2A Receptors in Multiple Sclerosis: Neural Stem Cells as a potential target”, IST, Universidade de Lisboa. Supervisor: Sara Xapelli.

Sara Paulo, 30/12/2018, “Intracerebroventricular injection of amyloid β 1-42 peptide in rat behaviour and adult hippocampal neurogenesis”, Master in Neurosciences, Faculdade de Medicina, Universidade de Lisboa. Supervisor: Sara Xapelli.

Rebekah Cavaco Koppenol, “On the role of stress granules in autophagy”, Master in Neurosciences, Faculdade de Medicina, Universidade de Lisboa. Supervisor: Clévio David Rodrigues Nóbrega (Universidade do Algarve-UALG). Co-Supervisor: Maria José Diógenes (FMUL).

PhD Thesis Completed

Francisco Mouro, 01/2018, “Interaction between adenosine A2A receptors and cannabinoid CB1 receptors at the hippocampus: consequences for memory and plasticity”, PhD in Biomedicine: Neurosciences, Faculdade de Medicina, Universidade de Lisboa. Supervisor: Ana M Sebastião.

Bruno Silva-Santos Lab

Major Interests / Objectives

We study the biology of T lymphocytes and their key roles in immunity to infection, inflammatory diseases, and cancer. Our projects focus on the development of these cells in the vertebrate thymus and their functions upon export to peripheral tissues. We investigate differentiation and activation signals for T-cells using *in vivo* models for infectious (such as malaria) or autoimmune diseases (such as multiple sclerosis), or cancer (namely breast cancer). We also study human peripheral blood T-cells, their recognition and elimination of haematological or solid tumours. Overall, we envisage the identification of molecular mechanisms involved in the differentiation, activation, and function of T-cells, aiming towards the design of new treatments for cancer and (auto)immune disorders.

Head of Laboratory

Bruno Silva-Santos, PhD, Associated Professor, Faculty of Medicine, University of Lisbon

Team

Afonso Figueiredo Antunes Lameiras de Almeida	Graduate	MSc Student (Started October)
Ana Maria de Amarante Pamplona Dias Santos	PhD	Senior Post-Doctoral Researcher
Ana Raquel Vicente Lopes	Graduate	MSc Student
Ana Sofia Rocha Batalha	Master	PhD Student (Started October Left November)
André Gonçalo do Espírito Santo Simões	PhD	Junior Post-Doctoral Researcher
Anita Raquel Quintal Gomes	PhD	Senior Post-Doctoral Researcher
Beatriz Silvestre Vieira de Sá	Graduate	MSc Student (Left June)
Biagio Di Lorenzo	Master	PhD Student
Carolina Emanuel Carreira Gomes Jardim	Master	Lab Technician
Catarina Pelicano da Cunha Branco da Costa	Graduate	MSc Student (Started June)
Daniel Pereira Inácio	Master	Trainee (Started September)
Daniel Vargas Correia	PhD	Senior Post-Doctoral Researcher (Left August)
Diogo Ferreira Conceição Conduto	Undergraduate	BSc Student (Started March Left December)
Francisco Landek Moreira Franco Caiado	PhD	Senior Post-Doctoral Researcher (Left June)
Gina Jasmin Fiala	PhD	Senior Post-Doctoral Researcher (Started January)
Gisela da Silva Gordino	Master	PhD Student (Started January)
Gonçalo Pimenta Pedro Palmeirim	Graduate	MSc Student (Started July)
Henning Boekhoff	Graduate	MSc Student (Started March Left September)
Inácio Joaquim Oliveira Freitas	Graduate	MSc Student (Started April Left September)
Joana Carolina Marinho Cunha	PhD	Junior Post-Doctoral Researcher (Started January)

Julie Cécile Caroline Ribot	PhD	Staff Scientist
Julie Darrigues	PhD	Junior Post-Doctoral Researcher (Started December)
Karine Marie Serre	PhD	Staff Scientist
Livia Lacerda Mariano	Master	PhD Student (Started August Left August)
Maria Helena Cristiano Brigas	Master	PhD Student
Mariana Reis Sobreiro	PhD	Senior Post-Doctoral Researcher (Started December)
Miguel Alves Rovisco Ribeiro	Master	Lab Technician
Natacha Maria Gonçalves Silva Sousa	Master	Lab Manager
Pedro Henrique Papotto Rosa	Master	PhD Student
Sara Alexandra da Costa Pereira	Undergraduate	BSc Student
Sara Ventura Bucar	Master	PhD Student (Started February Left April)
Sofia Mensurado Santos	Master	PhD Student
Tiago Maria de Carvalho da Costa Amado	Master	Lab Technician (Started March)
Tiago Roberto Gomes Pestana	Graduate	MSc Student (Left September)

Laboratory Keywords / Research Areas

T-cell development/differentiation, T-cell activation, Tumour immunology, Leukaemia clonal evolution, Immunopathogenesis of severe malaria, Neuroimmunology.

Major Scientific Achievements

In 2018, we published 11 papers in international peer-reviewed journals. Some of our major findings were the identification of the first microRNA to control the differentiation and functional plasticity of murine gamma-delta T-cells (Schmolka *et al.*, Science Immunol Res 2018); and the characterisation of a novel myeloid-lymphoid crosstalk by which tumour-associated neutrophils suppress the pro-tumoral functions of IL-17-producing gamma-delta T-cells (Mensurado *et al.*, PLoS Biol 2018). The latter work was distinguished with the Janssen Prize for Innovation 2018. We also had five oral presentations at the International Gamma-delta T-cell conference (Bordeaux, France), which strengthened our position as one of the leading laboratories in this research area. Finally, the spin-off company from our lab (founded in 2013), Lymphact S.A., was internationally acquired by GammaDelta Therapeutics (London, UK) on 31st May 2018, aiming to bring our cancer immunotherapy patented technology (Delta One T-cells) to the clinic.

Selected Publications

Muñoz-Ruiz M, Ribot JC, Grosso AR, Gonçalves-Sousa N, Pamplona A, Pennington DJ, Regueiro JR, Fernandez-Malavé E, Silva-Santos B (2016). TCR signal strength controls thymic differentiation of discrete proinflammatory $\gamma\delta$ T cell subsets. *Nature Immunology* 17(6):721-7. (IF: 21.506, Citations: 14. Source: Thomson Reuters).

Silva-Santos B, Serre K, Norell H (2015). $\gamma\delta$ T cells in cancer. *Nature Reviews Immunology* 15(11):683-91. Review (IF: 34.985, Citations: 73. Source: Thomson Reuters).

Schmolka N*, Serre K*, Grosso AR, Rei M, Pennington DJ, Silva-Santos B (2013). Epigenetic and transcriptional signatures of stable versus plastic differentiation of pro-inflammatory $\gamma\delta$ T cell subsets. *Nature Immunology* 14(10):1093-100. (IF: 24.973; Citations: 37. Source: Thomson Reuters).

Coquet J*, Ribot JC*, Babala N, Middendorp S, Xiao Y, Neves JF, Fonseca-Pereira D, Jacobs H, Pennington DJ, Silva-Santos B**, Borst J** (2013). Epithelial and dendritic cells in the thymic medulla promote CD4⁺ Foxp3⁺ regulatory T cell development via the CD27-CD70 pathway. *Journal of Experimental Medicine* 210(4):715-28. (*Co-first Authors; **Co-senior Authors) (IF: 13.912; Citations: 56. Source: Thomson Reuters).

Correia DV, Fogli M, Hudspeth K, da Silva MG, Mavilio D, Silva-Santos B (2011). Differentiation of human peripheral blood Vdelta1⁺ T cells expressing the natural cytotoxicity receptor NKp30 for recognition of lymphoid leukemia cells. *Blood* 118, 992-1001. (IF: 10.555, Citations: 46. Source: Thomson Reuters).

Ongoing Research Projects

2018/2021: PROMISE: Programação de células mielóides anti-tumorais para aplicação em imunoterapia do cancro. Coordinator: Karine Serre. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PROMISE - LISBOA-01-0145-FEDER-030948. Amount: € 239 896,60. Total Amount: € 239 896,60.

2018/2021: Impacto das células T gd17 residentes nas meninges em funções cognitivas num contexto fisiológico e neuropatológico. Coordinator: Julie Ribot. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: iMMunoCOGNITION - LISBOA-01-0145-FEDER-028241. Amount: € 239 679,45. Total Amount: € 239 679,45.

2018/2021: Magiciam: um sistema imunodelador de macrófagos para prevenir a invasão e metastização das células tumorais. Coordinator: Karine Serre. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: MAGICIAM - POCI-01-0145-FEDER-031859. Amount: € 12 500,00. Total Amount: € 238 554,80.

2018/2021: Combinando métodos computacionais e experimentais para obter uma caracterização genérica dos péptidos de fusão de vírus. Coordinator: Karine Serre. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MED-OUT/31118/2017. Amount: € 48 750,00. Total Amount: € 239 925,00.

2018/2020: Tracking $\gamma\delta$ T cell development and TCR $\gamma\delta$ proximal signalling — DevoSignGammaDelta. Coordinator: Bruno Silva-Santos. Funding Agency: European Commission. Reference: DevoSignGammaDelta – 752932. Amount: € 160 635,60. Total Amount: € 160 635,60.

2018/2019: GDT - Research Agreement. Coordinator: Bruno Silva-Santos. Funding Agency: Lymphocyte Activation Technologies SA. Reference: GDT - Research Agreement. Amount: € 184 176,00. Total Amount: € 184 176,00.

2018/2019: Sulphur-containing amino acid dietary modulation of breast cancer immunity. Coordinator: Karine Serre. Funding Agency: Fundo IMM-Laço. Reference: Fundo Laço. Amount: € 25 000,00. Total Amount: € 25 000,00.

2018/2019: Tumour-associated neutrophils suppress pro-tumoral IL-17+ $\gamma\delta$ T cells through induction of oxidative stress. Coordinator: Bruno Silva-Santos. Funding Agency: Janssen. Reference: Prémio Janssen 2018. Amount: € 30 000,00. Total Amount: € 30 000,00.

2017/2018: Transcriptional (re)programming of antitumor myeloid cells in breast cancer. Coordinator: Karine Serre. Funding Agency: Fundo IMM-Laço. Reference: Laço KSerre. Amount: € 49 500,00. Total Amount: € 49 500,00.

2016/2019: Dissection of microRNA mediated post-transcriptional regulation of gd T cell differentiation. Coordinator: Anita Gomes. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BEX-BCM/3592/2014. Amount: € 172 334,00. Total Amount: € 172 334,00.

2016/2018: Cancer immunotherapy based on the adoptive transfer of Delta 1 T cells. Coordinator: Bruno Silva-Santos. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/DTP-PIC/4931/2014. Amount: € 166 389,00. Total Amount: € 180 000,00.

2016/2018: Targeting microRNAs to modulate the differentiation of anti-tumour human gamma-delta T cells. Coordinator: Julie Ribot. Funding Agency: INFARMED. Reference: FIS-FIS-2015-01_ONC_20150630-162. Amount: € 90 000,00. Total Amount: € 90 000,00.

2015/2020: DevoTed_miR: MicroRNA determinants of the balance between effector and regulatory T cells in vivo. Coordinator: Bruno Silva-Santos. Funding Agency: European Commission. Reference: ERC CoG 646701. Amount: € 2 000 000,00. Total Amount: € 2 000 000,00.

2015/2020: Lineage-specific molecular networks that control pro-inflammatory cytokine production. Coordinator: Karine Serre. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/0004/2014/CP1236/CT0006. Amount: € 50 000,00. Total Amount: € 50 000,00.

2015/2020: Deciphering the outside-in mechanisms of human gd T Cell differentiation. Coordinator: Julie Ribot. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/00013/2014/CP1236/CT0004. Amount: € 50 000,00. Total Amount: € 50 000,00.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria do Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

2016/2018: TwinToInfect: Unleash iMM's research excellence in immunity and infection through twinning to infect Lisbon and Portugal with its increase in competitiveness and innovation. Coordinator: Maria Manuel Mota. Funding Agency: European Commission. Reference: TWINNING 692022. Amount: € 893 500,00. Total Amount: € 999 996,25.

Publications in Peer Review Journals

Nóbrega-Pereira S, Caiado F, Carvalho T, Matias I, Graça G, Gonçalves LG, Silva-Santos B, Norell H, Dias S (2018). VEGFR-2-mediated reprogramming of mitochondrial metabolism regulates the sensitivity of acute myeloid leukemia to chemotherapy. *Cancer Research* 78(3): 731-741 (IF: 9.130, Citations: 2. Source: Thomson Reuters).

Papotto PH, Reinhardt A, Prinz I, Silva-Santos B (2018). Innately versatile: $\gamma\delta$ 17 T cells in inflammatory and autoimmune diseases. *Journal of Autoimmunity*, 87: 26-37 Review (IF: 7.641, Citations: 9. Source: Thomson Reuters).

McKenzie DR, Comerford I, Silva-Santos B, McColl SR (2018). The Emerging Complexity of $\gamma\delta$ T17 Cells. *Frontiers in Immunology*, 20; 9: 796. Review (IF: 5.511, Citations: 1. Sources: Thomson Reuters).

Schmolka N, Papotto PH*, Romero PV*, Amado T, Enguita FJ, Amorim A, Rodrigues AF, Gordon KE, Coroadinha AS, Boldin M, Serre K, Buck AH, Gomes AQ*, Silva-Santos B* (2018). MicroRNA-146a controls functional plasticity in $\gamma\delta$ T cells by targeting NOD1. *Science Immunology*, 4;3(23). pii: eaao1392. *Co-corresponding and co-last authors. Cover paper** (IF:--, Citations: 1. Source: Thomson Reuters).

Mensurado S, Rei M, Lança T, Ioannou M, Gonçalves-Sousa N, Kubo H, Malissen M, Papayannopoulos V, Serre K, Silva-Santos B (2018). Tumor-associated neutrophils suppress pro-tumoral IL-17+ $\gamma\delta$ T cells through induction of oxidative stress. *PLoS Biology*, 11;16(5): e2004990 (IF: 9.163, Citations: 2. Sources: Thomson Reuters).

Papotto PH, Silva-Santos B (2018). Got my $\gamma\delta$ 17 T cells to keep me warm. *Nature Immunology*, 19(5): 427-429 (IF: 21.809, Citations: 0. Source: Thomson Reuters).

Simões AE, Di Lorenzo B, Silva-Santos B (2018). Molecular Determinants of Target Cell Recognition by Human $\gamma\delta$ T Cells. *Frontiers in Immunology*, 27; 9: 929 (IF: 5.511, Citations: 3. Source: Thomson Reuters).

Silva-Santos B, Strid J (2018). Working in "NK Mode": Natural Killer Group 2 Member D and Natural Cytotoxicity Receptors in Stress-Surveillance by $\gamma\delta$ T Cells. *Frontiers in Immunology*, 24; 9: 851. Review. (IF: 5.511, Citations: 3. Source: Thomson Reuters).

Inácio DP, Amado T, Silva-Santos B, Gomes AQ (2018). Control of T cell effector functions by miRNAs. *Cancer Letters*, 427:63-73. doi: 10.1016/j.canlet.2018.04.011. (IF: 6.491, Citations: 1. Source: Thomson Reuters).

Rodrigues NV, Correia DV, Mensurado S, Nóbrega-Pereira S, deBarros A, Kyle-Cezar F, Tutt A, Hayday AC, Norell H, Silva-Santos B, Dias S (2018). Low-Density Lipoprotein Uptake Inhibits the Activation and Antitumor Functions of Human V γ 9V δ 2 T Cells. *Cancer Immunology Research*, 6(4): 448-457 (IF: 9.188, Citations: 0. Source: Thomson Reuters).

Fiala GJ, Silva-Santos B (2018). How to develop IL-17-producing $\gamma\delta$ T cells. *Immunology Cell Biology*, 96(9): 886-887 (IF: 3.795, Citations: 0. Source: Thomson Reuters).

Invited Lectures and Seminars

Silva-Santos B. From Onco to Neuro: unanticipated findings on tissue-resident gamma-delta T cells. Instituto Gulbenkian de Ciência, Oeiras, Portugal, February 16, 2018.

Silva-Santos B. T cell differentiation and tumour targeting. EMBO Young Investigator Programme Immunology Meeting, Carcavelos, Portugal, February 22, 2018.

Di Lorenzo B. What's new in cancer immunotherapy research? III International Congress of Medical Imaging and Radiotherapy, Castelo Branco, Portugal, March 16, 2018.

Simões A. Cancer Immunology & Immunotherapy – aiming for tumour cells. AEICBAS Biomedical Congress Workshop, Porto, Portugal, March 17, 2018.

Silva-Santos B. Pleiotropic roles of IL-17+ gamma-delta T cells: host defense, cognition, tumour progression. Hannover Medical School, Hanover, Germany, April 11, 2018.

Silva-Santos B. Delta One T cells: towards the development of a novel immunotherapy for cancer. Porto Cancer Meeting, Porto, Portugal, April 27, 2018.

Ribot J. Cognitive impact of meningeal gd T cell-derived IL-17 in health and disease. CPTP seminar, INSERM, Toulouse, France, April 30, 2018.

Silva-Santos B. New perspectives on gamma-delta T cell research. 8th International Gamma-delta T Cell Conference, Bordeaux, France, June 10, 2018.

Silva-Santos B. Gamma-delta T cells as main source of (patho)physiological IL-17 in non-lymphoid tissues. Institut Pasteur, Paris, France, June 18, 2018.

Silva-Santos B. The atypical life of unconventional T cells. University of Zurich Hospital, Zurich, Switzerland, July 6, 2018.

Silva-Santos B. Innovative cell therapy in cancer – Delta One T cells. European Society of Immunodeficiencies Meeting, Lisbon, October 25, 2018.

Silva-Santos B. Gamma-delta T cell differentiation and cancer immunity. European Congress of Immunology, Amsterdam, The Netherlands, September 3, 2018.

Silva-Santos B. Regulation of gamma-delta T cell functions in the tumour microenvironment. Reunião Anual da Sociedade Brasileira de Imunologia, Ouro Preto, Brazil, October 2, 2018.

Gomes AQ. Molecular and Cellular Basis of Cancer: From basic knowledge to precision medicine and immunotherapy. University College Copenhagen (International Research Thursday), Copenhagen, Denmark, October 25, 2018.

Communications in International Conferences

Mensurado S, Rei M, Lança T, Ioannou M, Gonçalves-Sousa M, Kubo H, Malissen M, Papayanopoulos V, Serre K, Silva-Santos B. Tumour-associated neutrophils suppress pro-tumoral IL-17+ gamma-delta T cells through induction of oxidative stress. XII World Immune Regulation Meeting, Davos, Switzerland, March 14-17, 2018. (Oral Presentation). Project: FPJ1057.

Papotto PH, Pimenta-Palmeirim P, Fiala G, Carvalho T, Silva-Santos B. gamma-delta T cells shape pulmonary innate immune cell compartment at homeostasis. XII World Immune Regulation Meeting, Davos, Switzerland, March 14-17, 2018. (Poster Presentation). Project: FPJ899.

Schmolka N, Papotto PH, Paula VP, Amado T, Enguita FJ, Amorim A, Rodrigues AF, Gordon KE, Coroadinha AS, Boldin M, Serre K, Buck AH, Gomes AQ, Silva-Santos, B. MicroRNA-146a controls IFN-g production and functional plasticity of murine gamma-delta T cells by targeting Nod1. XII World Immune Regulation Meeting, Davos, Switzerland, March 14-17, 2018. (Poster Presentation). Project: FPJ899.

Cunha C, Romero PV, Papotto PH, Schmolka N, Amado T, Inácio D, Gomes AQ, Silva-Santos B. MicroRNA determinants of the balance between effector and regulatory CD4⁺ T-cells *in vivo*. TwinnToInfect Spring School on Infection and Immunity 2018, Sesimbra, Portugal, March 19-22, 2018. (Poster Presentation). Project: FPJ899.

Brigas HC, Wilharm A, Ribeiro M, Sandrock I, Amado T, Carvalho T, Reinhardt A, Oberdorfer L, Silva-Santos B, Prinz I, Ribot JC. Characterisation of gd T-cell subsets in the male reproductive tract. TwinnToInfect Spring School on Infection and Immunity 2018, Sesimbra, Portugal, March 19-22, 2018. (Oral Presentation).

Lopes R, Pinto M, Mensurado S, Kubo H, Silva-Santos B, Serre K. Different signalling pathways govern the emergence of macrophages and neutrophils with anti-tumour functions. Cost-action Mye-EUNITER - 5th Management Committee & Working Group Meeting, 5th Early Career Investigators' Workshop, Heraklion, Crete, Greece, April 16-17, 2018. (Poster Presentation). Project: FPJ1057.

Di Lorenzo B, Simões A, Caiado F, Tieppo P, Ravens S, Correia DV, Carvalho T, Gomes Da Silva M, Norell H, Déchanet-Merville J, Prinz I, Vermijlen D, Silva-Santos B. Cytotoxic targeting of Acute Myeloid Leukemia by highly polyclonal Delta One T (DOT) cells. 5th European Congress of Immunology (ECI), Amsterdam, The Netherlands, May 2-5, 2018. (Oral Presentation). Project: FPJ993.

Mensurado S, Pestana T, Lopes R, Silva-Santos B, Serre K. Methionine metabolism modulation for potentiation of immunotherapy efficacy. 13th ENII EFIS Summer School on Advanced Immunology, Porto Cervo, Sardenha, Italy, May 5-12, 2018. (Poster Presentation). Project: FPJ1106.

Papotto PH, Pimenta-Palmeirim P, Fiala G, Carvalho T, Silva-Santos B. gamma-delta T cells shape pulmonary innate immune cell compartment at homeostasis. 13th ENII EFIS Summer School on Advanced Immunology, Porto Cervo, Sardenha, Italy, May 5-12, 2018. (Oral Presentation). Project: FPJ899.

Di Lorenzo B, Tieppo P, Ravens S, Netzer S, Déchanet-Merville J, Prinz I, Vermijlen D, Silva-Santos B. A NGS based approach for the identification of new TCR ligands for human Vδ1⁺ T-cells. 13th ENII EFIS Summer School on Advanced Immunology, Porto Cervo, Sardenha, Italy, May 5-12, 2018. (Poster Presentation). Project: FPJ993.

Lopes R, Pinto M, Mensurado S, Kubo H, Silva-Santos B, Serre K. Different TLR signalling pathways induce macrophages or neutrophils with anti-tumour functions *in vivo*. TOLL 2018 Editing Innate Immunity, Porto, Portugal, June 6-9, 2018. (Poster Presentation). Project: FPJ1106

Di Lorenzo B, Simões A, Caiado F, Tieppo P, Ravens S, Correia DV, Carvalho T, Gomes Da Silva M, Norell H, Déchanet-Merville J, Prinz I, Vermijlen D, Silva-Santos B. Cytotoxic targeting of Acute Myeloid Leukemia by highly polyclonal Delta One T (DOT) cells. 8th International Gamma-Delta T-cell Conference, Bordeaux, France, June 7-10, 2018. (Oral Presentation).

Amado T, Schmolka N, Sobral D, Enguita F, Inácio D, Silva.Santos B, Gomes AQ. A key role for microRNAs in regulating IL-17 versus IFN-g production by gamma-delta T cells. 8th International Gamma-Delta T-cell Conference, Bordeaux, France, June 7-10, 2018. (Oral Presentation). Project: FPJ991.

Ribeiro M, Brigas H, Temido-Ferreira M, Santa C, Coelho J, Marques-Morgado I, Valente C, Omenetti S, Stockinger B, Manadas B, Lopes LV, Silva-Santos B, Ribot JC. gd T cells are the major source of IL-17 in the meninges and control brain cognitive functions. 8th International Gamma-Delta T-cell Conference, Bordeaux, France, June 7-10, 2018. (Poster Presentation). Project: FPJ1138.

Wilharm A*, Brigas HC*, Sandrock I, Amado T, Carvalho T, Reinhardt A, Oberdorfer L, Silva-Santos B, Prinz I**, Ribot JC**. Gamma-delta 17 T cells infiltrate the male reproductive tract at puberty to keep pathogens at bay. 8th International Gamma-Delta T-cell Conference, Bordeaux, France, June 7-10, 2018. (Oral Presentation).

Mensurado S, Rei M, Lança T, Ioannou M, Gonçalves-Sousa M, Kubo H, Malissen M, Papayanopoulos V, Serre K, Silva-Santos B. Tumour-associated neutrophils suppress pro-tumoral IL-17+ gamma-delta T cells through induction of oxidative stress. 8th International Gamma-Delta T-cell Conference, Bordeaux, France, June 7-10, 2018. (Oral Presentation). Project: FPJ1106.

Papotto PH, Pimenta-Palmeirim P, Fiala G, Carvalho T, Silva-Santos B. Maternal gamma-delta T cells shape pulmonary immune cell architecture of the offspring. 8th International Gamma-Delta T-cell Conference, Bordeaux, France, June 7-10, 2018. (Poster Presentation). Project: FPJ899.

Mensurado S, Rei M, Lança T, Ioannou M, Gonçalves-Sousa M, Kubo H, Malissen M, Papayanopoulos V, Serre K, Silva-Santos B. Tumour-associated neutrophils suppress pro-tumoral IL-17+ gamma-delta T cells through induction of oxidative stress. 8th International Conference on Tumour Microenvironment: Progression, Therapy and Prevention, Lisbon, Portugal, June 10-14, 2018. (Oral Presentation). Project: FPJ1106.

Lopes R, Pinto M, Mensurado S, Boekhoff H, Kubo H, Silva-Santos B, Serre K. Different TLR signalling pathways induce macrophages or neutrophils with anti-tumour functions *in vivo*. 8th International Conference on Tumour Microenvironment: Progression, Therapy and Prevention, Lisbon, Portugal, June 10-14, 2018. (Oral Presentation). Project: FPJ1106.

Ribeiro M*, Brigas HC*, Temido-Ferreira M, Santa C, Coelho JE, Marques-Morgado I, Valente C, Omenetti S, Stockinger B, Manadas B, Lopes LV, Silva-Santos B, Ribot JC. Meningeal gamma-delta T cell-derived IL-17 controls synaptic plasticity and cognitive behaviour. 11th FENS Forum of Neuroscience (FENS 2018), Berlin, Germany, July 7-11, 2018. (Poster Presentation). Project: FPJ1138.

Amado T, Schmolka N, Sobral D, Enguita F, Inácio D, Silva-Santos B, Gomes AQ. A key role for microRNAs in regulating IL-17 versus IFN-g production by gamma-delta T cells. 5th European Congress of Immunology, Amsterdam, The Netherlands, September 2-5, 2018. (Poster Presentation). Project: FPJ991.

Brigas HC, Wilharm A, Ribeiro M, Sandrock I, Reinhardt A, Oberdorfer L, Silva-Santos B, Prinz I, Ribot JC. gamma-delta T cell home to the male reproductive tract and expand at puberty to keep pathogens at bay. 5th European Congress of Immunology, Amsterdam, The Netherlands, September 2-5, 2018. (Oral Presentation).

Inácio D, Amado T, Sobral D, Enguita F, Gomes AQ, Silva-Santos B. A key role for microRNAs in regulating IL-17 versus IFN-gamma production by gamma-delta T cells. 9th Meeting on Signal Transduction, SINAL 2018, Lisbon, Portugal, September 21-22, 2018. Project: FPJ991.

Ribeiro M*, Brigas HC*, Temido-Ferreira M, Santa C, Coelho JE, Marques-Morgado I, Valente C, Omenetti S, Stockinger B, Manadas B, Lopes LV, Silva-Santos B, Ribot JC. Meningeal gamma-delta T cell-derived IL-17 controls synaptic plasticity and cognitive behavior. 2018 Champalimaud Research Symposium, "Quantitative approaches to Behaviour & Neural Systems", Lisbon, Portugal, October 23-26, 2018. (Poster Presentation). Project: FPJ1138.

Brigas HC, Coelho JE, Ribeiro M, Wilharm A, Ribeiro M, Silva- Santos B, Lopes LV, Ribot JC. Elucidating the Impact of IL-17 On Alzheimer's Disease. 2018 Champalimaud Research Symposium, "Quantitative approaches to Behaviour & Neural Systems", Lisbon, Portugal, October 23-26, 2018. (Poster Presentation). Project: FPJ1138.

Communications in National Conferences

Lopes R, Pinto M, Mensurado S, Boekhoff H, Kubo H, Silva-Santos B, Serre K. Different TLR signalling pathways induce macrophages or neutrophils with anti-tumour functions *in vivo*. 25th Porto Cancer Meeting - Cancer Wars: The Immune Force Awakens, Porto, Portugal, April 26-27, 2018. (Oral Presentation). Project: FPJ1057.

Mensurado S, Pestana T, Lopes R, Silva-Santos B, Serre K. Methionine metabolism modulation for potentiation of immunotherapy efficacy. XII CAML PhD Students Meeting, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation). Project: FPJ1106.

Papotto PH, Pimenta-Palmeirim P, Fiala G, Carvalho T, Silva-Santos B. Maternal gamma-delta T cells shape pulmonary immune cell architecture of the offspring. XII CAML PhD Students Meeting, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 23-25, 2018. (Oral Presentation). Project: FPJ899.

Di Lorenzo B, Simões A, Caiado F, Tieppo P, Ravens S, Correia DV, Carvalho T, Gomes Da Silva M, Norell H, Déchanet-Merville J, Prinz I, Vermijlen D, Silva-Santos B. Cytotoxic targeting of Acute Myeloid Leukemia by highly polyclonal Delta One T (DOT) cells. XII CAML PhD Students Meeting, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 23-25, 2018. (Oral Presentation). Project: FPJ993.

Brigas HC, Wilharm A, Ribeiro M, Sandroock I, Reinhardt A, Oberdorfer L, Silva- Santos B, Prinz I, Ribot JC. Characterisation of gd T cell subsets in the male reproductive tract XII CAML PhD Students Meeting, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Lopes R, Pinto M, Mensurado S, Kubo H, Silva-Santos B, Serre, K. Different signalling pathways govern the emergence of macrophages and neutrophils with anti-tumour functions. XLIV Annual Meeting of the Portuguese Society for Immunology, Lisbon, Portugal, June 27-29, 2018. (Oral Presentation). Project: FPJ946, FPJ1057.

Mensurado S, Pestana T, Lopes R, Silva-Santos B, Serre K. Methionine metabolism modulation for potentiation of immunotherapy efficacy. XLIV Annual Meeting of the Portuguese Society for Immunology, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation). Project: FPJ1057.

Gordino G, Pereira S, Gomes AQ, Silva-Santos B, Ribot JC. miR-181a negatively regulates human gamma-delta T cell differentiation into anti-tumour effectors. XLIV Annual Meeting of the Portuguese Society for Immunology, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Di Lorenzo B, Simões A, Caiado F, Tieppo P, Ravens S, Correia DV, Carvalho T, Gomes Da Silva M, Norell H, Déchanet-Merville J, Prinz I, Vermijlen D, Silva-Santos B., Cytotoxic targeting of Acute Myeloid Leukemia by highly polyclonal Delta One T (DOT) cells. XLIV Annual Meeting of the Portuguese Society for Immunology, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Amado T, Schmolka N, Sobral D, Enguita F, Inácio D, Silva-Santos B, Gomes AQ. A key role for microRNAs in regulating IL-17 versus IFN-g production by gamma-delta T cells. XLIV Annual Meeting of the Portuguese Society for Immunology, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation). Project: FPJ991.

Cunha C, Romero PV, Papotto P, Schmolka N, Amado T, Inácio D, Gomes AQ, Silva-Santos B. MicroRNA determinants of the balance between effector and regulatory CD4+ T cells in vivo, Lisbon (Portugal). XLIV Annual Meeting of the Portuguese Society for Immunology, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation and Speed Communication). Project: FPJ899.

Brigas HC, Wilharm A, Ribeiro M, Sandrock I, Amado T, Carvalho T, Reinhardt A, Oberdorfer L, Silva-Santos B, Prinz I, Ribot JC. Characterisation of gd T-cell subsets in the male reproductive tract. XLIV Annual Meeting of the Portuguese Society for Immunology, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Papotto PH, Pimenta-Palmeirim P, Fiala G, Carvalho T, Silva-Santos B. gamma-delta T cells shape pulmonary immune architecture of the offspring XLIV Annual Meeting of the Portuguese Society for Immunology, Lisbon, Portugal, June 27-29, 2018. (Oral Presentation). Project: FPJ899.

Di Lorenzo B, Simões A, Caiado F, Tieppo P, Ravens S, Correia DV, Carvalho T, Gomes Da Silva M, Norell H, Déchanet-Merville J, Prinz I, Vermijlen D, Silva-Santos B. Cytotoxic targeting of Acute Myeloid Leukemia by highly polyclonal Delta One T (DOT) cells. MIT-Portugal Conference, Lisbon, Portugal, October 1, 2018. (Poster Presentation).

Organisation of Conferences

Serre K. Co-organiser. 8th International Conference on Tumour Microenvironment, Lisbon, Portugal, June 10-14, 2018.

Silva-Santos B, Gonçalves-Sousa N. Co-organisers. XLIV Annual Meeting of the Portuguese Society for Immunology, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, June 27-29, 2018.

Mensurado S, Brigas HC. Co-organisers. XII CAML PhD Students Meeting, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 23-25, 2018.

Internationalisation

Collaborative work with Drs. Daniel J. Pennington (Blizard Institute, Queen Mary College, London, UK), Adrian Hayday (Francis Crick Institute, London, UK), Brigitta Stockinger (Francis Crick Institute, London, UK), Ton Schumacher (The Netherlands Cancer Institute, Amsterdam, The Netherlands), Domenico Mavilio (Istituto Clinico Humanitas, Milan, Italy), Immo Prinz (University of Hannover, Germany), Julie Déchanet-Merville (CIRID, University of Bordeaux, France), Venizelos Papayannopoulos (Francis Crick Institute, London, UK), José Ramon Regueiro (Universidad Complutense de Madrid, Madrid, Spain) and Ana Cumano (Institut Pasteur, Paris, France).

Prizes, Honours and Awards

Karine Serre, Sofia Mensurado and Bruno Silva-Santos were awarded the first prize of the Prémio Janssen Inovação 2018.

Karine Serre, Sofia Mensurado and Bruno Silva-Santos were awarded honours for the 3rd place of Prémio AstraZeneca FAZCiência 2018.

Karine Serre, Sofia Mensurado and Bruno Silva-Santos were awarded a Research Grant from Fundo iMM-Laço 2017, for the category of translational projects.

Sofia Mensurado was awarded Best Oral Presentation award at XII World Immune Regulation Meeting, Davos, Switzerland.

Sofia Mensurado was awarded a Travel Grant from the 8th International Gamma-Delta T-cell Conference.

Pedro Papotto was awarded the AAI Best Poster Award - 8th International Gamma-Delta T-Cell Conference.

Advanced Teaching

Serre K. Lecture. “Tumour immunology and Cancer Immunotherapy”, LisbonBioMed PhD Programme, January 11, 2018.

Serre K. Lecture. “Immune subsets in the tumour microenvironment and their role during (immuno)therapies”, GABBA PhD Programme, University of Porto, Porto, Portugal, June 21, 2018.

Simões A. Cancer Immunology & Immunotherapy – aiming for tumour cells, University of Algarve, Mestrado Integrado em Medicina, Algarve, Portugal, July 17, 2018.

Fiala GJ. Lecture. “Immune cell signalling”, Signalling and Gene Expression Regulation course of the Molecular Technologies in Health MSc Programme, Escola Superior de Tecnologia da Saúde de Lisboa (ESTeSL), Lisbon, Portugal, October 18, 2018.

Serre K. Lecture. “Tumour Immunology” LCs Life health and sciences (2 years), University of Lisbon, Lisbon, Portugal, November 11, 2018.

Gomes A. Lecture. “miR-mediated regulation of IFN γ production and functional plasticity of $\gamma\delta$ T cells” in the Signal Transduction and gene expression regulation course of the ESTeSL Molecular Technologies in Health MSc Program, ESTeSL, Lisbon, Portugal, November 22, 2018.

Serre K. Lecture. “Diversification of T helper cell functions”, MSc Clinical Microbiology and Emerging Infectious Diseases programme University of Lisbon, Lisbon, Portugal, December 3, 2018.

Science and Society

Bruno Silva-Santos, “The reality and the potential of cancer immunotherapy”, Beyond Sciences Initiative Remote Conference, January 27, 2018.

Bruno Silva-Santos, “Colesterol trava resposta imunitária contra o cancro de mama”, Diário de Notícias, February 2, 2018.

Sofia Mensurado was interviewed for “IMM-Laço. Como ir mais além na ciência contra o cancro da mama”, Diário de Notícias, April 6, 2018.

Bruno Silva-Santos, “Cientistas premiados por descoberta de ‘calcanhar de Aquiles’ de células imunitárias pró-tumorais”, Diário de Notícias, May 9, 2018.

Bruno Silva-Santos collaborated in the conception and participated in the mini-series, Grande Reportagem SIC - O Mal Entendido: as doenças a que chamamos Cancro, 2018.

Bruno Silva-Santos interviewed in the scope of the Nobel Prize of Medicine, Público, October 1, 2018.

Bruno Silva-Santos interviewed for the series “O mundo em 365 segundos”, SIC and SIC Noticias, December 28, 2018.

MSc Thesis Completed

Daniel Pereira Inácio, 19/10/2018, “Functional impact of specific miRNAs on gamma-delta T cell development”. University of Lisbon. Supervisor: Bruno Silva-Santos. Co-Supervisor: Anita Q. Gomes.

Tiago Pestana, 29/10/2018, “Methionine supplementation improves the efficacy of breast cancer immunotherapy”. Universidade Nova de Lisboa - Faculdade de Ciências e Tecnologia. Supervisor: Karine Serre. Co-Supervisor: Sofia Mensurado.

Carlota Saldanha Lab

Major Interests / Objectives

We are focused on understanding the cellular and molecular mechanisms underlying acute and recovery of inflammatory responses. Our interest was on deciphering how blood components, blood cells and molecular partners are targeted by fibrinogen, sCD40L and OxLDL. Considering leukocyte recruitment and making use of intravital microscopy, the development of numerical models that simulate the leukocyte-vascular wall interface interactions were also addressed. Under our scope was, as well, the study of biorheological behavior of blood components and fibrinogen-mediated signal transduction of the nitric oxide and its bioavailability on erythrocytes. Consequently, the validation of inflammatory biomarkers in vascular diseases were under questioning. We expect to achieve a better understanding of the inflammatory mechanisms in pathologies, like sepsis and cardiovascular diseases to help in further biomedical management.

Head of Laboratory

Maria Carlota Saldanha Lopes, PhD Agregação. (Left September)

Laboratory Keywords / Research Areas

Inflammation, Microcirculation, Neutrophil, Erythrocyte, Leukocyte recruitment, Inflammation, Hemorheology.

Publications in Peer Review Journals

Saldanha C, Silva-Herdade AS (2018). Erythrocyte acetylcholinesterase is a signalling receptor. Novel Approaches in Drug Designing & Development. (IF:--, Citations:--).

Saldanha C, Freitas T, Silva-Herdade AS (2018). Fibrinogen Effects of Erythrocyte Nitric Oxide Metabolism in Presence of Timolol. Clinical and Medical Investigations, doi: 10.15761/CMI.1000154. (IF:--, Citations:--).

Saldanha C, Freitas T, Silva-Herdade AS (2018). Timolol Effects on Erythrocyte Deformability and Nitric Oxide Metabolism. Clinical Hemorheology Microcirculation. (IF:--, Citations: 0. Source: Scopus).

Farber PL, Freitas T, Saldanha C, Silva-Herdade AS (2018). Beta-estradiol and ethinylestradiol enhance RBC deformability dependent on their blood concentration. *Clinical Hemorheology Microcirculation*. (IF:--, Citations: 0. Source: Scopus).

Saldanha C, Freitas T, Silva-Herdade AS (2018). Effects of indomethacin on erythrocyte nitric oxide metabolism and erythrocyte deformability. *Medical Research Archives*, 6: 4 (1-11). (IF:--, Citations:--).

Other International Publications

Saldanha C, Silva-Herdade AS (2018). Fibrinogen Involvement in Hemorheology and Inflammation (pp. 115-146), Chapter 3. *Advances in Medicine and Biology*, Volume 128 Editors: Leon V. Berhardt Series: *Advances in Medicine and Biology* Binding: Hardcover Pub. Date: 2018. (IF:--, Citations: 0. Source: Scopus).

Saldanha C and Silva-Herdade AS (2018). Erythrocyte nitric oxide. Chapter 7, in - "Novel Prospects Based on Oxidative / Nitrosative Stress in Health and Disease". (IF:--, Citations:--).

Invited Lectures and Seminars

Saldanha C. "Erythrocyte Reactive Nitrogen Species in Health and Disease". 4th International Multidisciplinary Conference on Rheology", organised NPNCLE Society of Rheology LEPL and Shota Rustaveli National Science Foundation of Georgia and LEPL Ivane Beritashvili Center of Experimental Biomedicine, Tbilisi, Georgia, April 22-26, 2018.

Saldanha C. "Multifunctional Life of Erythrocyte". Lecture of the Fahraeus Gold Medal Award in The Joint Conference of Three Societies, The European Society for Clinical Hemorheology and Microcirculation, The International Society of Clinical Hemorheology and The International Society of Biorheology (ESCHM-ISCH-ISB), Kraków, Poland, July 2-6, 2018.

Saldanha C. "Erythrocyte nitric oxide in glaucoma patients". 20th International Congress on Vision Science and Eye, Zurich, Switzerland, August 29-30, 2018.

Communications in International Conferences

Silva-Herdade AS, Saldanha C, Heras M, Castanho M, Roy S. "Delivery of small peptides in the eye and its implications in ocular diseases". 16th Iberian Peptide Meeting (16EPI)/4th Chemical Biology Group Meeting (4GEQB), February 5-7, 2018. (Poster Presentation).

Silva-Herdade AS, Saldanha C. "Leukocytes as a link between inflammation and erythrocyte nitric oxide". Symposium "Role of gasotransmitters (NO, CO and H₂S) in blood cell functions and the molecular mechanisms of their microrheology alterations" of The Joint Conference of Three Societies, The European Society for Clinical Hemorheology and Microcirculation, The International Society of Clinical Hemorheology and The International Society of Biorheology (ESCHM-ISCH-ISB), Kraków, Poland, July 2-6, 2018.

Saldanha C. "Contribution of fibrinogen to erythrocyte scavenger nitric oxide". Symposium "Role of gasotransmitters (NO, CO and H₂S) in blood cell functions and the molecular mechanisms of their microrheology alterations", of The Joint Conference of Three Societies, The European Society for Clinical Hemorheology and Microcirculation, The International Society of Clinical Hemorheology and The International Society of Biorheology (ESCHM-ISCH-ISB), Kraków, Poland, July 2-6, 2018.

Silva-Herdade AS, Saldanha C. "Erythrocyte nitric oxide dependent of acetylcholinesterase" receptor". "RBC nitric oxide/rheology symposium" of The Joint Conference of Three Societies, The European Society for Clinical Hemorheology and Microcirculation, The International Society of Clinical Hemorheology and The International Society of Biorheology (ESCHM-ISCH-ISB), Kraków, Poland, July 2-6, 2018.

Saldanha C, Silva- Herdade AS. "Erythrocyte deformability under nitric oxide influence". Symposium "Beyond Red cell stiffness" of The Joint Conference of Three Societies, The European Society for Clinical Hemorheology and Microcirculation, The International Society of Clinical Hemorheology and The International Society of Biorheology (ESCHM-ISCH-ISB), Kraków, Poland, July 2-6, 2018.

Organisation of Conferences

Saldanha C. Co-Chairman. Symposium “Role of gasotransmitters (NO, CO and H₂S) in blood cell functions and the molecular mechanisms of their microrheology alterations” in The Joint Conference of Three Societies, The European Society for Clinical Hemorheology and Microcirculation, The International Society of Clinical Hemorheology and The International Society of Biorheology (ESCHM-ISCH-ISB), Kraków, Poland, July 2-6, 2018.

Saldanha C. Co-Chairman. Symposium “Beyond Red cell stiffness” in The Joint Conference of Three Societies, The European Society for Clinical Hemorheology and Microcirculation, The International Society of Clinical Hemorheology and The International Society of Biorheology (ESCHM-ISCH-ISB), Kraków, Poland, July 2-6, 2018.

Saldanha C. Moderator. Conference Venue of and the 1st and 2nd session in 20th International Congress on Vision Science and Eye, Zurich, Switzerland, August 29-30, 2018.

Saldanha C. Co-Moderator. Session 3: “Cell Interaction and Adhesion”, 6th Eurosummer School on Biorheology & Symposium on Micro and Nano Mechanics and Mechanobiology of Cells, Tissues and Systems (BIORHEO2018), Varna, Bulgari, August 29-September 1, 2018.

Saldanha C. Co-Moderator. Session “Bio-reactivity control after Arterial Intervention” in the Meeting of the Reunião do Núcleo de Biologia Vasculuar da Sociedade Portuguesa de Angiologia e Cirurgia Vasculuar (SPACV), Aveiro, Portugal, October 2018.

Internationalisation

Saldanha C. Editorial Board of the Clinical Hemorheology and Microcirculation.

Saldanha C. Editorial Board of the Open Circulation and Vascular Journal.

Saldanha C. Editorial Board of the Journal of Cellular Biotechnology.

Saldanha C. Editorial Board of the Sciedu Press, Case Reports in Clinical Pathology.

Saldanha C. Editorial Board of Journal of Eye Disease.

Saldanha C. Editor-in-Chief of the Bulletin of the SPHM.

Saldanha C. President of the Portuguese Society of Hemorheology and Microcirculation.

Prizes, Honours and Awards

Saldanha C. Member of the International Board of 4th International Multidisciplinary Conference on Rheology”, organised NPNCLE Society of Rheology LEPL and Shota Rustaveli National Science Foundation of Georgia and LEPL Ivane Beritashvili Center of Experimental Biomedicine, Tbilisi, Georgia, April 22-26, 2018.

Saldanha C. Member of the International Advisory Committee The Joint Conference of Three Societies, The European Society for Clinical Hemorheology and Microcirculation, The International Society of Clinical Hemorheology and The International Society of Biorheology (ESCHM-ISCH-ISB), Kraków, Poland, July 2-6, 2018.

Saldanha C. Delegate in Open Ceremony of the 20th International Congress on Vision Science and Eye, Zurich, Switzerland, August 29-30, 2018.

Saldanha C. Member of the International Advisory Committee of 6th Summer School on Biorheology & Symposium on Micro and Nano Mechanics and Mechanobiology of Cells, Tissues and Systems (BIORHEO2018).

Saldanha C. Member of the Coordinating Committee of European Society Clinical Hemorheology and Microcirculation.

Saldanha C. Member of the Strategic Group of European Society of Microcirculation.

Saldanha C. Collaborator Investigator. CEMAT - Center for Computational and Stochastic Mathematics of FCT.

Saldanha C. Professor. Biochemistry Jubilated and Head of Unit of Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine University of Lisbon.

Saldanha C. Awarded. “Fahraeus Gold Medal Award 2018” from the European Society for Clinical Hemorheology and Microcirculation.

Advanced Teaching

Saldanha C. Lecture. “Fibrinogen involvement in hemorheology and inflammation”. 6th Summer School on Biorheology & Symposium on Micro and Nano Mechanics and Mechanobiology of Cells, Tissues and Systems (BIORHEO2018), Varna, Bulgari, August 29-September 1, 2018.

Science and Society

Saldanha C. Member of the Jury for the Innovative Competition of the IMed Conference 10.0 Lisbon 18.

Saldanha C. Editorial “Expectancy of lifetime Bulletin of the Portuguese Society of Hemorheology and Microcirculation”.

MSc Thesis Completed

Mariana Gomes Ferreira, “Analysis of neutrophil recruitment during tissue regeneration in zebrafish models of human disease”, MSc thesis in Human Biology and Environment, Faculty of Science, University of Lisbon. Supervisor: Ângelo Calado.

Cláudio Franco Lab

Major Interests / Objectives

Appropriate blood supply in multicellular organisms is essential for development, growth and regeneration. Several diseases arise from dysfunction of blood vessels, e.g. diabetic retinopathy, stroke, or tumour angiogenesis. The formation of a functional vascular network requires two distinct processes – SPROUTING ANGIOGENESIS (which expands the network) and VASCULAR REMODELING (which generates a hierarchical network) – both driven by endothelial rearrangements.

Our Lab has the aim to understand the molecular mechanisms regulating coordinated endothelial cell behaviour. We want to uncover:

- Novel regulators of endothelial cell migration;
- Molecular regulation of endothelial cell polarity;
- Effects of haemodynamic forces in vascular patterning;
- Novel anti-angiogenic therapies.

Head of Laboratory

Cláudio Areias Franco, PhD

Team

Ana Alexandra Baptista Martins Moutinho Russo	Master	Lab Technician
Ana Isabel Cosme Nunes Rolo	PhD	Senior Post-Doctoral Researcher (Started June)
Ana Raquel Martins Figueiredo Fonseca	PhD	Junior Post-Doctoral Researcher (Started December)
Andreia Alexandra Santos de Areosa Pena	Master	PhD Student (Started January)
Catarina Gonçalves Fonseca	Master	PhD Student
Dalila Maria Neves Silva	Master	Lab Technician (Left December)
Francisca Ferreira de Vasconcelos	PhD	Lab Manager
Isabela Corina Santos Fortunato	Graduate	MSc Student
Joana Cristina Reino Carvalho	Master	PhD Student
Maria Angeles Dominguéz-Cejudo	PhD	Post-Doctoral Researcher
Marie Ouarné	PhD	Junior Post-Doctoral Researcher (Started May)
Marta Filipa Alves Fidalgo	Graduate	MSc Student (Started September)
Pedro Miguel Branco Barbacena	Master	PhD Student
Silvia Vaccaro	Master	PhD Student (Left September)
Yulia Carvalho	Master	Lab Technician (Started October)

Laboratory Keywords / Research Areas

Angiogenesis, Cell migration, Tumour angiogenesis, Endothelial cells, Vascular patterning.

Major Scientific Achievements

In 2018, our work has uncovered that shear stress and junctional tension compete in the process of establishing network-level collective cell polarity. We established the cellular and molecular principles that define the competitive nature between blood flow and VEGF, the two main organisers of blood vessel formation. We show that these two organisers regulate collective polarity of endothelial cells in a competitive way, and the strength and directionality of each polarity cue defines the transition between vascular sprouting and vascular remodelling events. Currently, using zebrafish, mouse and advanced *in vitro* models of angiogenesis, we are exploring the mechanisms contributing to blood vessel pattern formation based on the dual and interdependent response to shear stress and chemokines.

Selected Publications

Franco CA, Jones M, Geudens I, Bernabeu MO, Ragab A, Collins RT, Phng LK, Coveney PV, Gerhardt H (2015). Dynamic endothelial cell rearrangements drive developmental vessel regression. *PLoS Biology* 13, e1002163. (IF: 9.797, Citations: 83/62. Sources: Google Scholar/Scopus).

Bentley K, Franco CA, Philippides A, Blanco R, Dierkes M, Gebala V, Stanchi F, Jones J, Cagna G, Kutschera S, Claesson-Welsh L, Vestweber D, Gerhardt H (2014). The role of differential VE-cadherin dynamics in cell rearrangement during angiogenesis. *Nature Cell Biology* 16, 309-21. (IF: 20.06, Citations: 171/125. Sources: Google Scholar/Scopus).

Guarani V, Deflorian G*, Franco CA*, Krüger M, Phng LK, Bentley K, Toussaint L, Dequiedt F, Mostoslavsky R, Schmidt MH, Zimmermann B, Brandes RP, Mione M, Westphal CH, Braun T, Zeiher AM, Gerhardt H, Dimmeler S, Potente M, *co-second (2011). Acetylation-dependent regulation of endothelial Notch signalling by the SIRT1 deacetylase. *Nature* 473, 234-8. (IF: 40.137, Citations: 283/214. Sources: Google Scholar/Scopus).

Stenzel D*, Franco CA*, Estrach S, Mettouchi A, Sauvaget D, Rosewell I, Schertel A, Armer H, Domogatskaya A, Rodin S, Tryggvason K, Collinson L, Sorokin L, Gerhardt H, * co-first (2011). Endothelial basement membrane limits tip cell formation by inducing Dll4/Notch signalling in vivo. *EMBO reports* 12, 1135-43. (IF: 8.568, Citations: 105/77. Sources: Google Scholar/Scopus).

Jakobsson L, Franco CA, Bentley K, Collins RT, Ponsioen B, Aspalter IM, Rosewell I, Busse M, Thurston G, Medvinsky A, Schulte-Merker S, Gerhardt H (2010). Endothelial cells dynamically compete for the tip cell position during angiogenic sprouting. *Nature Cell Biology* 10, 943-53. (IF: 20.06, Citations: 630/424. Sources: Google Scholar/Scopus).

Ongoing Research Projects

2018/2022: ATTRACT: Arterial flow as attractor for endothelial cell migration. Coordinator: Cláudio Franco. Funding Agency: Fondation Leducq. Reference: ATTRACT. Amount: € 425 424,99. Total Amount: \$ 5 000 000,00.

2018/2021: Flow(in)DR: Deregulated Endothelial Blood Flow Response as a cause of Diabetic Retinopathy. Coordinator: Francisca Vasconcelos. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MED-PAT/31639/2017. Amount: € 235 365,31. Total Amount: € 235 365,31.

2018/2021: Invasiveness: Identify the mechanisms of endothelial tip cell invasive behavior in order to inhibit physiological and pathological sprouting angiogenesis. Coordinator: Cláudio Franco. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIA-CEL/32180/2017. Amount: € 238 865,33. Total Amount: € 238 865,33.

2016/2021: AXIAL.EC: Principles of Axial Polarity-Driven Vascular Patterning. Coordinator: Cláudio Franco. Funding Agency: European Commission. Reference: ERC StG 679368. Amount: € 1 618 750,00. Total Amount: € 1 618 750,00.

2013/2018: Mechanisms of endothelial cell motility and invasion in vascular morphogenesis. Coordinator: Cláudio Franco. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/00412/2012. Amount: € 50 000,00. Total Amount: € 50 000,00.

Other Projects

2018/2018: Role for the microenvironment on nuclear positioning in myofibers. Coordinator: Edgar Gomes. Funding Agency: AFM-Téléthon - SP du CS. Reference: AFM-Telethon. Amount: € 51 000,00. Total Amount: € 51 000,00.

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria Camo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

2016/2018: ReTuBi: Towards outstanding research and training in tumour. Coordinator: Edgar Gomes. Funding Agency: European Commission. Reference: Twinning 692322. Amount: € 788 725,00. Total Amount: € 999 975,00.

Publications in Peer Review Journals

Hikita T, Mirzapourshafiyi F, Barbacena P, Riddell M, Pasha A, Li M, Kawamura T, Brandes R, Hirose T, Ohno S, Matsuda M, Gerhardt H, Franco CA, Nakayama M (2018). PAR-3 controls endothelial planar polarity and vascular inflammation under laminar flow. *EMBO Reports* 19(9). (IF: 8.749. Citations: 1. Sources: Web of Science and Scopus).

Bernabeu MO, Jones ML, Nash RW, Pezzarossa A, Coveney PV, Gerhardt H, Franco CA (2018). PolNet Analysis: a protocol for the quantification of network-level endothelial cell polarity and blood flow during vascular remodelling. *Biophysical Journal* 114(9):2052-2058. (IF: 3.495, Citations:--. Source: Web of Science).

Neto F, Klaus-Bergmann A, Ong YT, Alt S, Vion AC, Szymborska A, Carvalho JR, Hollfinger I, Bartels-Klein E, Franco CA Potente M, Gerhardt H(2018). YAP and TAZ regulate adherens junction dynamics and endothelial cell distribution during vascular development. *eLife* 7. pii: e31037. (IF: 7.616, Citations: 7. Sources: Web of Science and Scopus).

Invited Lectures and Seminars

Franco CA. Measuring collective cell behaviour in angiogenesis. 1st Spanish Workshop on Endothelium, Madrid, Spain, January 2018.

Franco CA. Junctional forces and wall shear stress compete to coordinate collective cell polarity, EMBL Meeting: Tissue Self-Organisation, Heidelberg, Germany, March 2018.

Franco CA. Endothelial Cell Orienteering. International Vascular Biology Meeting – IVBM, Helsinki, Finland, June 2018.

Franco CA. Biophysical and biochemical constrains in branching morphogenesis of blood vessels, Instituto Gulbenkian de Ciência, Oeiras, Portugal, July 2018.

Franco CA. Endothelial Cell Orienteering. 10th International Kloster Seeon Meeting Angiogenesis, Kloster Seeon, Germany, September 2018.

Franco CA. Endothelial Cell Orienteering. Emerging Concepts in Cardiovascular Biology – Centro Nacional de Investigaciones Cardiovasculares (CNIC), Madrid, Spain, November 2018.

Franco CA. Endothelial Cell Orienteering. Symposia on Tumour Biology: from basic biology to disease, Lisbon, Portugal, December 2018.

Franco CA. Yin-Yang effects of non-canonical Wnt signalling in endothelial cell polarity. Centro Nacional de Investigaciones Cardiovasculares (CNIC), Madrid, Spain. Invited by: Rui Benedito.

Franco CA. Competing Interests in Vascular Morphogenesis, University of Uppsala, Sweden. Invited by: Lena Claesson-Welsh.

Franco CA. Competing Interests in Vascular Morphogenesis. Georges Pompidou Hospital, Paris, France. Invited by: Anne Eichmann.

Franco CA. Competing Interests in Vascular Morphogenesis. International Centre for Genetic Engineering and Biotechnology, Italy. Invited by: Serena Zacchigna.

Franco CA. Endothelial Cell Orienteering. The Francis Crick Institute, London, England. Invited by: Katie Bentley.

Communications in International Conferences

Fortunato I. The role of alpha-catenin in collective cell migration. Leducq ATTRACT junior Meeting, Paris, France, April 11-12, 2018. (Oral Presentation).

Fonseca C. Biomechanics of Vascular Remodelling. Leducq ATTRACT Meeting, Paris, France, April 11-12, 2018. (Oral Presentation).

Fortunato I. Unveiling mechanotransduction during collective cell migration. *Mechanobiology after 10 Years: The Promise of Mechanomedicine*, Singapore, November 2018. (Oral Presentation).

Fonseca C. Identifying New Players in Flow Mechanosensation Using a New High-Throughput Microfluidic Device. Conference on Emerging Concepts in Cardiovascular Biology, Centro Nacional de Investigaciones Cardiovasculares (CNIC), Madrid, Spain, November 16-17, 2018. (Poster Presentation).

Dominguez-Cejudo M. Mechanisms driving axial polarity during vascular patterning. Conference on Emerging Concepts in Cardiovascular Biology, Centro Nacional de Investigaciones Cardiovasculares (CNIC), Madrid, Spain, November 16-17, 2018. (Poster Presentation).

Barbacena P. A tale of forces: how blood flow and chemokines interact to establish endothelial polarity. Conference on Emerging Concepts in Cardiovascular Biology, Centro Nacional de Investigaciones Cardiovasculares, Madrid, Spain, November 16-17, 2018. (Poster Presentation).

Fortunato I. Unveiling mechanotransduction during collective cell migration. *Symposia on Tumour Biology - ReTuBi*, Lisbon, Portugal, December 5-6, 2018. (Poster Presentation).

Pena A. Deregulated Endothelial Blood Flow Response as a cause of Diabetic Retinopathy. *Symposia on Tumour Biology - ReTuBi*, Lisbon, Portugal, December 5-6, 2018. (Poster Presentation).

Barbacena P. A tale of forces: how blood flow and chemokines interact to establish endothelial polarity. *Symposia on Tumour Biology - ReTuBi*, Lisbon, Portugal, December 5-6, 2018. (Oral Presentation).

Communications in National Conferences

Fortunato I. The role of alpha-catenin in collective cell migration. 7^a Edição das Jornadas Intercalares dos Mestrados do Departamento de Química e do Departamento de Ciências da Vida, Monte da Caparica, Portugal, February 2018. (Oral Presentation).

Carvalho J. Axial polarity and force transmission during endothelial collective cell migration. *DiA Meeting*, Faculty of Sciences, University of Lisbon, Lisbon, Portugal, March 2018. (Oral Presentation).

Carvalho J. Wnt5a controls axial polarity and force transmission during endothelial collective cell migration. LisbonBioMed Scientific Retreat, Mafra, Portugal, April 2018. (Oral Presentation).

Barbacena P. A tale of forces: how blood flow and chemokines interact to establish endothelial polarity. LisbonBioMed Scientific Retreat, Mafra, Portugal, April 2018. (Poster Presentation).

Pena A. Evaluating the contribution of endothelial-flow response in Diabetic Retinopathy. XII CAML PhD Meeting, Instituto de Medicina Molecular João Lobo Antunes, May 23-25, 2018. (Oral Presentation).

Fonseca C. Biomechanics of Vascular Remodelling. XII CAML PhD Meeting, Instituto de Medicina Molecular João Lobo Antunes, May 23-25, 2018. (Poster Presentation).

Barbacena P. A tale of forces: how blood flow and chemokines interact to establish endothelial polarity. XII CAML PhD Meeting, Instituto de Medicina Molecular João Lobo Antunes, May 23-25, 2018. (Oral Presentation).

Fortunato I. Do we know everything about non-canonical Wnt signalling in collective cell migration? Joint Lab Retreat on Trafficking and Cell Migration in Cancer, Sintra, Portugal, June 2018. (Oral Presentation).

Barbacena P. Filopodia dependent and independent Sprouting Angiogenesis. Joint Lab Retreat on Trafficking and Cell Migration in Cancer, Sintra, Portugal, June 2018. (Oral Presentation).

Carvalho J. Do we know everything about non-canonical Wnt signalling in collective cell migration? Joint Lab Retreat on Trafficking and Cell Migration in Cancer, Sintra, Portugal, June 2018. (Oral Presentation).

Fortunato I. Unveiling mechanotransduction during collective cell migration. 9th Meeting on Signal Transduction, Lisbon, Portugal, September 2018. (Poster Presentation).

Fortunato I. Do we know everything about non-canonical Wnt signalling in collective cell migration? Joint Lab Retreat on Vascular Heterogeneity, Lisbon, Portugal, October 2018. (Oral Communication).

Carvalho J. Do we know everything about non-canonical Wnt signalling in collective cell migration? Joint Franco and Augustin Lab Retreat, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 25, 2018. (Oral Presentation).

Ouarné M. Vascular patterning & quiescence. Joint Franco and Augustin Lab Retreat, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 25, 2018. (Oral Presentation).

Barbacena P. Filopodia dependent and independent Sprouting Angiogenesis. Joint Franco and Augustin Lab Retreat, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 25, 2018. (Oral Presentation).

Organisation of Conferences

Franco CA, Gomes ER. Organiser. Symposia on Tumour Biology: from basic biology to disease, Lisbon, Portugal.

Franco CA, Bettencourt-Dias M. Organiser. Biophysical Constraints and Evolutionary Cell Biology, Instituto Gulbenkian de Ciência, Oeiras, Portugal.

Franco CA, Gomes ER. Organiser. Cell Migration under Confinement Workshop, Baião, Portugal.

Franco CA. Organiser. Workshop on Advanced Light Microscopy, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal.

Advanced Teaching

Franco CA. Jury of the thesis of Cátia Alexandra Rebelo de Almeida, “Bevacizumab: more than an anti-angiogenic drug”. Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa, Lisbon, Portugal.

Franco CA. Theoretical classes in Mestrado Integrado em Engenharia Biomédica, IST, Lisbon, Portugal. Supervisor: Professor Cláudia Lobato and Margarida Diogo.

Franco CA. Theoretical classes in Mestrado Integrado Ciências da Visão, University of Coimbra, Lisbon, Portugal. Supervisor: Professor Francisco Ambrósio.

Franco CA. Theoretical classes in LisbonBioMed, Instituto de Medicina Molecular João Lobo Antunes/Faculty of Medicine/Centro Académico de Medicina de Lisboa, Lisbon, Portugal.

Science and Society

Franco CA. Interview for “Portugueses pelo Mundo” Programme.

Franco CA. Interview for Expresso.

MSc Thesis Completed

Isabela Corina Santos Fortunato, 30/11/2018, “Unveiling mechanotransduction during collective cell migration”, Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa. Supervisor: Cláudio Franco.

Claus Azzalin Lab

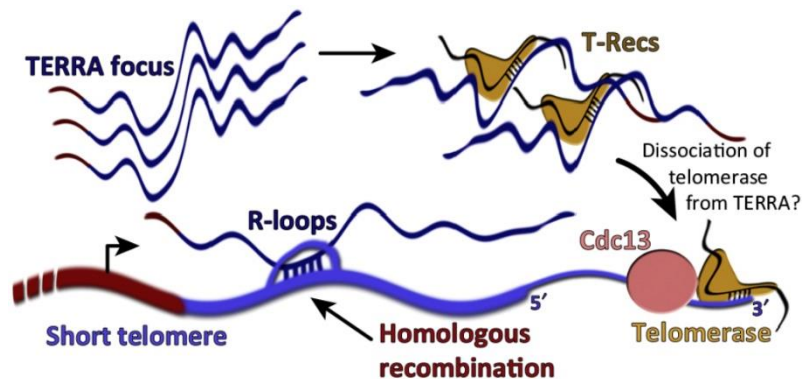
Major Interests / Objectives

Telomeres are heterochromatic nucleoprotein structures 'capping' the ends of linear eukaryotic chromosomes. Dysfunctional telomeres cause severe chromosome instability, which unleashes cascades of cellular reactions that are common hallmarks of human diseases including cancer and premature aging. We employ molecular biology, cell biology and biochemistry to understand how telomeres execute their protective functions and how telomeric dysfunctions are mechanistically linked to pathological conditions. In particular, we study how the telomeric long noncoding RNA TERRA participates in maintaining proper telomere structure and functions in both normal and diseased human cells. During the last year, our research mostly focused on how TERRA elicits telomere elongation in both telomerase-positive and telomerase-negative human cancer cells.

Head of Laboratory

Claus Maria Azzalin, PhD

Graphical Abstract



Team

Ana Beatriz Domingues Silva	Master	Lab Technician (Started September)
Ana Margarida da Silva Figueira	Master	Lab Manager
Beatriz Rodrigues Luis de Bento	Other	BSc Student (Started April Left December)
Bruno Adriano de Sousa Silva	PhD	Junior Post-Doctoral Researcher (Started March)
Catarina Marreiros Lagoas	Master Student	MSc Student (Started September Left December)
Filipe Bernardes da Silva Tavares Cadete	PhD	Junior Post-Doctoral Researcher (Started July)
Joana Cristina Pedro Rodrigues	PhD	Junior Post-Doctoral Researcher (Started October)

João Pedro Abreu Pessoa	PhD	Senior Post-Doctoral Researcher (Started January)
José Carlos Perez Nobre	Master	Lab Technician (Left February)
Leonardo Amaro Gaio	Graduate	MSc Student (Started July)
Mariasilvia Colantuoni	Master Student	MSc Student (Started February Left March)
Patrícia Alexandra Lona Abreu	Master	PhD Student
Pedro Miguel Torres Mascarenhas Ribeiro Martins	Master Student	MSc Student (Left August)
Rajika Arora	PhD	Senior Post-Doctoral Researcher (Left April)
Richard Pentz	PhD Student	PhD Student (Left January)
Yongwoo Lee	PhD	Senior Post-Doctoral Researcher (Left September)

Laboratory Keywords / Research Areas

TERRA, Telomeres, Cancer, Aging, Genome stability, RNA processing.

Major Scientific Achievements

We discovered that the human telomeric factor TRF2 promotes invasion of TERRA into double stranded telomeric DNA, thus inducing formation of telomeric R-loops (telR-loops). On the other side, the telomeric factor TRF1 suppresses the ability of TRF2 to induce telR-loops. When mutant TRF1 proteins lacking such inhibitory activity are expressed in cells, telR-loops accumulate and cause telomere instability. This novel activity associated to TRF2 suggests the existence of active mechanisms of telomere maintenance depending on scheduled telR-loop formation, and represents the first example of a human factor promoting R-loop formation independently of ongoing transcription. We also discovered that the Fanconi anaemia, complementation group M (FANCM) translocase suppresses telomeric replication stress in telomerase-negative cancer cells (ALT cells). When FANCM is depleted, ALT telomeres become dysfunctional and cells stop proliferating. We found that FANCM unwinds telR-loops *in vitro* and suppresses their accumulation in ALT cells. Overexpression of the RNA:DNA hybrid endoribonuclease RNaseH1 weakens replication stress in FANCM-depleted cells. Thus, FANCM supports ALT survival by dismantling telR-loops thereby limiting telomeric replication stress.

Selected Publications

Moravec M, Wischnewski H, Bah A, Hu Y, Liu N, Lafranchi L, King MC and Azzalin CM (2016). TERRA promotes telomerase-mediated telomere elongation in *Schizosaccharomyces pombe*. EMBO Reports 17, 999-1012. (IF: 8.568, Citations: 19. Source: Web of Science).

Lorenzi LE, Bah A, Wischnewski H, Shchepachev V, Sonesson C, Santagostino M, Azzalin CM (2015). Fission yeast Cactin restricts telomere transcription and elongation by controlling Rap1 levels. *The EMBO Journal* 34, 115-129. (IF: 9.792, Citations: 6. Source: Web of Science).

Arora R, Lee YW, Wischnewski H, Brun CM, Schwarz T and Azzalin CM (2014). RNaseH1 regulates TERRA-telomeric DNA hybrids and telomere maintenance in ALT tumour cells. *Nature Communications* 5, e5220. (IF: 12.353, Citations: 82. Source: Web of Science).

Shchepachev V, Wischnewski H, Missiaglia E, Sonesson C and Azzalin CM (2012). Mpn1, Mutated in Poikiloderma with Neutropenia Protein 1, Is a Conserved 3'-to-5' RNA Exonuclease Processing U6 Small Nuclear RNA. *Cell Reports* 2, 855-865. (IF: 8.032, Citations: 35. Source: Web of Science).

Chawla R, Redon S, Raftopoulou C, Wischnewski H, Gagos S and Azzalin CM (2011). Human UPF1 interacts with TPP1 and telomerase and sustains telomere leading-strand replication. *The EMBO Journal* 30, 4047-4058. (IF: 9.792, Citations: 52. Source: Web of Science).

Azzalin CM, Reichenback P, Khoriantuli L, Giulotto E and Lingner J (2007). Telomeric Repeat Containing RNA and RNA surveillance factors at mammalian chromosome ends. *Science* 318, 798-801. (IF: 37.205, Citations: 682. Source: Web of Science).

Ongoing Research Projects

2018/2021: Mecanismos de recombinação telomérica mediada por R-loops na via de alongamento alternativo de telómeros com vista ao desenvolvimento de novas terapias contra o cancro. Coordinator: Bruno de Sousa Silva. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MED-ONC/28282/2017. Amount: € 239 854,03. Total Amount: € 239 854,03.

2018/2021: Alongamento dos telómeros mediado por TERRA e por telomerase: o desvendar de novas vias moleculares para o desenvolvimento de inovadoras abordagens terapêuticas contra o cancro. Coordinator: Claus M. Azzalin. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: 029352/2017. Amount: € 239 789,17. Total Amount: € € 239 789,17.

2017/2020: TERRA and telomere transcription: towards therapies for healthy aging. Coordinator: Claus M. Azzalin. Funding Agency: European Molecular Biology Organisation. Reference: EMBO IG 3576. Amount: € 150 000,00. Total Amount: € 150 000,00.

2016/2021: TERRA and telomere transcription at the crossroads of cancer and aging. Coordinator: Claus M. Azzalin. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/01269/2015. Amount: € 50 000,00€. Total Amount: € 50 000,00€.

2016/2018: The multiple roles of TERRA in telomere length maintenance, telomere integrity, cancer and cellular senescence. Coordinator: Claus M. Azzalin. Funding Agency: Swiss National Science Foundation. Reference: 31003A_160338. Amount: € 272 083,00. Total Amount: € 272 083,00.

Publications in Peer Review Journals

Lee YW, Arora R, Wischnewski H, Azzalin CM (2018). TRF1 participates in chromosome end protection by averting TRF2-dependent telomeric R-loops. *Nature Structural & Molecular Biology*, 25, 147-153 (IF: 12.595. Citations: 3. Sources: Web of Science and Scopus).

Invited Lectures and Seminars

Azzalin CM. TERRA comes back to IBC: more on telomeres and long noncoding RNA. Invited lecturer. Institute of Biochemistry (IBC), ETH Zurich, Zurich, Switzerland, June 28, 2018.

Communications in International Conferences

Azzalin CM. Alternative Lengthening of Telomeres: living on the edge. Invited speaker. EMBO workshop 'RNA and genome maintenance: Cooperation and conflict management', Mainz, Germany, October 10-13, 2018.

Abreu P. *In vitro* analysis of TRF1-mediated inhibition of TRF2-induced telR-loop formation. EMBO workshop 'Telomere biology in health and human disease', Tróia, Portugal, May 1-6, 2018. (Poster Presentation).

Lee YW. TRF1 suppresses TRF2-stimulated telomeric R-loops to safeguard telomere integrity. EMBO workshop 'Telomere biology in health and human disease', Tróia, Portugal, May 1-6, 2018. (Poster Presentation).

Organisation of Conferences

Azzalin CM. Co-Organiser. EMBO workshop 'Telomere biology in health and human disease', Tróia, Portugal, May 1-6, 2018.

Internationalisation

Our group is directly collaborating with several laboratories in Europe, USA and Australia. Additionally, members of our laboratory regularly attend and present at international conferences on genomic stability and telomere biology and participate in international schools and courses.

PhD Thesis Completed

Richard Pentz, 28/06/2018, FANCM translocase promotes telomere stability and cell viability in ALT (Alternative Lengthening of Telomeres) cells, Institute of Biochemistry of ETH Zurich. Supervisor: Claus M. Azzalin.

Diana Prata Lab

Major Interests / Objectives

Our interest is the molecular biology of human behaviour, which we aim to translate into improving etiological and therapeutic models of neuropsychiatric disorders. We have reported on the influence of genetic variations on: mental illness risk, brain function/structure and drug treatment response. We are now majorly interested in: 1) the role of oxytocin in social cognition, and its relevance to psychosis, autism and anorexia; and 2) building clinically useful multimodal biomarkers for aiding clinical diagnostic and prognostic predictions. For this, we combine psychological and neuropharmacological experimentation with (epi)genetics, neuroimaging and psychophysiological tools - which is made possible by a diverse team of biomedical engineers, psychologists, biologists and psychiatrists.

Head of Laboratory

Diana Maria Pinto Prata, PhD, Group Leader and Assistant Professor (10% at Superior de Ciências do Trabalho e da Empresa) (Left August)

Team

Alessia Avila	PhD Student	PhD Student (Left August)
André Raul Araújo de Sousa	Master	Trainee (Left August)
Beatriz Candeias Simões	Master Student	MSc Student (Left August)
Bernardo Oliveira da Costa Neves	PhD Student	PhD Student (Left August)
Gonçalo Aires de Oliveira	PhD	Junior Post-Doctoral Researcher (Left February)
Gonçalo Bairos Cosme	Master	Lab Technician (Left August)
Hugo Alexandre Teixeira Duarte Ferreira	PhD	Visiting Researcher (Left August)
Katja Brodmann	PhD	Junior Post-Doctoral Researcher (Left April)
Maria Leonor Dinis Neto	Other	Trainee (Left August)
Maria Zelenina	Master	Trainee (Left August)
Mónica Gonçalves Barbeito Costa	Master Student	MSc Student (Left August)
Vânia Sofia Santos Tavares	PhD Student	PhD Student (Left August)

Laboratory Keywords / Research Areas

Neuroimaging, Genetics, Psychiatry, Social cognition, Machine learning, Neuropharmacology.

Ongoing Research Projects

2017/2020: Oxytocin: On the psychophysiology of trust and cooperation. Coordinator: Diana Prata. Funding Agency: BIAL. Reference: BIAL DPrata. Amount: € 50 000,00. Total Amount: € 50 000,00.

2016/2017: Social and non-social reinforcement learning in humans: a model-based pharmacofMRI approach. Coordinator: Diana Prata. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: BIG 2016 DPrata. Amount: € 97 335,00. Total Amount: € 97 335,00.

2015/2020: Oxytocin and dopamine interplay in humans - on the biological basis of cooperation. Coordinator: Diana Prata. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/00787/2014/CP1236/CT0005. Amount: € 50 000,00. Total Amount: € 50 000,00.

2015/2018: BIOSOCIOCOG: Oxytocin and Dopamine Interplay in Humans – on the Biology of Social Cognition. Coordinator: Diana Prata. Funding Agency: European Commission. Reference: MSCA CIG 631952. Amount: € 100 000,00. Total Amount: € 100 000,00.

Other Projects

2016/2018: SynaNet: Neurologic and Psychiatric disorders: from synapses to networks. Coordinator: Ana Sebastião. Funding Agency: European Commission. Reference: TWINNING 692340. Amount: € 525 437,50. Total Amount: € 999 996,25.

Domingos Henrique Lab

Major Interests / Objectives

Research in our laboratory has been focused on understanding how cells decide which differentiation paths they follow during embryonic development to generate tissues and organs. Our aim is to elucidate the gene regulatory networks that control cell-fate decision processes in the embryo, using 2 experimental models: i) embryonic stem cells to study the mechanisms underlying their pluripotent state, and ii) neural retina to investigate how neural progenitors generate the variety of neurons that compose the adult eye. The main goal is to understand the molecular mechanisms governing decision processes that stem/progenitor cells employ to differentiate along various fates, thereby generating correctly patterned tissues and organs.

Head of Laboratory

Domingos Manuel Pinto Henrique, PhD, Assistant Professor (Left December)

Team

João Manuel Coelho Carreira	PhD Student	PhD Student (Left December)
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Laboratory Keywords / Research Areas

Stem cells, Notch signalling, Pluripotency, Neurogenesis, Gene regulatory networks, Systems biology.

Major Scientific Achievements

In 2018, activities in our laboratory included:

- Organisation of an 8-week course for the LisbonBioMed international PhD Programme at IMM;
- Organisation of a 1-week course on Stem Cell Biology for the international PhD Programme in Bioengineering – Cell Therapies and Regenerative Medicine.

Other Projects

2016/2018: ReTuBi: Towards outstanding research and training in tumour. Coordinator: Edgar Gomes. Funding Agency: European Commission. Reference: Twinning 692322. Amount: € 788 725,00. Total Amount: € 999 975,00.

Publications in Peer Review Journals

Henrique D, Schweisguth F. Mechanisms of Notch signalling: a simple logic deployed in time and space. *Development* (in press). (IF: 5.413, Citations:--. Source: Web of Science).

Communications in International Conferences

Gaspar C, Rosa A, Henrique D. Unique Dll4 function in regulating the Horizontal cell fate in the developing mouse neural retina. BSDB Spring Meeting, University of Warwick, England, April 15-18, 2018.

Henrique D. Dll4 functions in the developing mouse neural retina. Joint Meeting of the Portuguese, Spanish and French Societies for Developmental Biology, Porto, Portugal, November 7-10, 2018.

Advanced Teaching

Henrique D. Organized the 8-week course "Towards a Creative and Critical Mind" for the LisbonBioMed International PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 8-March 2, 2018.

Henrique D. Organized the 1-week course on Stem Cell Biology for the International PhD Programme in Bioengineering – Cell Therapies and Regenerative Medicine, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, March 5-9, 2018.

Edgar Gomes Lab

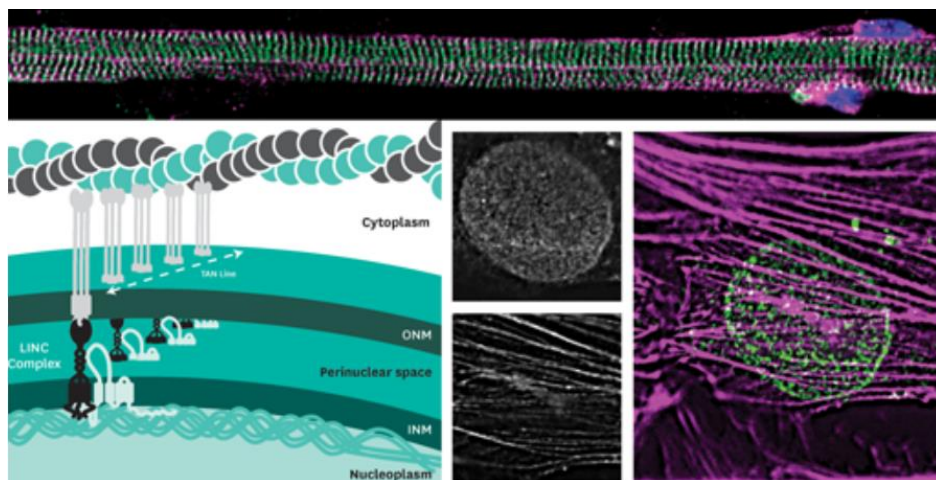
Major Interests / Objectives

Connecting the nucleus to the cytoskeleton is relevant for multiple cellular processes and disruption of these connections result in multiple pathologies. Nuclear positioning within cell cytoplasm requires the connection between the nucleus and the cytoskeleton. We are interested in understanding the processes involved in these connections and the role for nuclear positioning in cell function. We study cell migration and skeletal myofiber formation, which involves the connection between the nucleus and the cytoskeleton and precise nuclear positioning. We use different molecular and cellular approaches in combination with time-lapse imaging analysis to address these questions.

Head of Laboratory

Edgar Rodrigues Gomes, PhD

Graphical Abstract



Team

Ana Sofia Carvalho Marques	Graduate	MSc Student (Started September)
Anna Pezzarossa	PhD	Lab Technician (Left December)
Cátia Alexandra da Silva Janota	Master	PhD Student
Francisco Javier Calero Cuenca	PhD	Junior Post-Doctoral Researcher
Graciano da Silva Leal	PhD	Senior Post-Doctoral Researcher
Helena Alexandra Ribeiro de Carvalho Pinheiro	Master	PhD Student
João Pedro Nunes Paulo da Silva Martins	Master	PhD Student
Liliana Leonor Miranda Bento	Master	Junior Project Manager (Left October)

Lou Martha Wackerbarth	Graduate	MSc Student (Started October)
Mafalda Ramos de Melo Pimentel	Master	PhD Student
Maria Judite Sousa da Costa	PhD	Lab Manager
Miguel Filipe Martins Louro Alves	Graduate	MSc Student (Started April Left July)
Sara Raquel Reis de Oliveira Franco Pinheiro	PhD	Lab Technician (Left April)
Sara Sofia Gasalho Ferreira	Graduate	Lab Technician
Srchaiyanya Sridhara	PhD	Junior Post-Doctoral Researcher (Left April)
William Roman	PhD	Junior Post-Doctoral Researcher

Laboratory Keywords / Research Areas

Skeletal muscle, Cell migration, Cell biology, Cytoskeleton.

Major Scientific Achievements

We identified that peripheral nuclear positioning during myofiber development is locally activated by fibronectin secreted from myofibroblasts during embryonically and post-natal development. We found that myofibroblasts secrete fibronectin that activates integrins in muscle cells. Activated integrins then activate Cdc42 via Fak and Src kinases, leading to local triggering of myofibril cross-linking by desmin (Roman, Martins *et al.* Dev. Cell, 2018).

We were also involved in the identification of a role for the connection between the nucleus and the cytoskeleton to regulate the activation and release of trans-membrane membrane-type 1 matrix metalloproteinase (MT1-MMP) during breast cancer tumour invasion (Infante E *et al.*, Nat Commun, 2018).

Selected Publications

Gimpel P, Lee YL, Sobota RM, Calvi A, Koullourou V, Patel R, Mamchaoui K, Nédélec F, Shackleton S, Schmoranzler J, Burke B, Cadot B, Gomes ER (2017). Nesprin-1 α -Dependent Microtubule Nucleation from the Nuclear Envelope via Akap450 Is Necessary for Nuclear Positioning in Muscle Cells. *Current Biology*, doi.org/10.1016/j.cub.2017.08.031. (IF: 8.9, Citations: 19. Source: Web of Science).

Roman W, Martins J, Carvalho FA, Voituriez R, Abella JVG, Santos NC, Cadot B, Way M, Gomes ER (2017). Myofibril contraction and cross-linking drive nuclear movement to the periphery of skeletal muscle. *Nature Cell Biology*, 1189–1201 (2017) doi:10.1038/ncb3605. (IF: 20.1, Citations: 11. Source: Web of Science).

Janota CS, Calero-Cuenca FJ, Costa J, Gomes ER (2017). SnapShot: Nucleo-cytoskeletal Interactions. *Cell*, 2017; 169(5):970-970.e1. (IF: 31.4, Citations: 4. Source: Web of Science).

Vilmont V, Cadot B, Ouanounou G, Gomes ER (2016). A system to study mechanisms of neuromuscular junction development and maintenance. *Development*, 143: 2464-2477 (2016). doi:10.1242/dev.130278. (IF: 5.8, Citations: 4. Source: Web of Science).

Falcone S, Roman W, Hnia K, Gache V, Didier N, Lainé J, Aurade F, Marty I, Nishino I, Charlet-Berguerand N, Romero N, Marazzi G, Sassoon D, Laporte J, Gomes ER (2014). N-WASP is required for Amphiphysin-2/BIN1 dependent nuclear positioning and triad organization in skeletal muscle and is involved in the pathophysiology of centronuclear myopathy. *EMBO Molecular Medicine*, 6: 1455–1475. (IF: 10.3, Citations: 27. Source: Web of Science).

Metzger T, Gache V, Xu M, Cadot B, Folker E, Richardson B, Gomes ER*, Baylies MK* (2012). MAP and Kinesin dependent nuclear positioning is required for skeletal muscle function. *Nature* 484: 120–124, *co-last and corresponding author. (IF: 41.6, Citations: 106. Source: Web of Science).

Cadot B, Gache V, Vazyutina E, Falcone S, Birchmeier C, Gomes ER (2012). Nuclear movement during myotube formation is microtubule and dynein dependent and is regulated by Cdc42, Par6 and Par3. *EMBO Reports*, 13(8):741-9. (IF: 8.6, Citations: 56. Source: Web of Science).

Luxton GW*, Gomes ER*, Folker ES, Vintinner E, Gundersen GG (2010). Linear arrays of nuclear envelope proteins harness retrograde actin flow for nuclear movement. *Science*, 329(5994): 956-9. *co-first author. (IF: 37.2, Citations: 220. Source: Web of Science).

Gomes ER, Jani S, Gundersen GG (2005). Nuclear movement regulated by Cdc42, MRCK, myosin, and actin flow establishes MTOC polarization in migrating cells, *Cell*, 121: 451-63. (IF: 31.4, Citations: 367. Source: Web of Science).

Ongoing Research Projects

2018/2022: MyoChip: Building a 3D innervated and irrigated muscle on a chip. Coordinator: Edgar Gomes. Funding Agency: European Commission. Reference: MyoChip 801423. Amount: € 1 266 861,25. Total Amount: € 3 153 553,74.

2018/2021: Posicionamento do núcleo das células musculares esqueléticas. Coordinator: Edgar Gomes. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: 031075/2017. Amount: € 239 999,86. Total Amount: € 239 999,86.

2018/2018: Role for the microenvironment on nuclear positioning in myofibers. Coordinator: Edgar Gomes. Funding Agency: AFM-Téléthon - SP du CS. Reference: AFM-Telethon. Amount: € 51 000,00. Total Amount: € 51 000,00.

2018/2018: Discovering the mechanisms underlying intrinsic repair of muscle cells in wildtype and sarcopenia. Coordinator: William Roman. Funding Agency: AFM-Téléthon - SP du CS. Reference: AFM-Telethon. Amount: € 35 000,00. Total Amount: € 35 000,00.

2016/2018: ReTuBi: Towards outstanding research and training in tumour. Coordinator: Edgar Gomes. Funding Agency: European Commission. Reference: Twinning 692322. Amount: € 788 725,00. Total Amount: € 999 975,00.

2016/2018: Muscleguy: A novel muscle disorders 3D *in vitro* system for drug screening and validation. Coordinator: Edgar Gomes. Funding Agency: European Commission. Reference: ERC PoC 713612. Amount: € 150 000,00. Total Amount: € 150 000,00.

2014/2019: Phonics: Positioning the nucleus for cell migration and muscle fiber function. Coordinator: Edgar Gomes. Funding Agency: European Commission. Reference: ERC CoG 617676. Amount: € 1 968 000,00. Total Amount: € 1 968 000,00.

2014/2019: Positioning the Cell Nucleous. Coordinator: Edgar Gomes. Funding Agency: European Molecular Biology Organisation. Reference: EMBO IG EGomes. Amount: € 250 000,00. Total Amount: € 250 000,00.

2014/2019: Positioning the nucleus for cell migration and muscle fiber function. Coordinator: Edgar Gomes. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/01477/2013. Amount: € 50 000,00. Total Amount: € 50 000,00.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria do Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

Publications in Peer Review Journals

Roman W, Martins J, Gomes ER (2018). Local arrangement of fibronectin by myofibroblasts governs peripheral nuclear positioning in muscle cells. *Developmental Cell*, (1):102-111.e6. doi: 10.1016/j.devcel.2018.05.031. (IF: 9.6, Citations: 1. Source: Web of Science).

Roman W, Pimentel MR, Gomes ER (2018). An In Vitro System to Measure the Positioning, Stiffness, and Rupture of the Nucleus in Skeletal Muscle. *Methods in Molecular Biology*, 1840:283-293. doi: 10.1007/978-1-4939-8691-0_19 (IF:--, Citations: 0. Sources: Scopus).

Infante E, Castagnino A, Ferrari R, Monteiro P, Agüera-González S, Paul-Gilloteaux P, Domingues MJ, Maiuri P, Raab M, Shanahan CM, Baffet A, Piel M, Gomes ER, Chavrier P (2018). LINC complex-Lis1 interplay controls MT1-MMP matrix digest-on-demand response for confined tumour cell migration. *Nature Communications*, 9(1):2443. doi: 10.1038/s41467-018-04865-7. (IF: 12.353, Citations: 3. Sources: Web of Science and Scopus).

Invited Lectures and Seminars

Gomes ER. Institute NeuroMyoGene, Lyon, France, 2018. Invited by: Benedicte Chazaud.

Gomes ER. Institute Advanced Biosciences, Grenoble, France, 2018. Invited by: Corinne Albiges-Rizo.

Gomes ER. University of Toronto, Toronto, Canada, 2018. Invited by: Alexandre Palazzo.

Gomes ER. University Boston College, Boston, USA, 2018. Invited by: Eric Folker.

Gomes ER. Organising perinuclear cytoskeleton for nuclear positioning in migrating cells. German Society for Cell Biology, Potsdam, Germany, 2018.

Communications in International Conferences

Gomes ER. Organising perinuclear cytoskeleton for nuclear positioning in migrating cells. German Society for Cell Biology, Potsdam, Germany, 2018. (Oral Presentation). Funded by ERC Phonics.

Leal G, Pimentel M, Gomes ER. Regulation of excitation-contraction coupling by nuclei positioning. Muscle Development, Regeneration and Disease 2018 Meeting, Berlin, Germany, April 22-27, 2018. (Poster Presentation). Funded by ERC Phonics.

Calero F, Gomes ER. Dullard-Eps8L2 interaction regulates nuclear positioning in migrating fibroblasts by perinuclear actin reorganisation. FEBS Advanced Lecture Course 2018 - Biology and pathology of cytoskeleton: the crossroads of three cytoskeletal systems, Prague, Czech Republic, September, 20-24, 2018. (Oral Presentation). Funded by ERC Phonics.

Pinheiro H, Pimentel M, Gomes ER. Linking mRNA degradation to mRNA localisation in SKELETAL MUSCLE CELLS. EMBO|EMBL Symposium: The Complex Life of RNA, EMBL Heidelberg, Germany, October 3-6, 2018. (Poster Presentation). Funded by ERC Phonics.

Janota CS, Costa J, Gomes ER. A new player in the orchestra of nuclear movement. ASCB/EMBO 2018, San Diego, California, USA, December 8-12, 2018. (Oral Presentation). Funded by ERC Phonics.

Organisation of Conferences

Symposia on Tumour Biology: from basic biology to disease, Lisbon, Portugal, December 5-7, 2018.

Cell Migration Scientific Symposium, Douro, Portugal, May 2-4, 2018.

Internationalisation

Gomes ER. Coordinates a European FET OPEN project “Generating a 3D in vitro innervated and vascularised muscle”.

Gomes ER. Coordinates an EU H2020 Twinning project “Towards outstanding research and training in tumour biology at iMM” between Instituto de Medicina Molecular João Lobo Antunes (Lisbon), Institut Curie (France) and DKFZ (Germany) to promote interactions between these institutes.

Several members of the EGomes Lab spent the months of June and July at the Marine Biological Laboratory (MBL), University of Chicago interacting with multiple groups from US and Europe.

Prizes, Honours and Awards

Whitman Center Fellowship, Marine Biological Laboratory, University of Chicago, Chicago, USA.

Advanced Teaching

Gomes ER. “Introdução à Engenharia Biomédica”. Mestrado Integradado em Medicina. Subject: Practical classes of lab rotations on muscle organoids.

Gomes ER. Mestrado em Oncobiologia, Faculdade de Medicina, Universidade Lisboa, 18 hours. Subject: Practical classes of lab rotations on cell migration and cancer metastasis.

Gomes ER. “Engenharia de Células e Tecidos”. Mestrado Integrado Engenharia Biomédica, Instituto Superior Técnico, Lisbon. Subject: Stem cell differentiation and regeneration. Skeletal muscle development. Skeletal muscle physiology. Organoids. 2 hours

Gomes ER. Tissues, Cells and Molecules, Mestrado integrado em Medicina, Nova Medical School, Lisbon. Subject: Cytoskeleton; Cell division; Cell migration; Pathologies caused by cytoskeleton disruptions. 3 hours.

Gomes ER. Stem Cell Biology course of the Bioengineering – Cell Therapies and Regenerative Medicine PhD Programme, Lisbon, Portugal. 4 hours. Subject: Muscle development and regeneration. Muscle Organoids. Muscle function

Gomes ER. LisbonBioMed PhD Programme, Lisbon, Portugal. 40 hours. Subject: Cytoskeleton, cell migration, stem cell differentiation, muscle development, muscle regeneration, neuromuscular disorders.

Science and Society

Coordination of the production of brochures, newsletters, videos, website content, maintenance of LinkedIn to promote Cancer Biology research (<http://tumourbiology.eu>).

Interviews in media (TV and newspapers) regarding the project ERC Synergy “Defining the role of Arp2/3 complex diversity at multiple scales of biology” and the project FET OPEN “Generating a 3D *in vitro* innervated and vascularised muscle” (e.g. Expresso, Público, etc).

MSc Thesis Completed

Ana Duarte, 2017-2018, “The DNA damage response in terminally differentiated skeletal myotubes”, Master student.

Gonçalo Bernardes Lab

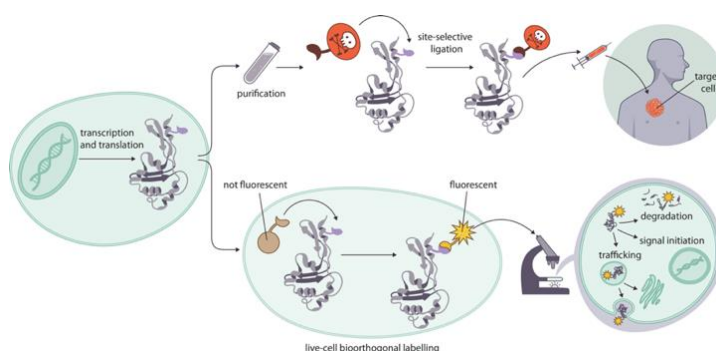
Major Interests / Objectives

Our laboratory uses chemical principles to address questions of importance in life sciences and molecular medicine. At the core of our research programme is the development of novel chemoselective methods that are compatible with biological systems, and their use to redesign the structure & function of proteins of biological & therapeutic interest, with the aim of understanding & influencing human disease. In the area of synthetic biology, we are mostly interested in the specific delivery of toxic molecules to cancer cells and in the construction of homogenous glycoproteins as vaccines candidates. We are also investigating the delivery of therapeutic amounts of CO to diseased tissues, using CO-releasing molecules that have the potential to become safe treatments, by controlling CO release *in vivo* in a spatial and temporal manner. And finally, we are using principles of data science and statistical learning to swiftly deconvolute phenotypic screen hits, and prioritise target-based biochemical assays. To that end, we have assembled a platform leveraging proprietary machine learning models for drug target identification.

Head of Laboratory

Gonçalo José Lopes Bernardes, D. Phil

Graphical Abstract



Team

Alexandra Isabel Freitas Rosa	PhD	Junior Project Manager (Started October)
Ana Filipa Pintéus da Cruz	PhD	Visiting Researcher (Left June)
Ana Maria dos Santos Guerreiro	Master	PhD Student
Annabel Katharina Kitowski	Master	PhD Student
Bárbara Beatriz da Costa Botelho Sousa	Master	Trainee

Bruno Luís Jesus Pinto de Oliveira	PhD	Senior Post-Doctoral Researcher (Started September)
Carlos Diogo Labão Alpiarça Sousa de Almeida	Master	PhD Student
Carolina Ting-Ting Qiu Mexia de Azeredo	Graduate	Trainee (Started July Left September)
Cátia Diana Parente Caldeira Carvalho	PhD	Junior Post-Doctoral Researcher
Charlotte Louise Baker	Master	PhD Student
Cláudia Filipa Martins Afonso	Master	PhD Student (Started March)
João Daniel da Silva Seixas	PhD	Staff Scientist
João Diogo Osorio de Castro Conde	PhD	Junior Post-Doctoral Researcher
Maria Inês Sousa de Albuquerque	Master	PhD Student
Marta Franco Coimbra Marques	PhD	Senior Post-Doctoral Researcher
Max Worthington	Graduate	Visiting Researcher (Started September Left November)
Padma Akkapeddi	Master	PhD Student
Pedro Miguel Saraiva Duarte Cal	PhD	Senior Post-Doctoral Researcher
Pedro Ricardo Morgado Henriques	Master	PhD Student
Roberto Russo	Master	PhD Student
Rui Miguel Petrucci Albuquerque Traquete	Master	PhD Student (Left July)
Sigitas Mikutis	Master	PhD Student (Started January Left February)
Tiago Correia de Oliveira Rodrigues	PhD	Staff Scientist

Laboratory Keywords / Research Areas

Site-selective protein modification, Bioorthogonal chemistry, Synthetic biologics, Targeted cancer therapeutics, Carbohydrate-based vaccines, Machine learning.

Major Scientific Achievements

Our research group has made significant advances in the areas of reaction engineering for protein modification, machine-learning models for drug target identification and antibody therapeutics. Key highlights include:

D.-A. Silva, et al.; **G.J.L. Bernardes**; M. Dougan; C. Garcia; D. Baker (2019) “De novo design of potent and selective mimics of IL-2/IL-15”, Nature, DOI: 10.1038/s41586-018-0830-7.

A designer interleukin-2 mimetic that binds to the β and γ subunits of IL-2R but not the α one was developed and analysed in my laboratory to show that the mimetic tendentiously retards tumour growth more efficiently than the same concentration of IL-2. Importantly, we demonstrated that by avoiding IL-2R α -binding we circumvent the increase in T regulatory cells, which is observed with IL-2 treatments and detrimental during cancer therapy.

P. Akkapeddi et al. **G.J.L. Bernardes***, J. T. Barata* (2019) “A fully human anti-IL-7R α antibody promotes anti-tumor activity against T-cell acute lymphoblastic leukemia”, *Leukemia*, Accepted for publication.

We generated a fully human IgG1 monoclonal antibody against wild type and mutant gain-of-function human IL-7R. This antibody impaired signalling downstream from IL-7R, induced cell death and, importantly, sensitised T-ALL cells to dexamethasone. The antibody promotes antibody-dependent NK-mediated leukaemia cytotoxicity *in vitro* and delays leukaemia development *in vivo* by reducing tumour burden and promoting survival of treated mice. These studies show the viability of antibody-based therapies against T-ALL and diseases in which IL-7R plays a pathological role.

B. Bernardim, et al., **G.J.L. Bernardes*** (2019) “Efficient and irreversible antibody-cysteine bioconjugation using carbonylacrylic reagents”, *Nature Protoc.* 14, 86.

B. Bernardim B; et al. **G.J.L. Bernardes*** (2016) “Stoichiometric and Irreversible Cysteine-selective Protein Modification using Carbonylacrylic Reagents”, *Nature Commun.* 7, 13128.

These publications report the development of carbonylacrylic acid derivatives for cysteine selective and irreversible antibody conjugation. The conjugates are stable in human plasma and the method can be routinely used to generate homogenous conjugates even with low equivalents of valuable reagents.

M.J. Matos, B.L. Oliveira, N. Martínez-Sáez, A. Guerreiro, P.M.S.D. Cal, et al., **G.J.L. Bernardes*** (2018) “Chemo and regioselective lysine modification on native proteins”, *J. Am. Chem. Soc.* 140: 4004–4017.

Highlighted in *Chemical&Engineering News*, 2018, Volume 96, Issue 11, p. 13, March 12, 2018 “Computer-designed reagent targets lysine for protein modification”; *Phys.org* “How to spark a chemical chain reaction”, March 9, 2018, Most read articles in the *J. Am. Chem. Soc.* March & April 2018.

Inspired by nature and the ways enzymes are able to confer very different reactivities to lysines, converting some of these lysines into excellent nucleophilic catalysts (e.g. in aldolases), we have designed a sulfonyl acrylate reagent that can be directed through hydrogen bonding to specifically modify the most nucleophilic lysine on native protein sequences even in the presence of other nucleophilic groups such as the thiol of cysteine. The reaction is fast and proceeds using

a single molar equivalent of the sulfonyl acrylate reagent under biocompatible conditions (37 °C and pH 8.0) and was applied on six different proteins including a therapeutic antibody. The conjugates formed are stable in plasma and retain the protein's innate activity. This simple and robust method does not require genetic engineering and may be generally used for accessing diverse, well-defined protein conjugates for basic biology and therapeutic studies.

Selected Publications

Silva D-A, Yu S, Ulge U, Spangler JB, Jude KM, Labão-Almeida C, Ali LR, Quijano-Rubio A, Ruterbusch M, Leung I, Biary T, Crowley S, Marcos E, Walkey CD, Weitzner BD, Pardo-Avila F, Carter L, Stewart L, Riddell S, Pepper M, Bernardes GJL, Dougan M, Garcia C, Baker D (2019). De novo design of potent and selective mimics of IL-2/IL-15. *Nature*, 565: 186–191. (IF: 41.577, Citations: 0. Sources: Web of Science and Scopus).

See also, “Designer protein delivers signal of choice” E. Yvonne Jones, *Nature* 2019, 565: 165–166.

“Researchers redesign a cancer-busting protein—without the side effects” Service RF, *Science* 2019, doi:10.1126/science.aaw6158.

Sun S, Oliveira BL, Jiménez-Osés G, Bernardes GJL (2018). Radical-mediated thiol-ene strategy for photoactivation of thiol-containing drugs in cancer cells. *Angew Chem*, 57: 15832–15835. (IF:--, Citations: 0. Sources: Web of Science and Scopus).

Rodrigues T, Werner M, Roth J, da Cruz EHG, Marques MC, Akkapeddi P et al, Bernardes GJL (2018). Machine intelligence decrypts β -lapachone as an allosteric 5-lipoxygenase inhibitor. *Chemical Science*, 9: 6885–7018. (IF: 9.063, Citations: 1. Sources: Web of Science and Scopus). Highlight Chemistry World 2018, 26 July 2018, “Artificial intelligence seeks out new anticancer drugs”.

Bernardim B, Matos MJ, Ferhati X, Compañón I, Guerreiro A, Akkapeddi P et al., Bernardes GJL (2019). Efficient and irreversible antibody-cysteine bioconjugation using carbonylacrylic reagents. *Nature Protocols*, 14: 86–99. (IF: 12.423, Citations:--. Sources: Web of Science and Scopus).

Stenton BJ, Oliveira BL, Matos MJ, Sinatra L, Bernardes GJL (2018). A Thioether-directed Palladium-cleavable Linker for Targeted Bioorthogonal Drug Decaging. *Chemical Science*, 9: 4185–4189. (IF: 9.063, Citations: 4. Sources: Web of Science and Scopus).

Matos MJ, Oliveira BL, Martínez-Sáez N, Guerreiro A, Cal PMSD, Bertoldo J et al., Bernardes GJL (2018). Chemo and regioselective lysine modification on native proteins. *Journal of the American Chemical Society*, 140: 4004–4017. (IF: 14.357, Citations: 18. Sources: Web of Science and Scopus).

Highlighted in *Chemical&Engineering News*, 2018, Volume 96, Issue 11, p. 13, March 12, 2018, “Computer-designed reagent targets lysine for protein modification”.

Ongoing Research Projects

2018/2021: Libertação controlada de agentes bioactivos por reacção química selectiva. Coordinator: Tiago Rodrigues. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: TzDD - LISBOA-01-0145-FEDER-028333. Amount: € 238 166,90. Total Amount: € 238 166,90.

2018/2021: Entrega intracelular de fármacos usando conjugados entre pequenas células e fármacos para terapia do Cancro da Próstata. Coordinator: João Seixas. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MED-QUI/28764/2017. Amount: € 239 960,32. Total Amount: € 239 960,32.

2018/2021: Nanoparticle-Based Therapeutic Applications and Detection of Carbon Monoxide Releasing. Coordinator: Tiago Rodrigues. Funding Agency: European Commission. Reference: Twinning-ACORN. Amount: € 353 750,00. Total Amount: € 1 000 000,00.

2017/2019: TRPLigDrugConj: TRPV1-targeted ligand-drug conjugates to treat prostate cancer. Coordinator: Tiago Rodrigues. Funding Agency: European Commission. Reference: MSCA IF 743640. Amount: € 160 635,60. Total Amount: € 160 635,60.

2016/2019: Unravelling Bronic Acids Bioconjugation and Targeted Delivery. Coordinator: Gonçalo Bernardes. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/QEQ-QOR/1434/2014. Amount: € 20 000,00. Total Amount: € 195 060,00.

2016/2018: LDC4PCaTher: BMX-Targeted Ligand-Drug Conjugates for Prostate Cancer Therapy. Coordinator: João Seixas. Funding Agency: European Commission. Reference: MSCA IF 702428. Amount: € 160 635,60. Total Amount: € 160 635,60.

2016/2018: Molecular Imaging Techniques of Liver Fibrosis. Coordinator: Gonçalo Bernardes. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: HMSP-ICT/0012/2013. Amount: € 142 300,00. Total Amount: € 142 300,00.

2015/2019: GLYCOVAX: A training network for the rational design of the next generation of well-defined glycoconjugate vaccines. Coordinator: Gonçalo Bernardes. Funding Agency: European Commission. Reference: MSCA ITN 675671. Amount: € 238 356,36. Total Amount: € 3 554 499,69.

2015/2019: ProteinConjugates: A training network for the chemical site-selective modification of proteins: Preparation of the next-generation of therapeutic chemically-defined protein conjugates. Coordinator: Gonçalo Bernardes. Funding Agency: European Commission. Reference: MSCA ITN 675007. Amount: € 741 939,48. Total Amount: € 2 542 771,03.

2014/2018: PerBioImag: Exploring pericyclic reactions for bioorthogonal imaging of biological. Coordinator: Gonçalo Bernardes. Funding Agency: European Commission. Reference: MSCA CIG 630731. Amount: € 100 000,00. Total Amount: € 100 000,00.

2014/2018: Modulation and targeting of calcium channels with ligand-drugs conjugates for selective cancer cell killing. Coordinator: Gonçalo Bernardes. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/00014/2012. Amount: € 50 000,00. Total Amount: € 50 000,00.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

Publications in Peer Review Journals

Sun S, Oliveira BL, Jiménez-Osés G, Bernardes GJL (2018). Radical-mediated thiol-ene strategy for photoactivation of thiol-containing drugs in cancer cells. *Angewandte Chemie International Edition*, 57: 15832–15835. (IF: 12.102, Citations: 0. Sources: Web of Science and Scopus).

Rodrigues T, Werner M, Roth J, da Cruz EHG, Marques MC, Akkapeddi P et al, Bernardes GJL (2018). Machine intelligence decrypts β -lapachone as an allosteric 5-lipoxygenase inhibitor. *Chemical Science*, 9: 6885–7018. (IF: 9.063, Citations: 1. Sources: Web of Science and Scopus). Deposited on ChemRxiv Preprint server on March 26th, 2018. <https://doi.org/10.26434/chemrxiv.6026795.v1>. Highlighted in Chemistry World 2018, July 26th, 2018 “Artificial intelligence seeks out new anticancer drugs”.

Bertoldo JB, Terenzi H, Hüttelmaier S, Bernardes GJL (2018). Posttranslational chemical mutagenesis: to reveal the role of non-catalytic cysteine residues in pathogenic bacterial phosphatases. *Biochemistry*, 57: 6144–6152. (IF: 2.997, Citations:-- . Sources: Web of Science and Scopus).

Mutter NL, Soskine M, Huang G, Albuquerque IS, Bernardes GJL, Maglia G (2018). Modular pore-forming immunotoxins with caged cytotoxicity tailored by directed evolution. *ACS Chemical Biology*, 13: 3153–3160. (IF: 4.592, Citations: 0. Sources: Web of Science and Scopus).

Davies D, Stenton BJ, Bernardes GJL (2018). Bioorthogonal Decaging Reactions for Targeted Drug Activation. *Chimia*, 72: 771–776. (IF: 1.245, Citations: 0. Sources: Web of Science and Scopus).

Robke L, Rodrigues T, Schröder P, Foley DJ, Bernardes GJL, Laraia L, Waldmann H (2018). Discovery of 2,4-dimethoxypyridines as novel autophagy inhibitors. *Tetrahedron*, 74: 4531–4537. (IF: 2.377, Citations: 0. Sources: Web of Science and Scopus).

Stenton BJ, Oliveira BL, Matos MJ, Sinatra L, Bernardes GJL (2018). A Thioether-directed Palladium-cleavable Linker for Targeted Bioorthogonal Drug Decaging. *Chemical Science*, 9: 4185–4189. (IF: 9.063, Citations: 4. Sources: Web of Science and Scopus).

Matos MJ, Oliveira BL, Martínez-Sáez N, Guerreiro A, Cal PMSD, Bertoldo J, Maneiro M, Perkins E, Howard J, Deery MJ, Chalker JM, Corzana F, Jiménez-Osés G, Bernardes GJL (2018). Chemo and regioselective lysine modification on native proteins. *Journal of the American Chemical Society*, 140: 4004–4017. (IF: 14.357, Citations: 18. Sources: Web of Science and Scopus).

Highlighted in *Chemical&Engineering News*, 2018, Volume 96, Issue 11, p. 13, March 12, 2018 “Computer-designed reagent targets lysine for protein modification”; *Phys.org* “How to spark a chemical chain reaction”, March 9, 2018. Most read articles in the *J. Am. Chem. Soc.* March & April 2018.

Rodrigues T, Bernardes GJL (2018). Development of antibody-directed therapies: Quo vadis? *Angewandte Chemie International Edition*, 57: 2032–2034. (IF: 12.102, Citations: 3. Sources: Web of Science and Scopus).

Matos MJ, Labão-Almeida C, Sayers C, Dada O, Tacke M, Bernardes GJL (2018). Synthesis and Biological Evaluation of Homogeneous Thiol-Linked NHC*-Au-Albumin and -Trastuzumab Bioconjugates. *Chemistry – A European Journal*, 24: 12250–12253. (IF: 5.16, Citations: 0. Sources: Web of Science and Scopus).

Special Issue to commemorate young and emerging scientists.

Worthington MJH, Shearer CJ, Esdaile LJ, Campbell JA, Gibson CT, Legg SK, Yin Y, Lundquist NA, Gascooke JR, Albuquerque IS, Shapter JG, Andersson GG, Lewis DA, Bernardes GJL, Chalker JM (2018). Sustainable Polysulfides for Oil Spill Remediation: Repurposing Industrial Waste for Environmental Benefit. *Advanced Sustainable Systems*, 2: 1800024. (IF:--, Citations: 2. Sources: Web of Science and Scopus).

Highlighted in The Guardian “Researchers create super sponge that mops up oil spills”

Scroggie KR, Alcock LJ, Matos MJ, Bernardes GJL, Perkins MV, Chalker JM (2018). A silicon-labelled amino acid suitable for late-stage fluorination and unexpected oxidative cleavage reactions in the preparation of a key intermediate in the Strecker synthesis. *Peptide Science*: 110, e24069. (IF:--, Citations: 0. Sources: Web of Science and Scopus).

Special Issue: Emerging Peptide Science in Australia.

Lee B, Sun S, Jiménez-Moreno E, Neves AA, Bernardes GJL (2018). Site-selective installation of an electrophilic handle on proteins for bioconjugation. *Bioorganic and Medicinal Chemistry*, 26: 3060–3064. (IF: 2.881, Citations: 0. Sources: Web of Sciences and Scopus).

Invited contribution for special issue honoring Matthew Fuchter.

Sun S, Compañón I, Martínez-Sáez N, Seixas JD, Omar Boutureira O, Corzana F, Bernardes GJL (2018). Enhanced permeability and binding activity of isobutylene-grafted peptides. *ChemBioChem*, 19: 48–52. (IF: 2.774, Citations: 2. Sources: Web of Science and Scopus).

Alcock LJ; Farrell KD; Akol MT; Jones GH; Tierney MM; Kramer HB; Pukala TL; Bernardes GJL; Perkins MV; Chalker JM (2018). Norbornene probes for the study of cysteine oxidation. *Tetrahedron*, 74: 1220–1228. (IF: 2.377, Citations: 2. Sources: Web of Science and Scopus).

Invited Lectures and Seminars

Bernardes GJL. 1st Alpine Winter Conference on Medicinal and Synthetic Chemistry, St. Anton, Austria, January 2018.

Bernardes GJL. Chemical Biology Program of Memorial Sloan Kettering Cancer Center, USA, March 2018. Host: Prof. Derek Tan.

Bernardes GJL. Perelman School of Medicine Department of Systems Pharmacology and Translational Therapeutics, Philadelphia, USA, March 2018. Host: Prof. Vera Moiseenkova-Bell.

Bernardes GJL. Quo Vadis Chemistry Series. Charles University, Prague, Czech Republic, April 2018.

Bernardes GJL. Detlef Schroeder Seminar Lecture Series. IOCB, Prague, Czech Republic, April 2018.

Marques M, Sousa B. Invited Speakers. Biophysics Party, ITQB-NOVA, Lisbon, Portugal, June 6, 2018.

Bernardes GJL. 29th International Carbohydrate Symposium in 2018 (ICS 2018), Lisbon, Portugal, July 2018.

Bernardes GJL. Astbury Centre, Leeds, United Kingdom, August 2018. Host: Prof. Andrew Wilson.

Bernardes GJL. Invited Lecture – Symposium "Diminutive Molecules, Big Impact: The Chemistry of ADC Linker-Payloads". 255th ACS National Meeting and Exposition, Boston, USA, August 2018.

Bernardes GJL. Max-Planck Institute for Medical Research, Heidelberg, Germany, September 2018. Host: Prof. Kai Johnson.

Bernardes GJL. 17th Brazilian Meeting on Organic Synthesis (BMOS), Salvador, Bahia, Brazil, October 2018.

Seixas J, Kitowski A. Invited Speakers. Waters Farma Forum, November 28, 2018.

Bernardes GJL. University of California, Berkeley, USA, November 2018. Host: Profs. Chris Chang and Matthew Francis.

Bernardes GJL. The Scripps Research Institute, La Jolla, USA, November 2018. Host: Prof. Ben Cravatt.

Bernardes GJL. Laboratory of Organic Chemistry (LOC) of ETH Zürich, Zürich, Switzerland, December 2018. Host: Prof. Eric Carreira.

Bernardes GJL. EPFL, Lausanne, Switzerland, December 2018. Host: Prof. Jerome Waser.

Communications in International Conferences

Guerreiro A, Compañón I, Fiammengo R, Corzana F, Bernardes GJL. A synthetically defined glycoconjugate vaccine against cancer. ICS2018. (Poster Presentation). Supported by: Estratégico.

Kitowski A, Bernardes GJL. Metabolic Oligosaccharide Engineering - A Tool for Malaria Infection? ICS2018. (Poster Presentation). Supported by: Estratégico.

Jiménez-Moreno E, Kitowski A, Salvadó M, Mestre J, Castellón S, Jiménez-Osés G, Boutureira O, Bernardes GJL. Oxidative activation of C-S bonds with an electropositive nitrogen promoter enables orthogonal glycosylation of alkyl over phenyl thioglycosides. ICS2018. (Poster Presentation). Supported by: Estratégico.

Albuquerque IS, Somovilla VJ, Bermejo IA, Martínez-Sáez N, Peregrina JM, Corzana F, Bernardes GJL. Unnatural glycopeptides and glycoproteins and their use in antigen detection and immunization. ICS 2018. (Poster Presentation). Supported by: Estratégico.

Kitowski A. Side selective modification of CRM197 and 2. Metabolic oligosaccharide engineering during the hepatic stage of Malaria infection. (Oral Presentation) Supported by: GLYCOVAX.

Afonso C. The role of adenosine A2A receptors in SVZ-derived oligodendrogenesis. 2nd Annual Scientific Meeting of the Neurologic and Psychiatric Disorders: from synapses to networks (SynaNet). (Poster Presentation).

Baker C. Modulation of TRPV2 by Piperlongumine in glioblastoma. 2nd Symposium of ProteinConjugates ITN. (Oral Presentation). Supported by: ProteinConjugates.

Marques MC, Albuquerque IS, Traquete R, Rodrigues T, Vaz S, Bernardes GJL. Towards understanding the complexity of molecular interactions: a structure-based approach to develop high affinity leads. Chemical Biology 2018, EMBL, Heidelberg, Germany. (Poster Presentation). Supported by: ReTuBi.

Marques MC, Traquete R, Rodrigues T, Bernardes GJL. Towards understanding the complexity of molecular interactions: a structure-based approach to develop high affinity leads. iNEXT Workshop, ESRF- Grenoble, France. (Poster Presentation). Supported by: Estratégico.

Marques MC, Gutiérrez-Sánchez O, Tapia C, De Lacey A, Matias PM, Pereira IAC. The role of selenocysteine in the catalytic properties and maturation of [NiFeSe] hydrogenases. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón de la Plana, Spain. (Oral Presentation). Supported by: Sociedade Portuguesa de Biofísica).

Akkapeddi P. A phage display-generated fully human anti-IL-7R α antibody shows anti-tumor activity against T-cell acute lymphoblastic leukemia. SINAL Meeting 2018. (Oral Presentation). Supported by: ReTuBi.

Akkapeddi P. A phage display-generated fully human anti-IL-7R α antibody shows anti-tumor activity against T-cell acute lymphoblastic leukemia. 2nd Symposium of ProteinConjugates ITN. (Oral Presentation). Supported by: ProteinConjugates.

Akkapeddi P, Fragoso R, Hixon JA, Ramalho AS, Oliveira ML, Carvalho T, Gloger A, Matasci M, Corzana F, Durum SK, Neri D, Bernardes GJL, Barata JT. A phage display-generated fully human anti-IL-7R α antibody shows anti-tumor activity against T-cell acute lymphoblastic leukemia. ASPIC 2018. (Poster Presentation). Supported by: Estratégico 2018.

Akkapeddi P, Fragoso R, Hixon JA, Ramalho AS, Oliveira ML, Carvalho T, Gloger A, Matasci M, Corzana F, Durum SK, Neri D, Bernardes GJL, Barata JT. A phage display-generated fully human anti-IL-7R α antibody shows anti-tumor activity against T-cell acute lymphoblastic leukemia. Keystone Conference 2018. (Poster Presentation). Supported by: ReTuBi.

Akkapeddi P, Fragoso R, Hixon JA, Ramalho AS, Oliveira ML, Carvalho T, Gloger A, Matasci M, Corzana F, Durum SK, Neri D, Bernardes GJL, Barata JT. A phage display-generated fully human anti-IL-7R α antibody shows anti-tumour activity against T-cell acute lymphoblastic leukaemia. ASH2018. (Poster Presentation). Supported by: TwinToInfect.

Cal P. Chairman. 10th Annual PEGS Europe, Protein and Antibody Engineering Summit, Lisbon Congress Centre, Lisbon, Portugal, November 12-16, 2018.

Communications in National Conferences

Cal P. HiTech 2018 MidTerm Session, NOVA School of Business and Economics, Lisbon, Portugal, May 17, 2018.

Rodrigues T. Using artificial intelligence to understand the pharmacology of natural products. PYChem, Setúbal, Portugal, May 15-18, 2018. Project: FPJ1043.

Cal P. HiTech 2018 Closing Session, Porto Business School, Porto, Portugal, July 3, 2018.

Internationalisation

Short period stays abroad in the context of PhD projects of:

Baker C. Francisco Corzana Lab, La Rioja University, Spain, June 2018.

Kitowski A. GSK, Sienna, Italy, June-July 2018.

Akkapeddi P. Gonçalo Bernardes Lab, Cambridge, England, September-November 2018.

These short stays allowed these members of the group to learn new techniques and to outreach the work from the lab.

Prizes, Honours and Awards

Bernardes GJL. MedChemComm Emerging Investigator Lectureship 2018.

Bernardes GJL. Travel award. 33rd LatinAmerican Congress of Chemistry (CLAQ) QUIMICUBA 2018, Havana, Cuba, October 2018.

Marques MC. Award. Prize Jovem Biofísico 2018 by Sociedade Portuguesa de Biofísica (SPBf).

Industry Contract Research

Research Project in collaboration with Albumedix Ltd, which explores the use of albumin proteins to deliver cytotoxic drugs in the context of cancer. Two-year collaboration.

Patents / Prototypes

The following patent applications were submitted in 2018 by the Gonçalo Bernardes Lab:

1. 'Compounds for the treatment of obesity'. Domingos A, Bernardes GJL. WO Application No: PCT/EP2018/077352.
2. 'TRPV2 Antagonists'. Rodrigues T, Baker C, Conde J, Bernardes GJL. WO Application No: PCT/PT2018/050035.
3. '5-Lipoxygenase Antagonists'. Rodrigues T, Bernardes GJL. WO Application No: PCT/PT2018/050029.

Advanced Teaching

João Seixas was selected for HiSeedTech 2018, an entrepreneurship & technology transfer course in Life Sciences – Lisbon, Nova School of Business, March to July 2018 with a Final Presentation at Porto Business School, July 3, 2018.

Bernardes GJL. Supervisor of biological chemistry courses at Trinity Hall College, Cambridge, England, 2017-to date.

Bernardes GJL. Part III Course Internal Examiner, University of Cambridge, Cambridge, England, 2014-to date.

Bernardes GJL. Lecturer on Chemical Biology & Drug Discovery - Undergraduate Course, University of Cambridge, Cambridge, England, 2014-to date.

Bernardes GJL. Lecturer on Chemical Biology of Nucleic Acids - Undergraduate Course, University of Cambridge, Cambridge, England, 2013-to date.

Bernardes GJL. Lecturer on Anti-Cancer Targeted Therapeutics - Graduate Course, University of Cambridge, Cambridge, 2013-to date.

Science and Society

Bernardes GJL participated in the Rotary Club in March 2018, for high- school students in Lisbon.

Cal P. III Jornadas de Investigação em Oncologia em Portugal, Lisbon, Portugal, April 20, 2018.

Seixas J, Almeida C, Albuquerque I, Kitowski A, Guerreiro A. Demonstration on chemical biology. European Researchers' Night, Lisbon, Portugal, September 28, 2018.

Cal P. Health Innovation 2018, Reitoria da Universidade Nova de Lisboa, Lisbon, Portugal, October 12, 2018.

Akkapeddi P, Seixas J, Guerreiro A. Hosts of High School Students in lab visits.

All the group member participated in:

Joint Lab Retreat: Chemistry Meets Biology, Estremoz, Portugal, November 7-9, 2018.

iMM Scientific Retreat 2018, Nazaré, Portugal, April 23, 2018.

MSc Thesis Completed

Bárbara Sousa, 31/10/2018, “Crystal structure of bone marrow tyrosine kinase from chromosome X with covalent ligands”. Supervisor: Marta Marques.

PhD Thesis Completed

Zijian Guo, October 2018, “Developing unstrained alkenes and alkynes for bioorthogonal chemistry”. Viva Committee: Prof. Christopher Hunter (University of Cambridge) and Dr. Pedro Góis (University of Lisbon). Supervisor: Gonçalo Bernardes.

Benjamin J. Stenton, April 2018, “Metal-mediate mechanisms of drug release”. Viva Committee: Dr. Janet Kumita (University of Cambridge) and Dr. Justin Chalker (Flinders University). Supervisor: Gonçalo Bernardes.

João Barata Lab

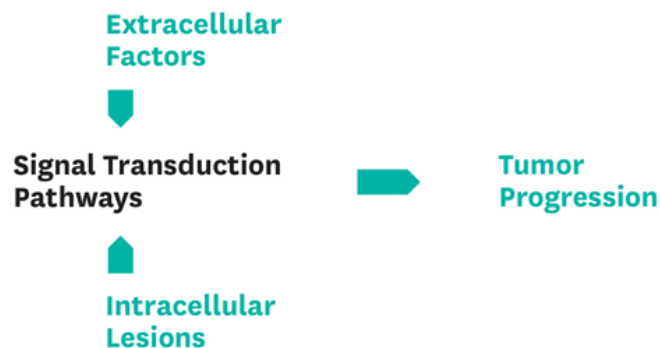
Major Interests / Objectives

We aim to understand the role of cell-autonomous alterations and microenvironmental cues in the development of cancer, focusing mainly on the dissection of signaling pathways essential for tumor maintenance. To do so, we make use of patient material, as a key source of insights into the disease, and integrate different biochemical, cellular and molecular biology techniques with appropriate *in vitro* and *in vivo* models - enabling an overall appreciation of the molecular, cellular and systemic nuances associated with cancer. The basic and pre-clinical research we perform is translation-oriented and enriched by active collaborations with clinicians. Ultimately, we aim to identify and characterize molecular targets for the development of novel, more selective therapies against cancer.

Head of Laboratory

João Pedro Taborda Barata, PhD, Associate Professor

Graphical Abstract



Team

Afonso Rocha Martins de Almeida	PhD	Senior Post-Doctoral Researcher
Alice Sofia dos Santos Melão	PhD Student	PhD Student
Ana Patrícia Cebola Cachucho	Master	Lab Technician
Ana Rita Cascão Rodrigues	PhD	Senior Post-Doctoral Researcher (Started April)
Ana Rita Freitas Martins de Matos Fragoso	PhD	Staff Scientist
Ana Sofia Machado Moreira	Master Student	MSc Student
Ana Sofia Navarro Ramalho	Master Student	MSc Student
Beatriz Carrinho Raposo	Master Student	MSc Student (Started July)
Bruno António Caetano Cardoso	PhD	Senior Post-Doctoral Researcher
Carlos Manuel Tavares da Custódia	Master	Lab Technician

Cláudia Maria Coelho de Faria	PhD	Senior Post-Doctoral Researcher
Daniel Filipe Silva Ribeiro	PhD	Junior Post-Doctoral Researcher
Eunice Ribeiro João Silva Paisana	PhD Student	PhD Student
Francisco Miguel da Cruz Vaz Borges Alexandrino	Master Student	MSc Student (Started October)
Françoise Sanderse	Master Student	MSc Student (Started July Left August)
Gonçalo Lopes Martins e Pereira	Graduate	Trainee
Isabel da Conceição Alves Alcobia Principe Henriques	PhD	Staff Scientist (Left April)
Joana Margarida Luís Gonçalves	Master Student	MSc Student
Luís Pedro Dias Bernardo Maricoto Monteiro	PhD Student	PhD Student
Mafalda Alexandra Ramos de Matos	Master	Lab Technician (Started April)
Mafalda dos Santos Dias Duque	Master	Trainee
Mariana Lobato de Oliveira	PhD Student	PhD Student
Marta Sofia Barbosa Fernandes	PhD Student	PhD Student (Started March)
Mayara Ferreira Euzébio	Master Student	MSc Student (Left August)
Teresa Laura Mendes Serafim	PhD	Senior Post-Doctoral Researcher (Left November)
Veronika Waas	Other	Trainee (Started September Left September)

Laboratory Keywords / Research Areas

Cancer biology, Signal transduction, Cellular and molecular biology, Rational targeted therapies, Leukemias (especially acute lymphoblastic leukemia), Brain tumours.

Major Scientific Achievements

The lab studies mainly hematological tumors (especially lymphoid leukemias) and brain tumors. In 2018, we participated in different collaborative research efforts in these two research vectors leading, for example, to the finding that inhibition of PI3K potentiates response to glucocorticoids in B-ALL or to the identification of pathways of drug resistance in medulloblastoma using a functional genomics approach. In addition, we found that STAT5 is essential for IL-7-mediated viability (surprisingly, in a Bcl-2-independent manner), growth, and proliferation of T-cell acute lymphoblastic leukemia cells, in part via activation of PIM1.

Selected Publications

Martins LR, Lúcio P, Melão A, Antunes I, Cardoso BA, Stansfield R, Bertilaccio MT, Ghia P, Drygin D, Silva MG, Barata JT (2014). Activity of the clinical-stage CK2-specific inhibitor CX-4945 against chronic lymphocytic leukemia. *Leukemia* 28: 179–182. (IF: 10.023, Citations: 42. Source: Web of Science).

Mendes RD, Sarmiento LM, Canté-Barrett K, Zuurbier L, Buijs-Gladdines J, Pova V, Smits WK, Abecassis M, Yunes JA, Sonneveld E, Horstmann MA, Pieters R, Barata JT, Meijerink JPP (2014). PTEN micro-deletions in T-cell acute lymphoblastic leukemia are caused by illegitimate RAG-mediated recombination events. *Blood*, 124: 567-578. (IF: 15.132, Citations: 32. Source: Web of Science).

Zenatti PP, Ribeiro, Li, Zuurbier L, Silva MC, Paganin M, Tritapoe J, Hixon JA, Silveira AB, Cardoso BA, Sarmiento LM, Correia N, Toribio ML, Kobarg J, Horstmann M, Pieters R, Brandalise SR, Ferrando AA, Meijerink JP, Durum SK, Yunes JA, Barata JT (2011). Oncogenic IL7R gain-of-function mutations in childhood T-cell acute lymphoblastic leukemia. *Nature Genetics*, 43: 932-939. (IF: 27.125, Citations: 179. Source: Web of Science).

Henriques CM, Rino J, Nibbs RJ, Graham GG, Barata JT (2010). IL-7 induces rapid clathrin-mediated internalization and JAK3-dependent degradation of IL-7R α in T cells. *Blood*, 115: 2724-2731. (IF: 15.132, Citations: 63. Source: Web of Science).

Silva A, Yunes JA, Cardoso BA, Martins LR, Jotta PY, Abecassis M, Nowill AE, Leslie NR, Cardoso AA, Barata JT (2008). PTEN Posttranslational Inactivation and Hyperactivation of the PI3K/Akt Pathway Sustain Primary T Cell Leukemia Viability. *Journal of Clinical Investigation*, 118: 3762-3774. (IF: 13.251, Citations: 260. Source: Web of Science).

Ongoing Research Projects

2018/2021: Descodificar a interação entre CK2, PI3K, e o relógio molecular circadiano para melhor compreender a biologia e maximizar respostas terapêuticas dirigidas contra leucemia de células T. Coordinator: João Barata. Funding Agency: Fundação para a Ciência e a Tecnologia. Amount: € 239 640,12. Total Amount: € 239 640,12.

2018/2021: Uso da genómica para a identificação de novas terapias alvo nas metástases cerebrais. Coordinator: Cláudia Faria. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MED-ONC/32222/2017. Amount: € 238 740,32. Total Amount: € 238 740,32.

2017/2019: Identificação de novas terapias no tratamento do astrocitoma pilocítico em idade pediátrica. Coordinator: Cláudia Faria. Funding Agency: José de Mello Saúde. Reference: Manuel de Mello CFaria. Amount: € 12 500,00. Total Amount: € 12 500,00.

2016/2019: Aberrant IL7R signaling in leukemogenesis: from the basics to potential therapeutics. Coordinator: João Barata. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: FAPESP/20015/2014. Amount: € 199 778,00€. Total Amount: € 400 000,00.

2016/2019: Brain Tumours. Coordinator: Cláudia Faria. Funding Agency: Fundação Millennium BCP. Reference: Millenium BTT. Amount: € 90 000,00. Total Amount: € 90 000,00.

2016/2018: Projeto David Vaz – Donativos. Coordinator: Cláudia Faria. Funding Agency: Clientes Diversos – Privados. Reference: Projeto David Vaz. Amount: € 8 485,62. Total Amount: € 8 485,62.

2015/2020: IL7SigNeTure: IL-7/IL-7R signaling networks in health and malignancy. Coordinator: João Barata. Funding Agency: European Commission. Reference: ERC CoG 648455. Amount: € 1 988 125,00. Total Amount: € 1 988 125,00.

2014/2018: Development of new therapeutic strategies in Acute Leukaemia. Coordinator: Ana Rita Fragoso. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/00788/2013. Amount: € 50 000,00. Total Amount: € 50 000,00.

2011/2020: Research into brain tumours. Coordinator: Cláudia Faria. Funding Agency: Clientes Diversos. Reference: BTT. Amount: € 213 993,00. Total € 213 993,00.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

2016/2018: ReTuBi: Towards outstanding research and training in tumour. Coordinator: Edgar Gomes. Funding Agency: European Commission. Reference: Twinning 692322. Amount: € 788 725,00. Total Amount: € 999 975,00.

Publications in Peer Review Journals

Oliveira ML, Akkapeddi P, Ribeiro D, Melão A, Barata JT (2018). IL-7R-mediated signaling in T-cell acute lymphoblastic leukemia: An update. *Advances in Biological Regulation*. pii: S2212-4926(18)30138-6. doi: 10.1016/j.jbior.2018.09.012. [Epub ahead of print]. (IF:--, Citations: 0. Source: Scopus).

Ribeiro D, Melão A, van Boxtel R, Santos CI, Silva A, Silva MC, Cardoso BA, Coffey PJ, Barata JT (2018). STAT5 is essential for IL-7-mediated viability, growth, and proliferation of T-cell acute lymphoblastic leukemia cells. *Blood Advances*, 2 (17): 2199-2213. (IF:--, Citations:--).

Buontempo F, McCubrey JA, Orsini E, Ruzzene M, Cappellini A, Lonetti A, Evangelisti C, Chiarini F, Evangelisti C, Barata JT*, Martelli AM* (2018). Therapeutic targeting of CK2 in acute and chronic leukemias. *Leukemia*, 32 (1): 1-10 (review) *co-corresponding authors. (IF: 10.023, Citations: 6. Source: Web of Science and Scopus).

Evangelisti C, Cappellini A, Oliveira M, Fragoso R, Barata JT, Bertaina A, Locatelli F, Simioni C, Neri LM, Chiarini F, Lonetti A, Buontempo f, Orsini E, Pession A, Manzoli L, Martelli AM, Evangelisti C (2018). Phosphatidylinositol 3-Kinase Inhibition Potentiates Glucocorticoid Response in B-cell Acute Lymphoblastic Leukemia. *Journal of Cellular Physiology*, 233(3):1796-1811. (IF: 3.923, Citations: 3. Sources: Web of Science and Scopus).

Cavalli FMG, Hübner JM, Sharma T, Luu B, Sill M, Zapotocky M, Mack SC, Witt H, Lin T, Shih DJH, Ho B, Santi M, Emery L, Hukin J, Dunham C, McLendon RE, Lipp ES, Gururangan S, Grossbach A, French P, Kros JM, van Veelen MC, Rao AAN, Giannini C, Leary S, Jung S, Faria CC, *et al.*, (2018). Heterogeneity within the PF-EPN-B ependymoma subgroup. *Acta Neuropathologica*, 136(2):227-237. (IF: 15.876, Citations: 3. Sources: Web of Science and Scopus).

Gonçalves CS, Vieira de Castro J, Pojo M, Martins EP, Queirós S, Chautard E, Taipa R, Pires MM, Pinto AA, Pardal F, Custódia C, Faria CC, Clara C, Reis RM, Sousa N, Costa BM (2018). WNT6 is a novel oncogenic prognostic biomarker in human glioblastoma. *Theranostics*, 8(17):4805-4823. (IF: 8.537, Citations: 0. Sources: Web of Science and Scopus).

Frazão L, do Carmo Martins M, Nunes VM, Pimentel J, Faria C, Miguéns J, Sagarrabay A, Matos M, Salgado D, Nunes S, Mafra M, Roque L (2018). BRAF V600E mutation and 9p21: CDKN2A/B and MTAP co-deletions - Markers in the clinical stratification of pediatric gliomas. *BMC Cancer*, 18(1):1259. (IF: 3.288, Citations: 0. Sources: Web of Sciences and Scopus).

Bertrand KC, Faria CC, Skowron P, Luck A, Garzia L, Wu X, Agnihotri S, Smith CA, Taylor MD, Mack SC, Rutka JT (2018). A functional genomics approach to identify pathways of drug resistance in medulloblastoma. *Acta Neuropathol Communications* 6, (1):146. (IF: 5.414, Citations: 0. Sources: Web of Science and Scopus).

Lavrador JP, Reis JH, Belo D, Acharya S, Faria CC, Pimentel J, Carvalho MH (2018). Cerebellar cystic glioblastomas: An uncommon presentation of a rare disease and clinical review. *eNeurologicalSci*, 14:60-61. (IF:--, Citations: 0. Source: Scopus).

Invited Lectures and Seminars

Faria C. Workshop in Pediatric Neurosurgery, 9th AIMS Meeting, Lisbon, Portugal, March 16-18, 2018.

Faria C. Hidrocefalia e desenvolvimento neuropsicológico em crianças. V Jornadas de Neuropsicologia Aplicada, Universidade Lusófona, Lisbon, Portugal, March 20, 2018.

Fragoso R. Selective death using a microRNA-detector system in T-ALL acute lymphoblastic leucemia. III Jornadas de Investigação em Oncologia em Portugal LPCC-NRS, Lisbon, Portugal, April 20, 2018.

Barata JT. Explorar os mecanismos básicos da leucemia para revelar novas estratégias de tratamento [Exploring the basic mechanisms of leukemia to reveal new treatment strategies]. IX Jornadas Nacionais de Ciências Biomédicas, University of Algarve, Faro, Portugal, April 20, 2018.

Barata JT. Good gone bad: IL-7 and IL-7R in leukaemia. IV Postgrad Symposium in Biomedicine, IBIMED, University of Aveiro, Aveiro, Portugal, July 5, 2018.

Barata JT. IL-7R-mediated signalling in T-cell acute lymphoblastic leukaemia: An update. 59th International Symposium on “Biological Regulation and Enzyme Activity in Normal and Neoplastic Tissues”, University of Bologna, Italy, October 1-2, 2018.

Faria C. Workshop in Pediatric Neurosurgery, Faculdade de Ciências Médicas de Lisboa, NOVA Medical School, Lisbon, Portugal, October 10, 2018.

Faria C. “Investigação Científica no Internato Médico - Desafios e Oportunidades”, Internato Médico, um olhar ao teu futuro, organized by AEFML, Lisbon, Portugal, October 17, 2018.

Faria C. Medicina e Investigação – o melhor dos dois mundos, BehondMEd, organized by Conselho Pedagógico da Faculty of Medicine University of Lisbon, Lisbon, Portugal, October 24, 2018.

Barata JT. Cancer Biology - What have we learned? Novartis Course “ARE WE CLOSER TO CURE LEUKEMIA? FROM TARGET TO PERSONALIZED THERAPY”, Annual Meeting of the Portuguese Society of Haematology, Vilamoura, Portugal, November 15-17, 2018.

Barata JT. João Barata’s Lab - Signaling in Cancer. iMM Summit - Building partnerships between research and industry, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, November 16-17, 2018.

Faria C. João Barata’s Lab – Patient-derived models of brain metastases-a tool for translational medicine. iMM Summit - Building partnerships between research and industry, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, November 16-17, 2018.

Faria C. Academia and Training in Regulatory Science – Workshop, European Medicines Agency (EMA), London, England, November 16, 2018.

Faria C. National Coordinator of EATRIS-ERIC network, “Como Incentivar Projetos de Iniciativa do Investigador”. V Jornadas de Investigação Clínica e Inovação – 2CA Braga, Universidade do Minho, Portugal, December 4, 2018.

Barata JT. IL-7R and leukaemia. Symposia on Tumour Biology: from basic biology to disease, Lisbon, Portugal, December 5-6, 2018.

Communications in International Conferences

Akkapeddi P, Fragoso R, Neri D, Bernardes GJL*, Barata JT*. Antibody based therapy for T-cell Acute Lymphoblastic Leukaemia through Targeting IL-7 receptor. 2018 Keystone Symposia Conference, Whistler, Canada, February 25-March 1, 2018. *Co-senior authors (Poster Presentation).

Duque T, Linheiro R, Barata JT, Fragoso R. Definition of a T-ALL-specific microRNA expression profile. 9th AIMS Meeting, Lisbon, Portugal, March 16-17, 2018. (Poster and Oral Presentation).

Cardoso BA*, Gírio A*, Fragoso R*, Martins LR, Moreira AS, Correia NC, Bortolini A, Grosso AR, Almeida SF, Yunes JA, Pflumio F, Barata JT. CASZ1 is overexpressed in T-cell acute lymphoblastic leukaemia and promotes cell transformation and tumour growth via PI3K-mTOR. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018. *Equal contribution. (Oral Presentation).

Faria CC, Custódia C, Paisana E, Cascão R, Barata JT. Patient-derived xenograft models of brain metastases for translational medicine. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018. (Oral Presentation).

Oliveira ML, Garcia EG, Langenau DM*, Barata JT*. Mutant IL-7 receptor cooperates with Myc and activated Notch to accelerate T-cell leukemogenesis in zebrafish. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018.*Co-senior authors. (Poster Presentation).

Akkapeddi P, Neri D, Bernardes GJL*, Barata JT*. Antibody based therapy for T-cell Acute Lymphoblastic Leukaemia through Targeting IL-7 receptor. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018.*Co-senior authors. (Poster Presentation).

Ribeiro D, Melão A, van Boxtel R, Santos CI, Silva A, Silva MC, Cardoso BA, Coffey PJ, Barata JT. STAT5 is Essential for IL-7-Mediated Viability, Growth and Proliferation of Human T-Cell Acute Lymphoblastic Leukaemia Cells. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018.* Co-senior authors. (Poster Presentation).

Duque M, Pinto I, Gonçalves J, Akkapeddi P, Oliveira ML, Carvalho T, Cabrita R, Yunes JA, Barata JT, Fragoso R. Dual role of NRARP in Notch and Wnt signalling differentially impacts T-cell acute lymphoblastic leukaemia. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018.*Co-senior authors. (Poster Presentation).

Oliveira ML, Garcia EG, Langenau DM*, Barata JT*. Mutant IL-7 receptor cooperates with Myc and activated Notch to accelerate T-cell leukemogenesis in zebrafish. 13th International Zebrafish Conference, Madison, Wisconsin, USA, June 20-24, 2018. *Co-senior authors. (Oral Presentation).

Ribeiro D, Melão A, van Boxtel R, Santos CI, Silva A, Silva MC, Cardoso BA, Coffey PJ, Barata JT. IL-7 Activates a STAT5/PIM1 axis to Promote T-cell Acute Lymphoblastic Leukaemia Proliferation and Viability in a Bcl-2-Independent Manner. The American Society of Haematology 60th Annual Meeting, San Diego, California, USA, December 1-4, 2018. (Oral Presentation).

Akkapeddi P, Fragoso R, Hixon J, Ramalho S, Oliveira M, Carvalho T, Gloger A, Matasci M, Corzana F, Durum SK, Neri D, Bernardes GJL*, Barata JT*. A phage display-generated fully human anti-IL-7R α antibody shows anti-tumour activity against T-cell acute lymphoblastic leukaemia. The American Society of Haematology 60th Annual Meeting, San Diego, California, USA, December 1-4, 2018. *co-senior authors. (Poster Presentation).

Ribeiro D, Lopes I, Abreu M, Custódia C, Barata JT. IL-7 either promotes or inhibits autophagy, depending on the stress context, to promote the viability of T-cell acute lymphoblastic leukaemia cells. The American Society of Haematology 60th Annual Meeting, San Diego, California, USA, December 1-4, 2018. (Poster Presentation).

Ramalho AS, Ferreira da Silva J, Perez F, Barata JT*. Does mutant interleukin-7 receptor-mediated signalling occur from intracellular compartments? Symposia on Tumour Biology: from basic biology to disease, Lisbon, Portugal, December 5-6, 2018. (Poster Presentation).

Cardoso BA, Gírio A, Fragoso R, Martins LR, Moreira AS, Correia NC, Bortolini A, Grosso AR, Almeida SF, Yunes JA, Pflumio F, Barata JT. CASZ1 is overexpressed in T-cell acute lymphoblastic leukaemia and promotes cell transformation and tumour growth via PI3K-mTOR signaling. Symposia on Tumour Biology: from basic biology to disease, Lisbon, Portugal, December 5-6, 2018. (Poster Presentation).

Communications in National Conferences

Ribeiro D, Melão A, van Boxtel R, Santos CI, Silva A, Silva MC, Cardoso BA, Coffey PJ, Barata JT. STAT5 is Essential for IL-7-Mediated Viability, Growth and Proliferation of Human T-Cell Acute Lymphoblastic Leukemia Cells. Instituto de Medicina Molecular João Lobo Antunes PostDoc Day 2018, Museu do Oriente, Lisbon, Portugal, January 29-30, 2018. (Oral Presentation).

Akkapeddi P, Fragoso R, Hixon J, Ramalho S, Oliveira M, Carvalho T, Gloger A, Matasci M, Corzana F, Durum SK, Neri D, Bernardes GJL*, Barata JT*. A phage display-generated fully human anti-IL-7R α antibody shows anti-tumour activity against T-cell acute lymphoblastic leukaemia. SINAL 2018 – 9th Meeting on Signal Transduction, Teatro Thalia, Lisbon, Portugal, September 21-22, 2018. *Co-senior authors. (Oral Presentation).

Ribeiro D, Melão A, van Boxtel R, Santos CI, Silva A, Silva MC, Cardoso BA, Coffey PJ, Barata JT. IL-7 Activates a STAT5/PIM1 axis to Promote T-cell Acute Lymphoblastic Leukemia Proliferation and Viability in a Bcl-2-Independent Manner. SINAL 2018 – 9th Meeting on Signal Transduction, Teatro Thalia, Lisbon, Portugal, September 21-22, 2018. (Oral Presentation).

Pereira MI, Sarmiento-Ribeiro AB, Ribeiro L, Barata JT, Moreira JN. O valor prognóstico da sobre-expressão de nucleolina em neoplasias hematológicas [The prognostic value of nucleolin overexpression in hematological neoplasias]. Annual Meeting of the Portuguese Society of Haematology, Vilamoura, Portugal, November 15-17, 2018. (Oral Presentation).

Organisation of Conferences

Almeida A was a member of the evaluation committee for the posters in the 44th annual meeting of the Portuguese Society of Immunology (SPI), Lisbon, Portugal.

Fragoso R was a member of the Evaluation panel of the Basic Research Poster Session, 9th AIMS Meeting Research, Faculdade Medicina Dentária da Universidade de Lisboa, Lisbon, Portugal, March 17, 2018.

Barata JT was Chairman of the Scientific Committee of the 3rd ASPIC International Congress, and co-chair of the EACR and ASEICA plenary lecture session, Lisbon, Portugal, May 10-11, 2018.

Almeida A was moderator of oral presentations at the XII PhD Students Meetings - Lisbon Academic Medical Centre, Lisbon, Portugal, May 23-25, 2018.

Barata JT was a Member of the Evaluation Committee for the best oral presentation, XII PhD Students Meetings - Lisbon Academic Medical Center, Lisbon, Portugal, May 23-25, 2018.

Faria C was Chair of the Young Investigators and Innovators Group of the European Society for Pediatric Oncology - Brain Tumour Group (SIOPE BTG), and organized the Training and Education Meeting, Denver, Colorado, USA, June 29, 2018.

Barata JT organized (with Peter Jordan and Duarte Barral), and co-Chaired Session 4 (with Alexandre do Carmo), SINAL 2018 – 9th Meeting on Signal Transduction, Teatro Thalia, Lisbon, Portugal, September 21-22, 2018.

Faria C organized the Annual Training Course for Neurosurgery Residents through the Portuguese Society of Neurosurgery (SPNC), Hotel Palace da Curia, Portugal, November 9-10, 2018.

Faria C organized “Dia da Investigação da FMUL” with GAPIC, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 12, 2018.

Fragoso R was a member of the Evaluation panel of the Poster Session IV, Research Day for Medical Students/21st Workshop “Education through Science”, Faculty of Medicine University of Lisbon, Lisbon, Portugal, December 12, 2018.

Almeida A was a member of the evaluation committee for the poster session at the GAPIC meeting “Educação pela Ciência” at the Faculty of Medicine University of Lisbon, Lisbon, Portugal, December 14, 2018.

Internationalisation

Our projects regularly involve collaborations with international research groups in Europe, USA and Brazil. Current international collaborators in the leukemia projects include: Alberto Martelli (University of Bologna, Italy), Ben Seddon (UCL, England), David Langenau (MGH, Harvard University, USA), Doreen Cantrell (University of Dundee, Scotland), Nigel Pyne (University of Strathclyde, England), Paul Coffey (Utrecht UMC, The Netherlands), Scott Durum (NCI, USA), Silvio Perea (CIGB, Cuba).

Current international collaborators in the brain tumor projects include: Michael D. Taylor (University of Toronto, Canada), James T. Rutka (University of Toronto, Canada) and Marc Remke (University of Dusseldorf, Germany).

In addition, we are executing an FCT-FAPESP collaborative project grant with a Brazilian research group from the state of São Paulo - Andres Yunes (Centro Infantil Boldrini, Brazil).

Barata JT was involved in the international project H2020-TWINN-2015 - ReTuBi “Towards outstanding research and training in tumour biology”, as task leader. This project promoted interactions between different groups working on diverse areas of Cancer Research from iMM, Institut Curie (France) and DKFZ (Germany).

Faria C participates in international consortia for the study of the most common pediatric brain tumours: MAGIC – Medulloblastoma Advanced Genomics International Consortium; GENE – Global Ependymoma Network of Excellence.

Faria C is the Chair of the Young Investigators and Innovators Group of the International Society of Pediatric Oncology – Europe (SIOP-E) Brain Tumor Group (BTG) since September 2017.

Faria C is the Portuguese representative in the Board of National Directors of the European translational network EATRIS-ERIC and responsible for the creation of the Portuguese National Hub (2018).

Prizes, Honours and Awards

Faria C was nominated Ambassador of Bairrada Region for Research and Science 2018.

Cardoso BA was awarded the best oral presentation award, for the work entitled “CASZ1 is overexpressed in T-cell acute lymphoblastic leukaemia and promotes cell transformation and tumor growth via PI3K-mTOR”, 3rd ASPIC International Congress, Lisbon, Portugal.

Akkapeddi P was awarded a ReTuBi scholarship to present the work entitled “Antibody based therapy for T-cell Acute Lymphoblastic Leukaemia through Targeting IL-7 receptor” at 2018 Keystone Symposia Conference, Whistler, Canada, February 25-March 1, 2018.

Faria C was awarded a scholarship as Visiting Scientist at the Labatt Brain Tumour Research Centre, The Hospital for Sick Children, Toronto, Canada, May 14-July 15, 2018.

Oliveira ML was awarded a ReTuBi Scholarship Conference Award to participate in the 13th International Zebrafish Conference, Madison, Wisconsin, USA, June 20-24, 2018.

Cascão R received the best poster award at the EurOPDX Workshop, Weggis, Switzerland, October 1-3, 2018.

Akkapeddi P was awarded a TwinntoInfect 2018 scholarship to present the work entitled “A phage display-generated fully human anti-IL-7R α antibody shows anti-tumour activity against T-cell acute lymphoblastic leukaemia” at The American Society of Haematology 60th Annual Meeting, San Diego, California, USA, December 1-4, 2018.

Ribeiro D was awarded a TwinntoInfect Travel Award to attend and present an oral communication at The American Society of Haematology 60th Annual Meeting, San Diego, California, USA, December 1-4, 2018.

Advanced Teaching

Faria C taught at “Curso de Pediatria – Do Básico à Diferenciação 2017/2018, Módulo XVII – Neurocirurgia”. Centro Hospitalar Universitário Lisboa Norte (CHULN), Lisbon, Portugal, January 5, 2018.

Faria C taught the topic “Pediatric brain tumors – from the bedside to the bench and back; Session bridging the gap”. LisbonBioMed International FCT PhD Program, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, 11 January 2018.

Barata JT coordinated (together with Sérgio Dias and Gonçalo Bernardes) and taught at the “Tissues and Tumors” week. LisbonBioMed International FCT PhD Program, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, January 15-19, 2018.

Faria C taught the topic “Traumatismos cranioencefálicos pediátricos” at Curso 3: do pequeno ao grande trauma na urgência de pediatria, XXIV Jornadas de Pediatria do Hospital de Santa Maria, Centro Hospitalar Universitário Lisboa Norte (CHULN), Lisbon, Portugal, February 7, 2018.

Almeida A taught the topic “T cell Homeostasis” at the GABBA PhD program from University of Porto, Porto, Portugal, June 14, 2018.

Barata JT taught the topic “Signalling in Cancer” at the Advanced Course on “Fundamentals of Genetics, Development and Neoplasia”, International Postgraduate Programme, School of Health Sciences, University of Minho, Braga, Portugal, October 23, 2018.

Science and Society

Barata JT presented “ABC do cancro (e um pouco de investigação) em 60 minutos [ABC of cancer (and a little bit of research) in 60 minutes]” to students of High School Colégio Rainha D. Leonor, Caldas da Rainha, Portugal, February 2, 2018.

Fragoso R presented "The Biology of Cancer in one hour" ReTuBi School Seminars, for high school students, in Pedro Nunes Leonor School, Lisbon, Portugal, January 8 2018.

The lab joined the Brain Tumour Team (BTT) on May 6th to participate in a run/walk event to create awareness for cancer research and, particularly, for brain tumor research. The BTT gathered health care professionals, scientists, patients and their families aiming to support cancer research and to create hope for the future of patients affected with brain cancer.

The lab participated in the European Researchers' Night on September 28th, presenting, together with other iMM groups, the interactive exhibition "A City Called Cell", Natural History Museum, Lisbon, Portugal.

MSc Thesis Completed

Tiago Soares, 03/07/2018, "Study of the impact of IL7R gain-of-function mutation on *in vivo* leukemogenesis", University of Algarve, Faro. Supervisor: João Barata.

Eduardo Raimundo da Silva Bento, 16/07/2018, "Metástases cerebrais: estudo retrospectivo da série cirúrgica do Hospital de Santa Maria", Mestrado Integrado em Medicina, Faculty of Medicine, University of Lisbon. Supervisor: Cláudia Faria.

Ana Margarida Lima Martins, 16/07/2018, "Craniofaringiomas: caracterização da série pediátrica do Hospital de Santa Maria", Mestrado Integrado em Medicina, Faculty of Medicine, University of Lisbon. Supervisor: Cláudia Faria.

Joana Gonçalves, 26/10/2018, "The role of NRARP in the regulation of Wnt signalling pathway in T-cell acute lymphoblastic leukaemia", Faculty of Sciences, University of Lisbon. Supervisor: Rita Fragoso.

João Eurico Fonseca Lab

Major Interests / Objectives

The Rheumatology Research Unit (RRU) results from a partnership between the iMM/FML and the Rheumatology Department of the Santa Maria Hospital, CHULN. Basic scientists and clinicians work closely to promote translational research and clinical excellence in the field of Rheumatology. Our specific research objectives are the study of the impact of inflammatory joint diseases (such as Rheumatoid Arthritis (RA), Juvenile Idiopathic Arthritis (JIA), Spondyloarthritis (SpA) and Systemic Lupus Erythematosus (SLE)) on bone and vessel in order to characterise potential tools for early diagnosis and prognosis and potential targets for novel therapies. The long-term objective of the RRU is to achieve recognition as a European League Against Rheumatism Centre of Excellence in Rheumatology.

Head of Laboratory

João Eurico Fonseca, MD/PhD

Team

Ângelo Miguel Silva Calado	PhD	Senior Post-Doctoral Researcher
Alexandre Figueiredo Brito	Graduate	MSc Student
Ana Filipa Brojo Lopes de Oliveira Ramos Cordeiro	Master	PhD Student
Ana Maria Ferreira Rodrigues	Graduate	Clinical Researcher (Left November)
Ana Rita Cascão Rodrigues	PhD	Senior Post-Doctoral Researcher (Left March)
Ana Rita da Cruz Machado	Master	Clinical Researcher (Started September)
Ana Rita Durão da Graça Godinho Sofio	Graduate	MSc Student (Started September)
Bruno Miguel Costa Vidal	PhD	Junior Post-Doctoral Researcher
Catarina Sofia Melo Tomé	Master	PhD Student (Started January)
Cláudia Sofia Honrado Marques	Graduate	MSc Student (Left December)
Cristina Dias Botelho da Ponte	Master	PhD Student
Diana de Almeida Carmona Fernandes	Master	PhD Student
Elsa Cristina Vieira de Sousa	Graduate	PhD Student
Inês Alexandra Pascoal Lopes	Master	Lab Manager (Left August)
Inês Filipa Pereira Abrunhosa Amaral	Graduate	MSc Student (Started September)
Joana da Silva Marques Coelho Dinis	Master	Clinical Researcher
Joaquim Miguel Polido Pereira	Graduate	PhD Student (Started December)
Manuel Quaresma Jorge Silvério António	Master	Clinical Researcher (Started October)
Marco António Ribeiro Antunes	Master	Senior Technician (Started November Left December)
Maria Helena Regalo da Fonseca	PhD	Senior Post-Doctoral Researcher
Maria João Gonçalves Martins	Master	Clinical Researcher (Left May)
Maria José Parreira dos Santos	PhD	Clinical Staff Scientist

Patricia Godinho Bexiga Martins	Master	Clinical Researcher
Pedro Manuel Ávila Ribeiro	Master	PhD Student (Started January)
Raquel Patrícia Campanilho Marques Ruivo	Master	Clinical Researcher
Rita Alexandra Pedra Aguiar de Moura	PhD	Senior Post-Doctoral Researcher
Rui Pedro Lourenço Teixeira	Master	Clinical Researcher
Sara Maria Navalho Novo Esteves	Other	BSc Student (Started January)
Sofia Carvalho Fernandes Barreira	Master	Clinical Researcher (Started February)
Susana Maria da Silva Oliveira	Graduate	MSc Student (Left November)
Susana Paula Leonardo Dias Abreu Capela	Master	Clinical Researcher (Started October)
Vânia Raquel Gomes Glória	PhD	Junior Post-Doctoral Researcher (Left July)
Vasco Madeira Crispim Romão	Master	Clinical Researcher
Vítor André Silvestre Teixeira	Master	Clinical Researcher (Started January)

Laboratory Keywords / Research Areas

Diagnostic, Prognostic and response to treatment markers in rheumatic diseases, Inflammation and bone, Cohorts, Registries and databases, Recommendations and guidelines, Collaboration in clinical trials.

Major Scientific Achievements

- Characterisation of the effect of TNF antagonists on osteoclasts and B-cells.
- Pre-clinical characterisation of Celastrol as an effective treatment for arthritis.
- Impact of early arthritis on bone nanostructure.
- Impact of tofacitinib on bone loss and biomechanics in early arthritis.

Selected Publications

Carmona-Fernandes D, Santos MJ, Canhão H, Fonseca JE (2013). Anti-ribosomal P protein IgG autoantibodies in patients with systemic lupus erythematosus: diagnostic performance and clinical profile. *BMC Medicine*, 11: R196. (IF: 9.088, Citations: 20. Source: Web of Science).

Moura RA, Cascão R, Canhão H, Sousa E, Mourão AF, Polido-Pereira J, Rodrigues AM, Queiroz MV, Souto-Carneiro MM, Rosário HS, Graça L, Fonseca JE (2011). Cytokine pattern in early Rheumatoid arthritis favours B cell activation and survival. *Rheumatology*, 50(2): 278-82. (IF: 5.245, Citations: 35. Source: Web of Science).

Cascão R, Rosário HS, Souto-Carneiro MM, Fonseca JE (2010). Neutrophils in rheumatoid arthritis: More than simple final effectors. *Autoimmunity Reviews*, 9: 531-535. (IF: 8.745, Citations: 108. Source: Web of Science).

Cascão R, Moura RA, Perpétuo I, Canhão H, Vieira-Sousa E, Mourão AF, Rodrigues AM, Polido-Pereira J, Queiroz MV, Rosário HS, Souto-Carneiro MM, Graca L, Fonseca JE (2010). Identification of a cytokine network sustaining neutrophil and Th17 activation in untreated early rheumatoid arthritis. *Arthritis Research and Therapy*, 12(5): R196. (IF: 4.269, Citations: 51. Source: Web of Science).

Caetano-Lopes J, Nery AM, Canhão H, Duarte J, Cascão R, Rodrigues A, Perpétuo I, Abdulghani S, Amaral PM, Sakaguchi S, Konttinen YT, Graça L, Vaz MF, Fonseca JE (2010). Chronic arthritis leads to disturbances in the bone collagen network. *Arthritis Research and Therapy* 12(1), R9. (IF: 4.269, Citations: 23. Source: Web of Science).

Ongoing Research Projects

2018/2018: Osteoarthritis Research. Coordinator: João Eurico da Fonseca. Funding Agency: ACHÉ LABORATÓRIOS FARMACÊUTICOS S.A. Reference: SC. Amount: € 12 800,00. Total Amount: € 12 850,00.

2017/2020: Tapering Biologics in PSA. Coordinator: João Eurico da Fonseca. Funding Agency: Sociedade Portuguesa de Reumatologia. Reference: PSA. Amount: € 9 500,00. Total Amount: € 9 500,00.

2017/2020: Systemic Sclerosis Clinical Study. Coordinator: João Eurico da Fonseca. Funding Agency: Sociedade Portuguesa de Reumatologia. Reference: SSPECT. Amount: € 8 750,00. Total Amount: € 8 750,00.

2017/2020: The role of lncRNAs in Rheumatoid Arthritis-associated bone degradation. Coordinator: João Eurico da Fonseca. Funding Agency: Sociedade Portuguesa de Reumatologia. Reference: lncRNA. Amount: € 12 500,00. Total Amount: € 12 500,00.

2017/2020: Ensaio clínico de mesoterapia. Coordinator: João Eurico da Fonseca. Funding Agency: Bial. Reference: Mesoterapia. Amount: € 4 831,25. Total Amount: € 4 831,25.

2017/2019: B Cells in Juvenile Idiopathic Arthritis. Coordinator: João Eurico da Fonseca. Funding Agency: Sociedade Portuguesa de Reumatologia. Reference: B cell in AIJ. Amount: € 18 000,00. Total Amount: € 18 000,00.

2017/2018: Autoinflammatory Diseases: analysis based on The Rheumatic Diseases Portuguese Register. Coordinator: João Eurico da Fonseca. Funding Agency: Novartis. Reference: REUMA.PT. Amount: € 12 680,00. Total Amount: € 12 680,00.

2017/2018: Predictors of response to ultrasound-guided sacroiliac joint corticosteroid-injection in patients with active sacroiliitis. Coordinator: João Eurico da Fonseca. Funding Agency: Sociedade Portuguesa de Reumatologia. Reference: US Sacroiliitis. Amount: € 5 884,00. Total Amount: € 5 884,00.

2017/2018: Serum sphingolipids as candidate biomarkers in Rheumatoid Arthritis. Coordinator: João Eurico da Fonseca. Funding Agency: Sociedade Portuguesa de Reumatologia. Reference: Sphingolipids RA. Amount: € 25 000,00. Total Amount: € 25 000,00.

2017/2018: Linking Biomechanics, Inflammation and Bone Formation in Psoriatic Arthritis. Coordinator: João Eurico da Fonseca. Funding Agency: UCB Pharma. Reference: UCB ES. Amount: € 51 350,00. Total Amount: € 51 350,00.

2016/2020: The role of certolizumab in non-infectious uveitis. Coordinator: João Eurico da Fonseca. Funding Agency: Sociedade Portuguesa de Oftalmologia. Reference: Uveítes. Amount: € 5 000,00. Total Amount: € 5 000,00.

2016/2020: Is ultrasound a good surrogate marker for remission in RA? (Association of ultrasound and histological synovitis in rheumatoid arthritis patients in clinical remission). Coordinator: João Eurico da Fonseca. Funding Agency: Sociedade Portuguesa de Reumatologia. Reference: Ultrasound - SPR JPP. Amount: € 10 000,00. Total Amount: € 10 000,00.

2016/2019: Carbon monoxide guided shuttles (COGSs) to fight Rheumatoid Arthritis. Coordinator: João Eurico da Fonseca. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/QEQ-MED/1902/2014. Amount: € 22 000,00. Total Amount: € 199 966,00.

2015/2019: Disease course and adult outcomes of childhood-onset rheumatic diseases. Coordinator: João Eurico da Fonseca. Funding Agency: Sociedade Portuguesa de Reumatologia. Reference: Bolsa de Inovação Diagnóstica. Amount: € 14 500,00. Total Amount: € 14 500,00.

2015/2018: Evaluation of celastrol as a candidate for the treatment of rheumatoid arthritis. Coordinator: João Eurico da Fonseca. Funding Agency: Sociedade Portuguesa de Reumatologia. Reference: CELAR. Amount: € 10 000,00. Total Amount: € 10 000,00.

2014/2019: IL-6 blockade in rheumatoid arthritis patients: impact on Tfh subsets and humoral responses. Coordinator: João Eurico da Fonseca. Funding Agency: Pfizer. Reference: BioTB. Amount: € 2 500,00. Total Amount: € 2 500,00.

2014/2019: Post-transcriptional regulation of response to Etanercept in patients with rheumatoid arthritis. Coordinator: Helena Canhão. Funding Agency: Pfizer. Reference: WI187429. Amount: € 40 000,00. Total Amount: € 40 000,00.

2013/2019: Inhibition of bone and cartilage degradation in rat induced arthritis treated with tofacitinib. Coordinator: João Eurico da Fonseca. Funding Agency: Pfizer. Reference: WI180320. Amount: € 60 000,00. Total Amount: € 60 000,00.

2013/2018: Synovial pathobiology and clinical differences in elderly and younger-onset of rheumatoid arthritis. Coordinator: João Eurico da Fonseca. Funding Agency: Sociedade Portuguesa de Reumatologia. Reference: BioTB. Amount: € 3 850,00. Total Amount: € 3 850,00.

2012/2019: Golimumab as first line DMARD therapy in MTX naive psoritic arthritis - a 24 weeks eddicacy and safety study focussing on dactylitis and enthesitis. Coordinator: Elsa de Sousa. Funding Agency: Merck Sharp & Dohme. Reference: GO-DACT. Amount: € 36 087,50. Total Amount: € 36 087,50.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria do Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

Publications in Peer Review Journals

Teixeira V, Cordeiro I, Gonçalves MJ, Fonseca JE, Macieira C (2018). Telerheumatology - breaking barriers to access care in Rheumatology. *Acta Reumatológica Portuguesa*, 43(4):253-255. (IF: 1.105, Citations: 0. Source: Web of Science).

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Invited Lectures and Seminars

Fonseca JE. "Implementação da telemedicina no Centro Hospitalar Lisboa Norte". 4^a Jornadas Luso-Brasileiras de Telesaúde e Telemedicina, Funchal, Madeira, Portugal, January 19, 2018.

Polido-Pereira J. "Escalas de Monitorização e Atividade da Doença". Curso de Reumatologia para internos de 2^o ano, Coimbra, Portugal, January 20, 2018.

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Fonseca JE. “Hipertensão Pulmonar nas Doenças do Tecido conjuntivo”. VIII Congresso Novas Fronteiras em Cardiologia, Óbidos, Portugal, February 24-25, 2018.

Resende C. “Hipertensão Pulmonar nas Doenças do Tecido conjuntivo”. VIII Congresso Novas Fronteiras em Cardiologia, Óbidos, Portugal, February 24-25, 2018.

Capela S. “O doente com doença reumática. Doenças reumáticas comuns. Doenças reumáticas inflamatórias. Mestrado em Enfermagem- Reabilitação”. Escola Superior de Saúde e Instituto Politécnico de Setúbal, Setúbal, Portugal, March 2018.

Fonseca JE. “Inspiring Collaboration- Translational research”. Leading the Heart, Lisbon, Portugal, March 3, 2018.

Fonseca JE. “Atualização em biológicos e biosimilares”. Reunião da Associação Portuguesa de Farmacêuticos Hospitalares, Tomar, Portugal, March 9, 2018.

Vieira-Sousa E. “CrossTalk Psoriasis and Psoriatic Arthritis: two faces of the same disease?”. Porto, Portugal, March 9, 2018.

Polido-Pereira J. “Investigação e Prática Clínica”. XIII Jornadas APDIS, Lisbon, Portugal, March 16, 2018.

Fonseca JE. “Vias comuns das doenças inflamatórias imunomediadas”. Fórum Imunologia Janssen, Lisbon, Portugal, March 24, 2018.

Polido-Pereira J. “Manifestações Renais e Sistémicas da Artrite Reumatóide”. Encontro Renal 2018, Vilamoura, Portugal, March 24, 2018.

Fonseca JE. “Novos fármacos na artrite reumatóide”. Reunião da Associação Portuguesa de Artrite Reumatóide, Lisbon, Portugal, April 5, 2018.

Santos MJ. “Reuma.pt o que é e para que serve”. Jornadas ANDAR, Lisbon, Portugal, April 5, 2018.

Fonseca JE. “Why biologics have been so successful?”. Sessões do Grémio Literário da SPR, Lisbon, Portugal, April 6, 2018.

Fonseca JE. “Biosimilars: an introduction” and “Switching: outstanding questions”. *Biologics in Inflammation: the role of manufacturing and the biosimilars environment*, Dublin, Ireland, April 12, 2018.

Santos MJ. “Lúpus eritematoso juvenil – diagnóstico e referenciação”. XVI Jornadas Internacionais de Reumatologia Pediátrica, Cascais, Portugal, April 19, 2018.

Oliveira Ramos F. “Terapeutica farmacológica das AIJ”. XVI Jornadas Internacionais de Reumatologia Pediátrica, Cascais, Portugal, April 19-20, 2018.

Resende C. “Alterações Inespecíficas da Capilaroscopia”. Curso de Capilaroscopia Pré-Congresso, Lisbon Academic Medical Centre, Lisbon, Portugal, May 2, 2018.

Fonseca JE. “Tofacitinib clinical development program”. Congresso Português de Reumatologia, Vilamoura, Portugal, May 2-5, 2018.

Fonseca JE. “Tocilizumab: evidence for use as first line biologic”. Congresso Português de Reumatologia, Vilamoura, Portugal, May 2-5, 2018.

Fonseca JE. “Which patients might benefit most from an anti-IL6”. Congresso Português de Reumatologia, Vilamoura, Portugal, May 2-5, 2018.

Capela S. Moderadora da Mesa: “Planeamento Familiar e doenças reumáticas na gravidez”. XX Congresso Português de Reumatologia, Vilamoura, Portugal, May 2-5, 2018.

Romeu JC. “Terapêutica médica da Osteoporose”. XI Congresso Português de Osteoporose. Coimbra, Portugal, May 13-15, 2018.

Polido-Pereira J. “International medical positioning regarding biosimilars”. Lisbon Biosimilars update: First Ibero-American meeting on Biosimilars, Lisbon, Portugal, May 14, 2018.

Vieira-Sousa E, Romão VC, Barros R, Polido Pereira J, Saraiva J, Fonseca JE. “Precisão diagnóstica em Reumatologia: porque as sinovites não são todas iguais”. Sessões do CAML, Hospital de Santa Maria, Lisbon, Portugal, May 17, 2018.

Fonseca JE. “Reasons for the success of biologics: Rheumatology as an example and rheumatoid arthritis as a case study”. *As Fronteiras das Ciências Médicas*, Lisbon, Portugal, May 24, 2018.

Polido-Pereira J. “Biobanco-IMM”. Curso de Investigação Centro Hospitalar Lisboa Norte 2018, Lisbon, Portugal, May 24, 2018.

Fonseca JE. “Bone cancer and healthy bones”. Mama Help-Champalimaud Foundation, Lisbon, Portugal, May 30, 2018.

Campanilho-Marques R. “Anamnese e caso clínico interativo”. Curso de Pediatria – Básico, Hospital Santa Maria, Lisbon, Portugal, June 1, 2018.

Fonseca JE. “Synovitis Study Group”. European League Against Rheumatism congress, Amsterdam, Netherlands, June 13-16, 2018.

Fonseca JE. Chaired the poster session “Seeking the origins of Rheumatoid Arthritis”, European League Against Rheumatism congress, Amsterdam, Netherlands, June 13-16, 2018.

Fonseca JE. Chaired the abstract session “Seeking the origins of Rheumatoid Arthritis”, European League Against Rheumatism congress, Amsterdam, Netherlands, June 13-16, 2018.

Fonseca JE. Chaired the poster session “Searching for outcome measures”, European League Against Rheumatism congress, Amsterdam, Netherlands, June 13-16, 2018.

Fonseca JE. “O Exemplo do Centro de Investigação Clínica (CIC) Centro Académico de Medicina de Lisboa”. Partilha de Boas Práticas: «Modelos Organizacionais de Centros de Investigação Clínica»- PADIS-AESE, Lisbon, Portugal, June 18, 2018.

Campanilho-Marques R. “Miosites juvenis”. Jornadas Internacionais de Reumatologia Pediátrica, Cascais, Portugal, June 19, 2018.

Campanilho-Marques R. “Miosites Juvenis; Vasculites Juvenis e caso clínico interativo”. Curso de Pediatria – Avançado, Hospital Santa Maria, Lisbon, Portugal, June 22, 2018.

Capela S. “Principais doenças reumáticas e impacto laboral”. Pós-graduação em Medicina Social, Universidade Católica de Lisboa, Lisbon, Portugal, June 29, 2018.

Saraiva F. “Sonoanatomy, standardised scanning and basic pathological findings of the child’s elbow”. Paediatric Musculoskeletal Basic Ultrasound Course (EULAR endorsed), Lisbon, Portugal, September 2018.

Saraiva F. “Sonoanatomy, standardised scanning and basic pathological findings of the child’s elbow”. Paediatric Musculoskeletal Basic Ultrasound Course (EULAR endorsed), Lisbon, Portugal, September 2018.

Fonseca JE. Chaired the session “New tools and some omics”, European Pediatric Rheumatology Congress, Lisbon, Portugal, September 5-8, 2018.

Oliveira Ramos F. Chair of the session Updates in JIA management, PReS 2018, Lisbon, Portugal, September 5-8, 2018.

Oliveira Ramos F. Chair of the session Updates in JIA management, PReS 2018, Lisbon, Portugal, September 5-8, 2018.

Fonseca JE. “Animal and synovial tissue studies in understanding chronic arthritis. European Pediatric Rheumatology Congress, Lisbon, Portugal, September 5-8, 2018.

Polido-Pereira J. “US-guided biopsies – medium and large joints”. 1st Course on Synovial Biopsies 2018, Brussels, Belgium, September 21, 2018.

Fonseca JE. “Biosimilars in rheumatology an update”. Osteoimmunology, Genova, Italy, October 4-6, 2018.

Vieira-Sousa E. “Fisiopatologia e Clínica da Artrite Psoriática”. Artrite Reumatóide, Artrite Psoriática e Colite Úlcerosa, o que as une na fisiopatologia e na terapêutica, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 13, 2018.

Vieira-Sousa E. “Terapêutica da Artrite Psoriática” Artrite Reumatóide, Artrite Psoriática e Colite Úlcerosa, o que as une na fisiopatologia e na terapêutica, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 13, 2018.

Fonseca JE, Vieira-Sousa E, Bernardo S. “Segurança da Terapêutica da Artrite Reumatoide, Artrite Psoriática e Colite Úlcerosa” Artrite Reumatoide, Artrite Psoriática e Colite Úlcerosa, o que as une na fisiopatologia e na terapêutica, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 13, 2018.

Fonseca JE. “Synovitis Study Group”. American Congress of Rheumatology Annual Meeting, Chicago, USA, October 19-24, 2018.

Fonseca JE. Chaired the abstract session “Cytokines and Cell Trafficking”. American Congress of Rheumatology Annual Meeting, Chicago, USA, October 19-24, 2018.

Grayson PC, Ponte C, Suppiah R. “ACR-EULAR Diagnosis and Classification study (DCVAS): an update”. Vasculitis Clinical Research Investigators Meeting, Chicago, USA, October 20, 2018.

Ponte C, Grayson P, Suppiah R, Robson J, Merkel PA, Watts RA, Luqmani RA. “New Classification Criteria for Giant Cell Arteritis”. ACR/ARHP Annual Meeting 2018, Chicago, USA, October 23, 2018.

Suppiah R, Grayson P, Ponte C, Robson J, Merkel PA, Watts RA, Luqmani RA. “The Changing Face of Large-Vessel Vasculitis”. ACR/ARHP Annual Meeting 2018, Chicago, USA, October 23, 2018.

Grayson P, Ponte C, Suppiah R, Robson J, Merkel PA, Watts RA, Luqmani RA. “New Classification Criteria for Takayasu's Arteritis”. ACR/ARHP Annual Meeting 2018, Chicago, USA, October 23, 2018.

Saraiva F. “Sonoanatomia do ráquis e da região glútea” e “Quantificação da entesite em EC e em USD”. 1º Curso Avançado de Ecografia Músculo-esquelética da ESPER, Covilhã, Portugal, November 2018.

Fonseca JE. “Translational research”. II Congresso em Investigação das Escolas Médicas Portuguesa, Porto, Portugal, November 9, 2018.

Fonseca JE. “Academic centres”. II Congresso em Investigação das Escolas Médicas Portuguesa, Porto, Portugal, November 9, 2018.

Capela S. “O papel do reumatologista nas Unidades de Dor”. I Curso Básico de Dor musculoesquelética, Monte Real, Portugal, November 9, 2018.

Fonseca JE. “Programa de desenvolvimento clínico do tofacitinib”. Reunião Gastroenterologia e Reumatologia, Lisbon, Portugal, November 17, 2018.

Fonseca JE. “Unidade de Investigação em Reumatologia”. IMM Summit, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, November 17, 2018.

Fonseca JE. “Centro de Investigação Clínica”. IMM Summit, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, November 17, 2018.

Fonseca JE. “Evolução ou Revolução – Tofacitinib: Novo Paradigma de Tratamento – A visão da Reuma”. Congresso da Associação Portuguesa de Farmacêuticos Hospitalares, Estoril, Portugal, November 21, 2018.

Fonseca JE. “Biosimilars: an introduction” and “Switching: outstanding questions”. 2nd edition of the Biologics in Inflammation: the role of manufacturing and the biosimilars environment, Dublin, Ireland, November 25, 2018.

Ponte C. “Utilização de ecografia na arterite de células gigantes”. Reunião do Grupo Português de Neurooftalmologia, Vilamoura, Portugal, December 5, 2018.

Ponte C. “Novas perspectivas terapêuticas na arterite de células gigantes”. Reunião do Grupo Português de Neurooftalmologia, Vilamoura, Portugal, December 5, 2018.

Communications in International Conferences

Luís M, Brites AL, Duarte AC, Teixeira V, Macieira C, Santos MJ, Inês L. How to diagnose lupus enteritis early? Lessons learned from a multicentre case series. 11th European Lupus Meeting, Dusseldorf, Germany, March 21-24, 2018. (Poster Presentation).

Valido A, Silva-Dinis J, Saavedra MJ, Bernardo N, Fonseca JE. Efficacy and Cost Analysis of a systematic switch from Originator Infliximab to Biosimilar Ct-P13 of all patients with inflammatory arthritis from a single centre. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Teixeira VA*, Valido A, Barreira S, Fonseca JE, Macieira C. Severe Outcomes of African Patients From PALOP Evacuated for Medical Assessment in Portugal – Rheumatology as a Case Study. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Costa T, Eusébio M, Falcão S, Araújo F, Nero P, Inês L, Rodrigues M, Jesus D, Barreira S, Macieira C, Cabral M, Sequeira G, Branco J, Santos M. Pattern of Drug Use in Systemic Lupus Erythematosus in Real World Clinical Practice. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Just SA, Humby F, Lindegaard H, Meric de Bellefon L, Durez P, Vieira- Sousa E, Teixeira R, Stoenoiu M, Werlinrud J, Rosmark S, Larsen PV, Pitzalis C, Filer A. Patient Reported Outcomes and Safety in Patients undergoing Synovial Biopsy: Comparison of Arthroscopic, Ultrasound-guided Portal-forceps and Ultrasound- guided needle biopsy techniques, in five centres across Europe. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Oral Presentation).

Robson J, Grayson PC, Ponte C, Suppiah R, Craven A, Khalid S, Judge A, Hutchings A, Gray D, Rosa J, Barret J, Watts RA, Merkel PA, Luqmani RA. Draft classification criteria for the ANCA associated vasculitides. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Oral Presentation).

Marona JA, Sepriano A, Rodrigues-Manica S, Pimentel-Santos F, Mourão AF, N. Gouveia N, Branco JC, Vinagre F, Roque R, Rovisco J, Marques ML, Tavares-Costa J, Silva J, Santos H, Madeira H, Vieira-Sousa E, Machado R, Bernardes M, Ferreira R, Ramiro S. Eligibility criteria for TNFi therapy in axSpA: Going beyond BASDAI. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Oral Presentation).

Cruz-Machado AR, Manica SR, Silva JL, Pimentel-Santos FM, Tavares-Costa J, Vieira-Sousa E. The effect of biologic disease-modifying antirheumatic drugs in targeting disease remission in Axial Spondyloarthritis (AxSpA): a systematic literature review. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Oral Presentation).

Rodrigues-Manica S, Leite Silva J, Machado AR, Coelho C, Duarte J, Vieira-Sousa E, Tavares-Costa J, Pimentel-Santos FM. The effect of biologic disease-modifying antirheumatic drugs; A systematic literature review and a call for action. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Oral Presentation).

Barreira SC, Silva-Dinis J, Martins P, Vitorino E, Campanilho-Marques R, Fonseca JE, Oliveira-Ramos F. Synovial biopsy in children: a single center experience. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Sousa S, Duarte C, Oliveira-Ramos F, Santos MJ. Rituximab in refractory juvenile onset rheumatic diseases: report of 10 cases. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Sousa H, Carvalho S, Rodrigues M, Brito I, Costa Reis P, Rocha T, Ramos MP, Santos MJ, Ramos FO, Cabral M, Guedes M. Vaccination Coverage in Portuguese Children with Rheumatic Diseases Undergoing Immunosuppressive Therapy. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Silva-Dinis J, Melo AT, Campanilho-Marques R, Costa-Reis P, Mourão AF, Dias-Ferreira P, Fonseca JE, Oliveira-Ramos F. Evaluation of the impact of a Summer Camp in children with Juvenile Idiopathic Arthritis. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Martins P, Barreira SC, Dinis JS, Meira J, Marques RC, Fonseca JE, Oliveira-Ramos F. Transition Readiness Assessment Questionnaire (TRAQ): experience of a Pediatric Rheumatology Unit. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Courvoisier D, Mongin D, Hetland M, Pavelka K, Turesson C, Bergstra SA, Kvien TK, Santos MJ, Hernandez V, Lannone F, Gottenberg JE, Mariette X, Kubo S, Tanaka Y, Choquette D, Lonescu R, Finckh A. The impact of seropositivity on the effectiveness of abatacept versus TNF inhibitors in rheumatoid arthritis. Real life data from several European registries (the PAN-ABA study). EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Lauper K, Santos MJ, Lannone F, Rotar Z, Nordström DC, Codreanu C, Kvien TK, Kristianslund EK, Pavelka K, Lukina G, Hernández MV, Gale SL, Sarsour K, Luder Y, Courvoisier DS, Gabay C. Comparative effectiveness of subcutaneous versus intravenous tocilizumab in a pan-european collaboration of registries. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Ørnbjerg LM, Østergaard M, Onen F, Can G, Rotar Z, Tomsic M, Gudbjornsson B, Geirsson AJ, Santos MJ, Barcelos A, Nordström D, Aaltonen K, Nissen MJ, Ciurea A, Kristianslund EK, Kvien T, Codreanu C, Hauge EM, Le Jacobsson, Mann H, Jones G, Iannone F, Hernandez MV, van der Horst-Bruinsma I, Hyldstrup LH, Krogh NS, Hetland ML. Creation of a European database of patients with axial Spondyloarthritis treated in clinical practice— initial, preliminary findings from the EuroSpA research network collaboration. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Lauper K, Kvien TK, Codreanu C, Hernández MV, Iannone F, Kristianslund EK, Lukina G, Nordström DC, Pavelka K, Rotar Z, Santos MJ, Gale SL, John M, Luder Y, Courvoisier DS, Gabay C. Comparative effectiveness of Tocilizumab as monotherapy versus TNF inhibitors in combination with conventional synthetic disease modifying antirheumatic drugs in bio-naïve patients with rheumatoid arthritis. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Ørnbjerg LM, Østergaard M, Onen F, Birlik M, Rotar Z, Tomsic M, Gudbjornsson B, Love TJ, Nissen MJ, Ciurea A, Nordström D, Trokovic N, Santos MJ, Barcelos A, Kristianslund EK, Kvien T, Codreanu C, Hauge E-M, Askling J, Iannone F, Mann H, Hernandez MV, Macfarlane G, van der Sande M, Hyldstrup LH, Krogh NS, Hetland M. Creating a european database of psoriatic arthritis patients treated in routine care – first, preliminary results from the EuroSpA research network collaboration. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Foeldvari I, Klotsche J, Kasapcopur O, Adrovic A, Torok K, Stanevicha V, Terreri MT, Alexeeva E, Katsikas M, Smith V, Sztajn bok F, Avcin T, Cimaz R, Anton J, Kostic M, Lehman T, Sifuentes-Giraldo WA, Appenzeller S, Janarthanan M, Moll M, Nemcova D, Santos MJ, Battagliotti C, Berntson L, Brunner J, Reis PC, Eleftheriou D, Harel L, Kallinich T, Minden K, Nielsen S, Uziel Y, Stevens A, Pilkington C, Helmus N. Do Raynaud phenomenon negative juvenile systemic sclerosis patients have a different pattern of organ involvement as Raynaud phenomenon positive patients? EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Foeldvari I, Klotsche J, Terreri MT, Katsikas M, Stanevicha V, Avcin T, Cimaz R, Kostic M, Sifuentes-Giraldo WA, Sztajn bok F, Anton J, Nemcova D, Santos MJ, Battagliotti C, Berntson L, Brunner J, Eleftheriou D, Harel L, Janarthanan M, Kallinich T, Moll M, Nielsen S, Smith V, Torok K, Stevens A, Pilkington C, Helmus N. Patients and physician related outcomes improve significantly over 12 months follow up in patients with juvenile systemic sclerosis. Results from the juvenile sclerosis inception cohort. www.juvenile-sclerosis.com. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Madeira N, Cardoso A, Trinca R, Silva C, Santos H, Miguel C, Barcelos F, Medeiros D, Campanilho-Marques R, Cunha-Miranda L, Vaz Patto J. Adherence to biologic therapy: is there any difference between Spondyloarthritis and Rheumatoid Arthritis patients? EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Locatelli F, Castaneda S, Zanframundo G, Meyer A, Lannone F, Giannini M, Prieto Gonzalez S, Scire C, Govoni M, Montecucco C, Furini F, Jovani V, Lorenz H, Emmi G, Villa Blanco I, Barsotti S, Neri R, Mosca M, Pesci A, Dei G, Moraes-Fontes MF, Cammelli D, Parronchi P, Biagioni B, Mathieu A, Piga M, Nannini C, Gerli R, Bartoloni Bocci E, Fonseca JE, Marques R, Romero Bueno F, Damian L, Belliato M, de Vita S, Quartuccio L, Maurier F, Cifrian J, Zampogna G, Mera Varela A, Perez Gomez N, da Silva P, Matos Costa CJ, Rojas-Serrano J, Vazquez L, Scheneider U, Feist E, Cavazzana I, Franceschini F, Cagnotto G, Chiapparoli I, Motta F, Bellando-Randone S, Matucci-Cerinic M, Caporali R, Gonzalez-Gay MA, Cavagna L. Clinical features and complications in a large international cohort of anti-MDA5 patients: a challenge for the future. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Madeira N, Cardoso A, Trinca R, Silva C, Santos H, Miguel C, Barcelos F, Medeiros D, Campanilho-Marques R, Cunha Miranda L. Adherence to biologic therapy of Rheumatoid Arthritis patients is there any relation with disease activity? EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Moura RA, Brito A, Oliveira S, Teixeira RL, Romão VC, Teixeira V, Campanilho-Marques R, Oliveira-Ramos F, Fonseca JE. Extended oligoarticular and polyarticular juvenile idiopathic arthritis patients have a similar B cell phenotype when compared to established rheumatoid arthritis. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Romão VC*, Agua-Doce A*, Polido-Pereira J, Barros R, Lopes IP, Seixas MI, Saavedra MJ, Sacadura-Leite E, Rebelo-de-Andrade E, Fonseca JE, Graca L. Expansion of activated CXCR5+ICOS+ Tfh cells and plasmablasts induced by seasonal influenza vaccine is impaired in anti-IL-6R treated rheumatoid arthritis patients. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Moura RA, Brito A, Oliveira S, Teixeira R, Romão VC, Teixeira V, Campanilho-Marques R, Oliveira-Ramos F, Fonseca JE. Extended oligoarticular and polyarticular juvenile idiopathic arthritis patients have a similar B-cell phenotype when compared to established rheumatoid arthritis. EULAR Annual European Congress of Rheumatology, Amsterdam, Netherlands, June 13-16, 2018. (Poster Presentation).

Melo AT, S. Sousa, A. Cordeiro, I. Cordeiro, P. Costa-Reis, F. Oliveira-Ramos, J. E. Fonseca, R. Campanilho-Marques. Distinct clinical features between adult and juvenile dermatomyositis patients. Young Investigator Meeting e PRES, Lisbon, Portugal, September 2018. (Poster Presentation).

Martins P, Barreira SC, Silva Dinis J, Meira J, Campanilho-Marques R, Fonseca JE, Oliveira Ramos F. Transition Readiness Assessment Questionnaire (TRAQ): Experience of a Paediatric Rheumatology Unit. Young Investigator Meeting e PRES, Lisbon, Portugal, September 2018. (Poster Presentation).

Neto A, Martins P, Araújo C, Pinto L, Capela S. Maternal and fetal outcomes in antiphospholipid syndrome: experience from a multidisciplinary unit. 10th International Conference on Reproduction, Pregnancy and Rheumatic Diseases, September 2018. (Poster Presentation).

Barreira SC, Cruz-Machado AR, Centeno M, Araújo C, Pinto L, Capela S. “Anti-Ro/SSA and anti-La/SSB positive pregnant women - Experience from a tertiary centre”. 10th International Conference on Reproduction, Pregnancy and Rheumatic Diseases, September 2018. (Poster Presentation).

Água-Doce A*, Romão VC*, Polido-Pereira J, Barros R, Lopes IP, Seixas MI, Saavedra MJ, Sacadura-Leite E, Rebelo-de-Andrade E, Fonseca JE, Graca L. Expansion of activated CXCR5+ICOS+ Tfh cells and plasmablasts induced by seasonal influenza vaccine is impaired in anti-IL-6R treated rheumatoid arthritis patients. 5th European Congress of Immunology, Ammesterdam, Netherlands, September 2018. (Oral Presentation).

Martins P, Barreira SC, Dinis JS, Meira J, Campanilho Marques R, Fonseca JE, Oliveira-Ramos F. Transition Readiness Assessment Questionnaire (TRAQ): experience of a Paediatric Rheumatology Unit. Young Investigator meeting (YIM) – PreS2018, Lisbon, Portugal September 4-5, 2018. (Oral Presentation).

Barreira SC, Silva-Dinis J, Martins P, Vitorino E, Campanilho-Marques R, Fonseca JE, Oliveira-Ramos F. “Synovial biopsy in children: a single center experience”. Young Investigator meeting (YIM) – PreS2018, Lisbon, Portugal September 4-5, 2018. (Poster Presentation).

Moura RA, Brito A, Oliveira S, Teixeira RL, Romão VC, Teixeira V, Campanilho-Marques R, Oliveira-Ramos F, Fonseca JE. Extended oligoarticular and polyarticular juvenile idiopathic arthritis patients have a similar B cell phenotype when compared to established rheumatoid arthritis. Young Investigator meeting (YIM) – PreS2018, Lisbon, Portugal September 4-5, 2018. (Poster Presentation).

Vieira-Sousa E, Eusébio M, Ávila-Ribeiro P, Khmelinskii N, Machado AR, Martins Rocha T, Bernardes M, Santos-Faria D, Leite Silva J, Santos H, Miguel C, Carvalho P, Costa T, Teixeira L, Meirinhos T, Nero P, Santos MJ. Tumour Necrosis Factor Inhibitors Persistence in Psoriatic Arthritis Patients. 11th International Congress on Spondyloarthritis, Gent, Belgium, September 4-6, 2018 (Oral Presentation).

Vieira-Sousa E, Caetano Silva S, Vidal B, Lopes I, Canhã H, Fonseca JE. Certolizumab Pegol like Reduces Inflammation and Bone Damage in tmTNF Transgenic Mice. 11th International Congress on Spondyloarthritis, Gent, Belgium, September 4-6, 2018 (Oral Presentation).

Vieira-Sousa E, Canhã H, Fonseca JE on behalf of the GO-DACT research team. The GO-DACT Protocol: A Randomized Controlled Trial to Compare The Efficacy Of Golimumab In Combination With Methotrexate (MTX) Versus MTX Monotherapy, In Improving Dactylitis and Enthesitis, In MTX Naïve Psoriatic Arthritis Patients. 11th International Congress on Spondyloarthritis, Gent, Belgium, September 4-6, 2018 (Oral Presentation).

Cruz-Machado AR, Manica SR, Silva JL, Pimentel-Santos FM, Tavares-Costa J, Vieira-Sousa E. The effect of biologic disease-modifying antirheumatic drugs in targeting disease remission in Axial Spondyloarthritis (AxSpA): a systematic literature review. 11th International Congress on Spondyloarthritis, Gent, Belgium, September 4-6, 2018 (Oral Presentation).

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Machado R. "Real-World Long-Term Effectiveness of Tumor Necrosis Factor Inhibitors in Psoriatic Arthritis patients from the Rheumatic Diseases Portuguese Register - The EXCHANGE PsA study". 11th International Congress on Spondyloarthritis, Gent, Belgium, September 4-6, 2018 (Poster Presentation).

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Martins P, Marques D, Janeiro J, Romeu JC, Ponte C. "Calcinose tumoral em doente com artrite reumatoide – relato de um caso raro". XXVI Jornadas Internacionais do Instituto Português de Reumatologia, Lisbon, Portugal, November 29-30, 2018. (Poster Presentation).

Khmelinskii N. A.R. e O.A. das mãos - quando as duas coexistem. XXVI Jornadas Internacionais do Instituto Português de Reumatologia, Lisbon, Portugal, November 29-30, 2018. (Oral Presentation).

Silva-Dinis J, Melo AT, Campanilho-Marques R, Costa-Reis P, Mourão AF, Fonseca JE, Oliveira-Ramos F. Evaluation of the impact of a Summer Camp in Children with Juvenile Idiopathic Arthritis. Jornadas Internacionais de Reumatologia Pediátrica, Lisbon, Portugal, 2018. (Oral Presentation).

Organisation of Conferences

Saraiva F. IX Fórum das Espondilartrites “Workshop Enthesis Ultrasound”, Organisation of “Validation of Enthesitis Score”, session “hands-on”, Tomar, Portugal, February 2018.

Saraiva F. Workshop Básico de Ecografia Músculo-Esquelética da ESPER - Xº Congresso Nacional de Cirurgia Ambulatória, Organisation and coordination on behalf of ESPER and tutor in the sessions “hands-on”, Lisbon, Portugal, May 2018.

Saraiva F. Simpósio de Imagem do XXº Congresso Português de Reumatologia, Organisation and coordination on behalf of ESPER Vilamoura, Portugal, May 2018.

Saraiva F. Paediatric Musculoskeletal Basic Ultrasound Course (EULAR endorsed), Organisation and coordination on behalf of ESPER, supervisor sessions “hands-on”, Lisbon, Portugal, September 2018.

Campanilho-Marques R. Organisation and coordination of Curso Básico de Ecografia Musculosquelética da Escola de Ecografia da Sociedade Portuguesa de Reumatologia, com o patrocínio científico EULAR 2018 and the Young Investigator Meeting - YIM (curso pré-congresso Europeu de Reumatologia Pediátrica - PRES), Chair sessions of the YIM and PRES 2018, Lisbon, Portugal, September 2018.

Fonseca JE. Co-organised the first EULAR course on synovial biopsies, Brussels, Belgium, September 20-21, 2018.

Saraiva F. 1º Curso Avançado de Ecografia Músculo-esquelética da ESPER, Organisation and coordination on behalf of ESPER, tutor session “hands-on”, Covilhã, Portugal, November 2018.

Vieira-Sousa E. Organisation and coordination of the meetings of the Corpo Editorial da Acta Reumatologica Portuguesa and of Grupo de Trabalho das Espondilartrites during the Portuguese Congress of Rheumatology 2018.

Internationalisation

Oliveira Ramos F. Member of the Scientific Committee of XVI Jornadas Internacionais de Reumatologia Pediátrica, Cascais, Portugal, April 19-20, 2018.

Oliveira Ramos F. Poster jury (for the best poster award) and coordinator of abstract revision of the XX Congresso Português de Reumatologia, Vilamoura, Portugal, May 2-5, 2018.

Polido-Pereira J. Chair of the Júri de Poster de Trabalhos Originais do XX Congresso Português de Reumatologia, Vilamoura, Portugal, May 2-5, 2018.

Capela S. Chair session: Planeamento Familiar e doenças reumáticas na gravidez. XX Congresso Português de Reumatologia, Vilamoura, Portugal May 3-5, 2018.

Campanilho-Marques R. Chair of a session, Jornadas Internacionais de Reumatologia Pediátrica, Cascais, Portugal, June 2018.

Fonseca JE. Member of the Scientific Committee of the European League Against Rheumatology Congress, EULAR 2018, Lisbon, Portugal, June 13-16, 2018.

Campanilho-Marques R. Member of the Organising Committee of the Pediatric Rheumatology European Congress, Lisbon, Portugal, September 2018.

Fonseca JE. Member of the Scientific Committee of the Pediatric Rheumatology European Congress, PReS 2018, Lisbon, Portugal, September 5-8, 2018.

Oliveira Ramos F. Member of Local Organising Committee of Pediatric Rheumatology European Congress, PReS 2018, Lisbon, Portugal, September 5-8, 2018.

Saraiva F. Chair of the table “Técnicas em Reumatologia”. Jornadas Internacionais do Instituto Português de Reumatologia., Lisbon, Portugal, November 2018.

Fonseca JE. Chair of the European Synovitis Study Group of EULAR.

Fonseca JE. Past chair of the EULAR scientific commission.

Fonseca JE. Member of the Steering committee of the European reference network Reconnet.

Ponte C. Member of the scientific committee of Reuma.pt (2014-2018) and Member of Emerging Eular Network group (EMEUNET).

Ponte C. Member of “Grupo de estudos das Doenças Reumáticas Sistémicas” (GEDRESIS) and of the “Grupo de trabalho de Imagem musculoesquelética” (GoTIME) of the Portuguese Society of Rheumatology.

Ponte C. Member of the European Vasculitis Study Group (EUVAS).

Ponte C. Member of the OMERACT Ultrasound Large-Vessel Vasculitis (LVV) Subtask Force.

Ponte C. Member of the tasks “force to develop the European League Against Rheumatism (EULAR) recommendations for the use of imaging in Large-Vessel Vasculitis”, “force to update the EULAR recommendations for the management of Large-Vessel Vasculitis” and Member of the task “force to develop the Portuguese Society of Rheumatology recommendations for the use of ultrasound in Rheumatic Diseases”.

Polido-Pereira J. Consultant in the international project of KPMG “Improving Quality of Care in Rheumatoid Arthritis and Associated Comorbidities”.

Prizes, Honours and Awards

Oliveira Ramos F. “Juvenile Idiopathic Arthritis in adulthood: fulfilment of classification criteria for adult rheumatic diseases, long-term outcomes and predictors of inactive disease, functional status and damage”. Prémio Assunção Texeira 2018.

Romão VC, Agua-Doce A, Polido-Pereira J, Barros R, Lopes IP, Seixas MI, Saavedra MJ, Sacadura-Leite E, Rebelo-de-Andrade E, Fonseca JE, Graca L. “Tocilizumab abrogates expansion of activated Tfh cells following influenza vaccination and partially limits vaccine response in rheumatoid arthritis patients”. Menção honrosa para poster no XX Congresso Português de Reumatologia, 2018.

Vidal B, Fonseca JE. Fundo de apoio à investigação e formação reumatológica. “Preclinical evaluation of celastrol for the treatment of RA: long-term efficacy and safety in the chronic K/BxN mice model”, Sociedade Portuguesa de Reumatologia 2018.

Moura AR, Fonseca JE. JAKIE Fellowship. “The effect of Tofacitinib on B cells in Rheumatoid Arthritis”. Bolsa Jak – Investigational & Experimental Program (JAKIE) 2018, Sociedade Portuguesa de Reumatologia.

Martins P, Marques D, Janeiro J, Romeu JC, Ponte C. “Calcinose tumoral em doente com Artrite Reumatóide” – Relato de um caso raro”. Prémio XXVI Jornadas Internacionais IPR 2018.

Advanced Teaching

Calado A. “Respostas metabólicas à hiperglicemia e à hipoglicémia”. Mestrado em Doenças Metabólicas e Comportamento Alimentar, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, January 2018.

Calado, A. “Metabolismo Glicídico”. Mestrado em Doenças Metabólicas e Comportamento Alimentar, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, January 2018.

Moura RA. Supervision of undergraduate student Sara Esteves (Cell and Molecular Biology, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa) at Rheumatology Research Unit, Instituto de Medicina Molecular, Lisbon, Portugal for voluntary scientific training period from January to February 2018.

Polido-Pereira J. Internship coordinator “Toward quality controls standards in Portuguese Biobank”; El Awadi Nora, February-August 2018.

Vieira-Sousa E. “General Concepts on How to Write a Manuscript”, February 2018.

Vieira-Sousa E. “Bridging the Gap: Clinical Trials Unit”, Lisbon, Portugal, February 15, 2018.

Fonseca JE. Organisation of the translational research week. LisbonBioMed PhD Programme, Lisbon, Portugal, February 26-March 2, 2018.

Fonseca JE. Human samples and data management. Visit to the Biobank and to the clinical research centre. LisbonBioMed PhD Programme, Lisbon, Portugal, February 28, 2018.

Romão VC. “Desmistificando a Análise Estatística”. XII Seminário do Trabalho Final de Mestrado, Lisbon, Portugal, April 16, 2018.

Fonseca JE. Organisation of the Lisbon Cartilage Update. A Preceptorship on osteoarthritis at CAML, Lisbon, Portugal, April 20-21, 2018.

Fonseca JE. “Biology of the cartilage”. Lisbon Cartilage Update. A Preceptorship on osteoarthritis at CAML, Lisbon, Portugal, April 20-21, 2018.

Fonseca JE. “European guidance on osteoarthritis treatment”. Lisbon Cartilage Update. A Preceptorship on osteoarthritis at CAML, Lisbon, Portugal, April 20-21, 2018.

Fonseca JE. Organisation of the Lisbon Biosimilars Update. A Preceptorship on biosimilars at CAML. Lisbon, Portugal, May 14-15, 2018.

Fonseca JE. “A real life experience of switching in rheumatology; the example of the infliximab biosimilar CT-P13”. Lisbon Biosimilars Update. A Preceptorship on biosimilars at CAML. Lisbon, Portugal, May 14-15, 2018.

Fonseca JE. “Pharmacovigilance: our own experience”. Lisbon Biosimilars Update. A Preceptorship on biosimilars at CAML. Lisbon, Portugal, May 14-15, 2018.

Fonseca JE. “Infliximab biosimilar: a cost-effective therapy based on scientific data and experience”. Lisbon Biosimilars Update. A Preceptorship on biosimilars at CAML. Lisbon, Portugal, May 14-15, 2018.

Fonseca JE. Investigação de translação. Programa de Formação em Investigação Clínica, Centro Hospital Universitário Lisboa Norte, Lisbon, Portugal, May 24, 2018.

Fonseca JE. Co-Organised with Filipa Oliveira-Ramos. Modulo XXIII-Reumatologia do Curso de Pediatria - do básico à diferenciação, Lisbon, Portugal, June 1 and 22, 2018.

Fonseca JE. “Quando suspeitar de doença reumática na criança”. Modulo XXIII-Reumatologia do Curso de Pediatria - do básico à diferenciação, Lisbon, Portugal, June 1 and 22, 2018.

Fonseca JE. “Outras causas de artrite?”. Modulo XXIII-Reumatologia do Curso de Pediatria - do básico à diferenciação, Lisbon, Portugal, June 1 and 22, 2018.

Fonseca JE. “Outras causas de artrite”. Modulo XXIII-Reumatologia do Curso de Pediatria - do básico à diferenciação, Lisbon, Portugal, June 1 and 22, 2018.

Oliveira Ramos F. Coordinator of Módulo XXIII-Reumatologia do Curso de Pediatria - do básico à diferenciação, Lisbon, Portugal, June 1 and 22, 2018.

Moura RA. Supervision of undergraduate student Aleksandra Pupysheva (First Moscow State Medical University, Sechenov University, Faculty of Medicine, Russia) at Rheumatology Research Unit, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal for a research exchange internship during July 2018.

Fonseca JE. “Dealing with infection under biological agents”. Rheuma Summerschool, Lisbon, Portugal, July 6, 2018.

Fonseca JE. “Implementação Clínica de Biológicos Biossimilares”. Sessão Faculdade Farmácia, Universidade de Lisboa, Lisbon, Portugal, July 9, 2018.

Fonseca JE. Organised Curso Pós-graduado de Reumatologia, Lisbon, Portugal, September 14, 2018.

Fonseca JE. “Prediction and early management of RA”, EULAR postgraduate course, Budapest, Hungary, October 2-3, 2018.

Fonseca JE. Organized “Formação em Artrite Reumatóide, Artrite psoriática e colite ulcerosa: da Fisiopatologia à Atualidade Terapêutica”, Lisbon, Portugal, October 13, 2018.

Fonseca JE. A Fisiopatologia da artrite reumatóide. Formação em Artrite Reumatóide, Artrite psoriática e colite ulcerosa: da Fisiopatologia à Atualidade Terapêutica”, Lisbon, Portugal, October 13, 2018.

Fonseca JE. O tratamento da artrite reumatóide. Formação em Artrite Reumatóide, Artrite psoriática e colite ulcerosa: da Fisiopatologia à Atualidade Terapêutica”, Lisbon, Portugal, October 13, 2018.

Saraiva F. 1º Curso Avançado de Ecografia Músculo-esquelética da ESPER. Tutor nas sessões práticas de “hands-on”, Covilhã, Portugal, November 2018.

Fonseca JE. Organized Curso Pós-graduado de Reumatologia, Lisbon, Portugal, November 9, 2018.

Certificação de Investigadores Clínicos segundo o syllabus CLIC da PharmaTrain MJ Santos. Módulo “Introdução à ética de investigação clínica – viés de publicação e registo de ensaios clínicos”.

Oliveira Ramos F. Coordinator of Módulo de Reumatologia Pediátrica - I curso Online da SPR.

Teixeira RL. Peer-review mentoring. Emerging Rheumatologists and Researchers (EMERGE).

Romão VC. Organização de workshop prático de introdução à análise estatística, integrado no Seminário do Trabalho Final de Mestrado, organizado pela Associação de Estudantes da Faculdade de Medicina de Lisboa (AEFML) 2018.

Science and Society

Fonseca JE participated in several TV and radio programmes to talk about rheumatic diseases, clinical trials and translational research.

Romão VC. Entrevista de divulgação da Síndrome de Sjögren ao jornal Correio da Manhã, em colaboração com o Núcleo de Síndrome de Sjögren da Liga Portuguesa Contra as Doenças Reumáticas, publicada em 31 de março de 2018.

MSc Thesis Completed

Cláudia Marques, “Characterisation of peripheral blood lymphocytes in Arthritis Idiopathic Juvenile”, Mestrado em Biologia Molecular e Celular, Universidade de Aveiro. Supervisor: Rita Moura and Maria Fátima Macedo.

Susana Oliveira, “Effect of Celastrol in Leukocytes from Rheumatoid Arthritis patients”, Mestrado em Ciências Biofarmacêuticas, Faculdade de Farmácia da Universidade de Lisboa. Supervisor: Ana Rita Cascão Rodrigues and João Manuel Braz Gonçalves.

Mariana Gomes Ferreira, “Analysis of neutrophil recruitment during tissue regeneration in zebrafish models of human disease”, Mestrado em Biologia Humana e Ambiente, Faculdade de Ciências, Universidade de Lisboa. Supervisor: Ângelo Calado.

PhD Thesis Completed

Ana Maria Rodrigues, “New markers, prevalence and burden of osteoporosis and fragility fractures”, Doutoramento em Medicina, Especialidade Reumatologia, Faculdade de Medicina da Universidade de Lisboa. Supervisor: Helena Canhão, João Eurico Fonseca and Ara Nazarian.

Luís Santos, “Análise da Qualidade do Osso Osteoporótico”, Doutoramento em Engenharia Biomédica, Universidade Técnica de Lisboa. Supervisor: Paulo Fernandes and João Eurico Fonseca.



Valter Fonseca, “T follicular regulatory cells in human adaptive immunity and autoimmunity”,
Doutoramento em Medicina, Especialidade de Imunologia, Faculty of Medicine, University of
Lisbon. Supervisor: Luís Graça, João Eurico and Rui Vitorino.

João Lacerda Lab

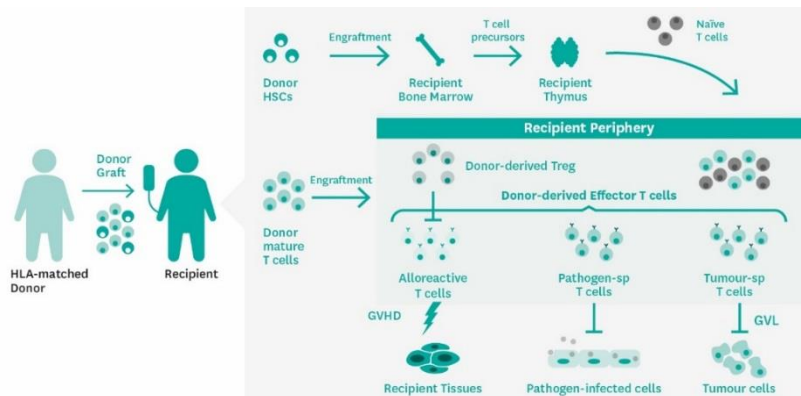
Major Interests / Objectives

We study immunity after Hematopoietic Stem Cell Transplantation (HSCT), aiming to identify immunological risk factors for complications occurring post-HSCT, such as Graft-versus-Host Disease (GVHD), viral and fungal infections, plus the mechanisms by which these complications emerge. Steroid-resistant GVHD patients are undergoing therapy with donor regulatory T cells (Tregs) while being monitored through immune assays in our lab. We are involved in studies of genetic propensity for invasive fungal infections after HSCT, aiming to identify prognostic markers. We further plan to develop therapies using antigen-specific Tregs to treat GVHD whilst retaining leukaemia-specific responses and to use pathogen-specific T cells to treat infections, ultimately aiming to improve HSCT patient survival.

Head of Laboratory

João Mascarenhas Forjaz de Lacerda, MD/PhD, Associate Professor, Clinical Specialist, Hospital Santa Maria

Graphical Abstract



Team

Ana Cláudia Batista Jordão Ribeiro	Master	Lab Technician
Ana Cristina Frazão Lopes Alho	PhD Student	PhD Student
Bárbara Coelho Martins da Silva Saraiva	Master Student	MSc Student (Left March)
Eduardo Lima da Silva Espada	Master	Clinical Researcher (Started May)
Ekaterina Minskaia	PhD	Senior Post-Doctoral Researcher (Left April)
Joana Bianchi Marques Bettencourt Gesta	PhD Student	PhD Student
Laura Chloe Ward	PhD	Lab Manager (Left October)
Maria Godinho Alves Vieira Duarte Soares	PhD	Senior Post-Doctoral Researcher

Paulo Nelson Gomes Pereira	PhD	Lab Technician
Rita Isabel Silva de Azevedo	PhD	Senior Post-Doctoral Researcher

Laboratory Keywords / Research Areas

Immune reconstitution after hematopoietic stem cell transplantation (HSCT), Graft-versus-Host Disease (GvHD), Homeostasis of regulatory T-cells in patients submitted to HSCT, Adoptive immunotherapy after HSCT, Pathogen-specific immunity after HSCT, Genetic susceptibility for fungal and viral infections.

Major Scientific Achievements

Completed works:

- Minskaia E, Saraiva BC, Soares MV, Azevedo RI, Ribeiro RM, Kumar SD, Vieira AIS, Lacerda JF. Molecular Markers Distinguishing T Cell Subtypes with TSDR Strand-Bias Methylation, *Frontiers in Immunology*, DOI: 10.3389/fimmu.2018.02540 (IF: 5.5. Source: Web of Science).
- “Naive and stem cell memory T cell subset recovery reveals opposing reconstitution patterns in CD4 and CD8 T cells in chronic Graft-versus-Host Disease” Under interactive review in *Frontiers in Immunology*.
- “*In vitro* recruitment of human regulatory T-cells (Treg) in mesenchymal stem cell (MSC) co-cultures” (In preparation).

These contribute significantly to accurate identification of T-cell subpopulations, cGVHD pathobiology, immune tolerance and reconstitution post-transplant and mechanisms of MSC-mediated immunomodulation to inform future therapy design.

Since 2015, we have been coordinating a multinational cellular therapy clinical trial. In 2018, we continued to actively recruit patients for the Phase I trial. We are responsible for quality control and deciding the dosage of infused products, plus post-infusion immune monitoring, through FACS and NGS analysis, to track infused clonotypes.

Selected Publications

Hirakawa M, Matos T, Liu H, Koreth J, Kim HT, Paul NE, Murase K, Whangbo J, Alho AC, Nikiforow S, Cutler C, Ho VT, Armand P, Alyea EP, Antin JH, Blazar BR, Lacerda JF, Soiffer RJ, Ritz J (2016). Low-dose IL-2 selectively activates subsets of CD4+ Tregs and NK cells. *JCI Insight*; 1: 18. (IF:13.25, Citations: 22. Source: Web of Science).

Chorny A, Casas-Recasens S, Sintes J, Shan M, Polentarutti N, Garcia-Escudero R, Walland AC, Yeiser JR, Cassis L, Carrillo J, Puga I, Cunha C, Bastos H, Rodrigues F, Lacerda JF, Morais A, Dieguez-Gonzalez R, Heeger PS, Salvatori G, Carvalho A, Garcia-Sastre A, Blander JM, Mantovani A, Garlanda C, Cerutti A (2016). The soluble pattern recognition receptor PTX3 links humoral innate and adaptive immune responses by helping marginal zone B cells. *Journal of Experimental Medicine*, 213: 2167. (IF: 10.8, Citations: 18. Source: Web of Science).

Alho AC, Kim HT, Chammas MJ, Reynolds CG, Matos TR, Forcade E, Whangbo J, Nikiforow S, Cutler CS, Koreth J, Ho VT, Armand P, Antin JH, Alyea EP, Lacerda JF, Soiffer RJ, Ritz J (2016). Unbalanced recovery of regulatory and effector T cells after allogeneic stem cell transplantation contributes to chronic GVHD. *Blood*, 127: 646. (IF: 15, Citations: 40. Source: Web of Science).

Cunha C, Aversa F, Lacerda JF, Busca A, Kurzai O, Grube M, Löffler M, Maertens JA, Bell AS, Almeida B, Sousa PS, Barbui A, Potenza L, Caira M, Rodrigues F, Salvatori G, Pagano I, Lupi M, Garlanda C, Mantovani A, Velardi A, Romani L, Carvalho A (2014). Genetic deficiency of PTX3 and invasive aspergillosis in stem cell transplantation. *New England Journal of Medicine*, 370(5): 421. (IF: 79,3, Citations: 117. Source: Web of Science).

Azevedo RI, Soares MV, Albuquerque AS, Tendeiro R, Soares RS, Martins M, Ligeiro D, Victorino RM, Lacerda JF, Sousa AE (2013). Long-Term Immune Reconstitution of Naive and Memory T Cell Pools after Haploidentical Hematopoietic Stem Cell Transplantation. *Biology of Blood and Marrow Transplantation*; 19: 703. (IF: 4.48, Citations: 10. Source: Web of Science).

Ongoing Research Projects

2015/2019: TREGeneration: Repair of tissue and organ damage in refractory chronic graft versus host disease after hematopoietic stem cell transplantation by infusion of purified allogeneic donor regulatory T lymphocytes. Coordinator: João Lacerda. Funding Agency: European Commission. Reference: SC3 643776. Amount: € 1 792 894,46. Total Amount: € 5 899 250,00.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

Publications in Peer Review Journals

Minskaia E, Saraiva BC, Soares MV, Azevedo RI, Ribeiro RM, Kumar SD, Vieira AIS, Lacerda JF (2018). Molecular markers distinguishing T cell subtypes with TSDR strand-bias methylation. *Frontiers in Immunology*, DOI: 10.3389/fimmu.2018.02540. (IF: 5.5, Citations: 0. Sources: Web of Science and Scopus).

Ferreira CS, Polo B, Lacerda JF (2018.) Somatic Mutations in Philadelphia Chromosome-Negative Myeloproliferative Neoplasms. *Seminars in Haematology*. DOI: 10.1053/j.seminhematol.2018.04.005. (IF: 3.93, Citations: 0. Sources: Web of Science and Scopus).

Gresnigt MS, Cunha C, Jaeger M, Gonçalves SM, Malireddi RK, Ammerdorffer A, Lubbers R, Oosting M, Rasid O, Jouvion G, Fitting C, Jong DJ, Lacerda JF, Campos A Jr, Melchers WJG, Lagrou K, Maertens J, Kanneganti TD, Carvalho A, Ibrahim-Granet O, van de Veerdonk FL (2018). Genetic deficiency of NOD2 confers resistance to invasive aspergillosis. *Nature Communications*, DOI: 10.1038/s41467-018-04912-3. (IF: 12.35, Citations: 1. Sources: Web of Science and Scopus).

Kyrmizi I, Ferreira H, Carvalho A, Figueroa JAL, Zampas P, Cunha C, Akoumianaki T, Stylianou K, Deepe GS Jr, Samonis G, Lacerda JF, Campos A Jr, Kontoyiannis DP, Mihalopoulos N, Kwon-Chung KJ, El-Benna J, Valsecchi I, Beauvais A, Brakhage AA, Neves NM, Latge JP, Chamilos G (2018). Calcium sequestration by fungal melanin inhibits calcium–calmodulin signalling to prevent LC3-associated phagocytosis. *Nature Microbiology*, DOI: 10.1038/s41564-018-0167-x. (IF: 14.2, Citations: 2. Sources: Web of Science and Scopus).

Stappers MHT, Clark AE, Amanianda V, Bidula S, Reid DM, Asamaphan P, Hardison SE, Dambuzza IM, Valsecchi I, Kerscher B, Plato A, Wallace CA, Yucel R, Hebecker B, da Glória Teixeira Sousa M, Cunha C, Liu Y, Feizi T, Brakhage AA, Kwon-Chung KJ, Gow NAR, Zanda M, Piras M, Zanato C, Jaeger M, Netea MG, van de Veerdonk FL, Lacerda JF, Campos A, Carvalho A, Willment JA, Latgé JP, Brown GD (2018). Recognition of DHN-melanin by a C-type lectin receptor is required for

immunity to *Aspergillus*. *Nature*, PMID: 29489751; DOI: 10.1038/nature25974. (IF: 41.6, Citations: 13. Sources: Web of Science and Scopus).

Other International Publications

Warnatz HJ, Azevedo RI, Soares MV, Alho AC, Ward LC, Ribeiro AC, Juncal C, Rodrigues A, Garção A, Roncon S, Vaz CP, Voigt C, Yaspo M-L, Lehrach H, Edinger M, Baron F, Arpinati M, Garcia-Fiñana M, Ritz J, Lacerda JF. Profiling T Cell Receptor Repertoires in Phase I/II Clinical Trials of Donor Treg Infusion for the Treatment of Chronic Graft-Versus-Host Disease. *Blood*, 132 (Suppl 1): 4563.

Azevedo RI, Minskaia E, da Silva CL, Platzgummer AF, Vieira AIS, Cabral JMS, Lacerda JF. Epigenetic Profile of Treg-like Cells Induced by Mesenchymal Stem Cells in Vitro Resembles That of Natural Treg. *Blood*, 132 (Suppl 1): 2578.

Invited Lectures and Seminars

Lacerda JF, Azevedo R, Pereira P. Phase I/II clinical trial of donor Treg administration in steroid-refractory chronic GvHD Case report, review of diagnostic criteria and interim clinical trial results. Sessões CAML, Centro Académico de Medicina de Lisboa, January 2018.

Lacerda JF. Acute lymphoblastic leukaemia. Hematopoietic stem cell transplantation. Symposium Amgen, European Society for Bone and Marrow Transplantation Annual Meeting, EBMT 2018, Lisbon, Portugal, March 18, 2018.

Lacerda JF. Best of EBMT. Jazz Scientific Dinner, European Society for Bone and Marrow Transplantation Annual Meeting, EBMT 2018, Lisbon, Portugal, March 18, 2018

Lacerda JF. Regulatory T cells. In: Cellular therapy for GVHD/GVL modulation. European Society for Bone and Marrow Transplantation Annual Meeting, EBMT 2018, Lisbon, Portugal, March 20, 2018.

Lacerda JF. Desenvolver um projeto de investigação. Em: Programa de Formação em Investigação Clínica, Centro Hospitalar Lisboa Norte, Lisbon, Portugal, May 21, 2018.

Lacerda JF. Trends in AML 2018. Novartis Region Europe Launch Acceleration Meeting, Split, Croatia, June 4, 2018.

Lacerda JF. Novel applications of Blinatumomab. HOPE Meeting, Lisbon, Portugal, September 29, 2018.

Lacerda JF. Síndrome de obstrução sinusoidal hepático em doentes adultos submetidos a transplante alogénico de progenitores hematopoiéticos. JAZZ Symposium, Lisbon, Portugal, October 12, 2018.

Lacerda JF. Transplante de progenitores hematopoiéticos em leucemia linfoblástica aguda. Simpósio o futuro é agora, Pfizer Symposium, Lisbon, Portugal, October 12, 2018.

Lacerda JF. Tratamento da leucemia mielóide aguda. Vídeo-conferência para centros brasileiros, October 15, 2018.

Communications in International Conferences

Bianchi J, Azevedo RI, Ligeiro D, da Silva CL, Lacerda JF. Development of methodologies to recruit and expand regulatory T cells (Tregs) *in vitro* for subsequent clinical translation. Bioinformatics Resources for Immunologists, European Bioinformatics Institute (EMBL-EBI), Cambridge, England, June 2018. (Poster Presentation).

Azevedo RI, Minskaia E, da Silva CL, Platzgummer AF, Vieira AIS, Cabral JMS, Lacerda JF. Epigenetic profile of Treg like cells induced by Mesenchymal Stem Cells *in vitro* resembles that of natural Treg. American Society of Hematology Annual Meeting, 2018, Atlanta, USA, December 2018. (Poster Presentation).

Warnatz H-J, Azevedo RI, Soares MV, Alho AC, Ward LC, Ribeiro AC, Juncal C, Rodrigues A, Garção A, Roncon S, Vaz CP, Voigt C, Yaspo ML, Lehrach H, Edinger M, Baron F, Arpinati M, Garcia-Fiñana M, Ritz J, Lacerda JF. Profiling T Cell receptor repertoires in Phase I/II Clinical trials of donor Treg infusion for the treatment of chronic Graft versus Host Disease. American Society of Hematology Annual Meeting, 2018, Atlanta, USA, December 2018. (Poster Presentation).

Espada E, Ligeiro, D, Calão S, Trindade H, Lacerda JF. An Epidemiological Characterisation of the Portuguese Bone Marrow Donor Registry. 44th Annual Meeting of the European Group for Marrow Transplantation and 34th Meeting of the Nurses Group, Lisbon, Portugal, 2018. (Poster Presentation).

Communications in National Conferences

Alho AC, Soares M, Azevedo R, Ferreira I, Bucar S, Pereira P, Martins C, Lourenço F, Moreno R, Juncal C, Chammas M, Reynolds C, Nikiforow S, Cutler C, Koreth J, Ho V, Antin J, Alyea E, Soiffer R, Lacerda JF, Ritz J. Reconstituição imune T na Doença de Enxerto Contra Hospedeiro Crónica após alotransplante de dador não relacionado: análise de três grupos clínicos. Reunião Anual da Sociedade Portuguesa de Hematologia, Vilamoura, Portugal, November 2018. (Oral Presentation).

Durão S, Vieira J, Velosa F, Neves M, Infante J, Alho A, Espada E, Martins H, Valle S, Lourenço F, Moreno R, Alves D, Costa MJ, Polo B, Lopes C, Martins C, Lacerda JF, Esteves G, Raposo J. Impacto da profundidade de resposta na evolução de doentes com mieloma múltiplo elegíveis para transplante. Reunião Anual da Sociedade Portuguesa de Hematologia, Vilamoura, Portugal, November 2018. (Oral Presentation).

Martins ALS, Ramos A, Cruz R, López D, Alves D, Esteves G, Lopes C, Valle S, Polo B, Martins H, Moreno R, Costa MJ, Martins C, Lacerda J, Raposo J. Terapêutica de indução no idoso com LNH difuso de grandes células B: comparação entre R-CHOP, R-CHOP com redução de dose e regimes paliativos. Livro de Resumos. Reunião Anual da Sociedade Portuguesa de Hematologia, Vilamoura, Portugal, November 2018. (Oral Presentation).

Espada E, Ligeiro D, Trindade H, Lacerda JF. Caracterização do registo nacional de dadores de medula óssea. Reunião Anual da Sociedade Portuguesa de Hematologia, Vilamoura, Portugal, November 2018. (Oral Presentation).

Espada E, Pereira AA, Lito L, Martins H, Valle S, Esteves G, Moreno R, Lourenço F, Cristino JMC, Raposo J, Lacerda JF, Martins C. Colonização e infecção por Enterobacteriaceae produtoras de carbapenemases num serviço de hematologia – epidemiologia e impacto. Reunião Anual da Sociedade Portuguesa de Hematologia, Vilamoura, Portugal, November 2018. (Oral Presentation).

Mata AV, Velosa F, Espada E, Alves D, Lopes C, Polo B, Costa MJ, Lacerda JF, Raposo J. R-bendamustina na leucemia linfocítica crónica/linfoma linfocítico em primeira linha vs. Doença em recaída/refractária: toxicidade e eficácia. Reunião Anual da Sociedade Portuguesa de Hematologia, Vilamoura, Portugal, November 2018. (Poster Presentation).

Veloso F, Mata AV, Espada E, Alves D, Lopes C, Polo B, Costa MJ, Lacerda JF, Raposo J. Rituximab-bendamustina: impacto das comorbilidades no tratamento da leucemia linfocítica crónica/linfoma linfocítico. Reunião Anual da Sociedade Portuguesa de Hematologia, Vilamoura, Portugal, November 2018. (Poster Presentation).

Melo JA, Mata AV, Espada E, Martins H, Valle S, Esteves G, Alves D, Polo B, Lopes C, Moreno R, Lacerda JF, Lourenço F, Martins C, Raposo J, Costa MJ. Perfil de toxicidade e eficácia de protocolos pediátricos versus Hyper-CVAD em adolescentes e adultos jovens (AYA) com leucemia linfoblástica aguda. Reunião Anual da Sociedade Portuguesa de Hematologia, Vilamoura, Portugal, November 2018. (Poster Presentation).

Ramos A, Polo B, Martins AS, Bento M, Alves L, Martins H, Moreno R, Valle S, Alves D, Costa MJ, Esteves G, Lopes C, Lourenço C, Martins C, Lacerda J, Raposo J. Agonistas do receptor da trombopoietina em púrpura trombocitopénica imune – experiência de um centro hospitalar. Reunião Anual da Sociedade Portuguesa de Hematologia, Vilamoura, Portugal, November 2018. (Poster Presentation).

Organisation of Conferences

Lacerda JF. Organiser of TREGeneration General Assembly, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, March 15-16, 2018.

Internationalisation

Our Unit actively collaborated in 2018 with the following investigators:

- Jerome Ritz, Dana-Farber Cancer Institute (DFCI) and Harvard Medical School (HMS), USA, under the sponsorship of the TREGeneration Consortium of the Horizon 2020 Programme.
- Joaquim Cabral, IST-Universidade de Lisboa, also within the framework of Harvard Medical School Portugal Programme.
- Matthias Edinger, Universitaetsklinik, Regensburg, under the TREGeneration Consortium of the Horizon 2020 Programme.
- Frederic Baron, Laboratory of Cell and Gene Therapy, CHU Sart-Tilman, Liege, under the TREGeneration Consortium of the Horizon 2020 Programme.

- Mario Arpinati, Department of Hematology “Seragnoli”, University Hospital S. Orsola-Malpighi, Bologna, under the TREGeneration Consortium of the Horizon 2020 Programme.
- John Koreth, Dana-Farber Cancer Institute (DFCI) and Harvard Medical School (HMS), USA, under the auspices of Harvard Medical School Portugal Programme and the TREGeneration Consortium of the Horizon 2020 Programme.
- Marie-Laure Yaspo, Max Planck Society, Max Planck Institute for Molecular Genetics, Berlin, under the TREGeneration Consortium of the Horizon 2020 Programme.
- Hans Lehrach, Alacris Theranostics GmbH, Berlin, under the TREGeneration Consortium of the Horizon 2020 Programme and in planning a FET Flagship proposal.
- Marta Garcia-Finana, Department of Biostatistics, Faculty of Health & Life Sciences, University of Liverpool, Liverpool, under the TREGeneration Consortium of the Horizon 2020 Programme.
- Drs. Cristina Cunha and Dr Agostinho Carvalho, Universidade do Minho, for the studies of genetic susceptibility for invasive fungal infections.
- Prof. Britta Eiz-Vesper at the University of Hanover for the generation of third-party pathogen-specific T cells to administer after HSCT.
- Prof. José Antonio Pérez-Simón at the University of Seville in proposing addition to the TREGeneration Consortium of the Horizon 2020 Programme.

Advanced Teaching

“CAR T: começando pela ciência básica”. Curso CAR T e os linfomas difusos de grandes células B, da investigação aos doentes. Curso Sociedade Portuguesa de Hematologia, Vilamoura Portugal, November 15, 2018.

Science and Society

The JLacerda Lab prepared a video for dissemination in the social networks celebrating the World Bone Marrow Donor Day (<https://worldmarrowdonorday.org/>), which aims to acknowledge the contribution of Bone Marrow Donors to cancer treatment.

The video is available on the following link:

<https://www.facebook.com/imolecular/videos/247739185935774/>

MSc Thesis Completed

Bárbara C. S. Martins Saraiva, March 2018, “Focusing on the epigenetic control of Regulatory T Cells”, Faculty of Medicine, University of Lisbon. Tutor: Dr. Ekaterina Minskaia. Coordinator: Professor João Forjaz Lacerda.

Joaquim Ferreira Lab

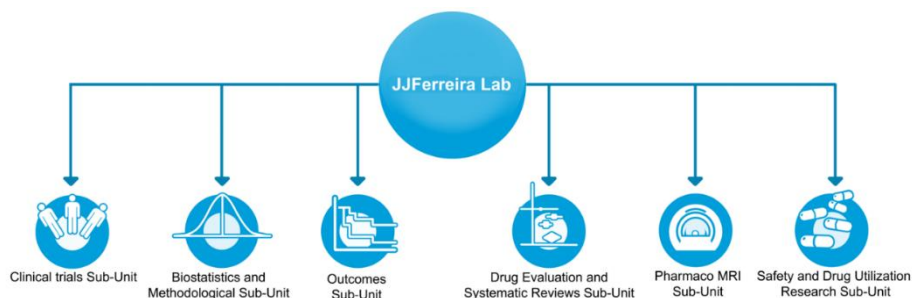
Major Interests / Objectives

The main mission of the Joaquim Ferreira Lab is to contribute to the development of effective and safe therapeutic interventions through the establishment of optimised methodologies for the design, conduction, analysis and report of clinical trials. The main clinical pharmacology domains of interest are clinical trials methodology, outcomes, systematic reviews, safety, pharmaco MRI and drug utilisation. The emphasis is mainly on novel, early phase proof-of-principle clinical studies and new methodological and trial designs but the scope extends throughout the clinical development spectrum. We also envision collaborations with the pharmaceutical industry, facilitating the conduction of clinical trials to a shared role in the early stages of drug and planning of clinical development.

Head of Laboratory

Joaquim Ferreira, MD/PhD, Neurologist, Associate Professor, Faculty of Medicine, University of Lisbon

Graphical Abstract



Team

Ana Cristina Brito Almeida Sampaio Cruz	PhD	Clinical Staff Scientist
Ana Isabel Santos Augusto	Master	Lab Technician (Left January)
Ana Patrícia Silva Pita Lobo	Graduate	Clinical Researcher
Ana Raquel Duque Gonçalves Fernandes	Master	Clinical Researcher
Ana Rita Simões Cardoso	Master	Clinical Researcher
Ana Teresa Martins Sousa Santos	Master	Lab Manager
Anabela Ferreira Valadas	Graduate	Clinical Researcher
Catarina Afonso Godinho	PhD	Clinical Researcher
Catarina Filipa Severiano e Sousa	Master	PhD Student (Started October)
Cláudio Virgílio Antunes David	Graduate	Clinical Researcher

Daisy Andreina Vieira de Abreu	Master	Clinical Researcher
Daniel Gomes Caldeira	PhD	Clinical Researcher
Daniela Marina Dias Guerreiro	Graduate	Trainee
Ema Dulce Henriques Roque	Graduate	Administrative Technician
Helena Isabel Vicente dos Santos	Graduate	Clinical Researcher
Isabel Cristina Ramos Peixoto Guimarães	PhD	Clinical Researcher
Joana Margarida do Nascimento Fagundes Carvalho	Master	Clinical Researcher
Joana Micaelo Grilo	Master	Clinical Researcher (Started February)
João José Simões Santos	Master	PhD Student
João Nuno Marques Parracho Guerra da Costa	PhD	Clinical Researcher
Kelli Destri	Master	Lab Technician
Luís António Garcez Duarte da Costa Ferreira	Master	Clinical Researcher
Margarida de Fátima Palma Faria Borges	Graduate	Clinical Researcher
Margherita Fabbri	Master	PhD Student
Maria Isabel Boaventura de Atougua	Graduate	Clinical Researcher
Maria João Bettencourt Pereira Forjaz	PhD	Clinical Researcher
Maria Leonor Brito de Arriaga Correia Guedes Möller Miranda	PhD	Clinical Researcher
Mariana da Cruz Alves	Master	PhD Student
Mário Miguel Coelho da Silva Rosa	PhD	Clinical Researcher
Miguel Vilhena Soares Coelho	PhD	Clinical Researcher
Nilza Karina Cabral Gonçalves	Master	Clinical Researcher
Olga Sofia de Oliveira Caetano	Graduate	Administrative Technician
Rafaela Alexandra Policarpo da Rosa	Master	Language Area Coordinator
Raquel de Queirós Bouça Ribeirinho Machado	Master	PhD Student
Raquel José Ladeira Lobo	Master	Lab Technician
Ricardo Miguel Ribeiro Marques Cunha Fernandes	PhD	Clinical Researcher
Sofia Cristina Pereira Coutinho Reimão	PhD	Clinical Researcher
Solange Carolino Alves de Gouveia Carvalho	Master	Trainee (Started May)
Tânia Sofia Santos Silva	Master	Lab Technician
Tiago Alexandre Mestre	Master	Clinical Researcher
Tiago Filipe Soares	Master	Clinical Researcher (Left December)
Tiago Heleno Mendes	Master	Clinical Researcher
Tiago Rodrigues Teodoro	Master	Clinical Researcher
Vanda Filipa Viseu Cândido De Freitas	Master	Clinical Researcher
Verónica Candeias Caniça	Graduate	Trainee

Laboratory Keywords / Research Areas

Parkinson's disease, Huntington Disease, Movement Disorders, Neuropharmacology, Clinical trials, Systematic reviews.

Major Scientific Achievements

In 2018:

Our team participated in an International Collaboration who has discovered for the first time variants in a gene (termed LRP10) in patients with familial forms of Parkinson's disease, Parkinson's disease and dementia, and Dementia with Lewy bodies. This discovery may pave the way to the identification of novel biomarkers and novel targets for disease-modifying therapies.

A total of 76 original papers were submitted and accepted in peer-review journals, a 38% increase over the scientific output achieved in the last year.

Ongoing Research Projects

2018/2018: ENROLL: A Prospective Registry Study in a Global Huntington's Disease Cohort. Coordinator: Joaquim Ferreira. Funding Agency: CHDI Foundation, Inc. Reference: Enroll-HD Protocol. Amount: € 2 546,43. Total Amount: € 2 546,43.

2015/2020: Fair-ParK-II: Conservative iron chelation as a disease-modifying strategy in Parkinson's disease: a multicentric, parallel-group, placebo-controlled, randomized clinical trial of deferiprone. Coordinator: Joaquim Ferreira. Funding Agency: European Commission. Reference: SC3 633190. Amount: € 187 083,00. Total Amount: € 5 998 994,00.

2014/2018: Dysarthria in Parkinson's disease: Lusophony vs. Francophony comparison. Coordinator: Joaquim Ferreira. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: FCT-ANR/NEU-SCC/0005/2013. Amount: € 151 686,00. Total Amount: € 322 796,00.

Publications in Peer Review Journals

Caldeira D, Nunes-Ferreira A, Rodrigues R, Vicente E, Pinto FJ, Ferreira JJ (2018). Non-vitamin K antagonist oral anticoagulants in elderly patients with atrial fibrillation: A systematic review with meta-analysis and trial sequential analysis. *Archives of Gerontology and Geriatrics* 81:209-214. doi: 10.1016/j.archger.2018.12.013. (IF: 2.241, Citations: 0. Sources: Web of Science and Scopus).

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Invited Lectures and Seminars

Fernandes R. Oxigenioterapia de alto fluxo, Ventilação Não Invasiva no Serviço de Pediatria, Hospital da Luz, Lisbon, Portugal, January 13, 2018.

Fernandes R. Sibilância Recorrente em idade Pré-Escolar. 1ª Reunião Nacional, Academia Cuf, José de Mello Saúde, Lisbon, Portugal, January 19, 2018.

Ferreira JJ. A condição da doença degenerativa, que investimento? Do singular para o universal: laços e vínculos, Torres Vedras, Portugal, March 7, 2018.

Guimarães I. The speech sounds and its disorders. Seminar at ISPA (Instituto Superior de Psicologia Aplicada), Lisbon, Portugal, March 16, 2018.

Ferreira JJ. Tremor e doença de Parkinson: dicas práticas na avaliação e tratamento. VII Curso de Atualização em Geriatria e Gerontologia, Hotel Real Palácio, Lisbon, Portugal, April 6, 2018.

Borges M. Evidência e Decisão Clínica (de administração/gestão e de políticas de saúde). Pós-Graduação em Gestão de Saúde, Universidade Europeia, Lisbon, Portugal, April 2018.

Carvalho, J, Guimarães, I, Ferreira JJ. Audio-perceptive analysis of Parkinson's disease patients' speech samples by heterogeneous group of jury panel. 10th European Congress of Speech and Language Therapy, organized by The Standing Liason Committee of EU Speech and Language Therapists and Logopedists (CPLOL), Abstract book, Estoril, Portugal, May 10-12, 2018. (Poster Presentation).

Ferreira JJ. Investigação clínica em Portugal: que futuro? Conferência + Inovação + Saúde, Fundação Calouste Gulbenkian, Lisbon, Portugal, June 15, 2018.

Frota S, Oliveira P, Cruz M, Vicente S, Cardoso R, Guimarães I, Ferreira JJ, Pinto S, Vigário M. (Dys) Prosody in Parkinson's disease: Effects of medication and disease progression on different prosodic functions. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 16-19, 2018.

Ferreira JJ. Why are we failing developing new medicines on neurodegenerative diseases? Workshop on integrative approaches in neurodegeneration, Lisbon, Portugal, June 21-23, 2018.

Ferreira JJ. Campus Neurológico Sénior como modelo de abordagem multidisciplinar na Doença de Parkinson. II Congresso Internacional de geriatria e saúde mental, Mealhada, Portugal, June 22, 2018.

Ferreira JJ. Management of Advanced Parkinson Disease. Basal ganglia club, The National Hospital for the Neurology and Neurosurgery, London, England, September 5, 2018.

Ferreira JJ. Devemos fazer investigação durante o internato médico? 5^o Congresso do Internato Médico, Infeção, Auditório do Hospital Cuf Descobertas, Lisbon, Portugal, September 13, 2018.

Ferreira JJ. Eficácia e segurança da Opicapona. Sessão científica: apresentação da Opicapona, Sede BIAL, Porto, Portugal, September 21, 2018.

Guimarães I. Master lecture: Quantitative data collection instruments and measurement concepts. Clinical master program in Rehabilitation Sciences at JUST (JUST – CRS), Jordan, October 10, 2018.

Ferreira JJ. Drug development in movement disorders – pitfalls and bottlenecks. Movement Disorder Academy, Medicine Center Anichstrasse, Innsbruck, Austria, October 19-20, 2018.

Fernandes R. Júri Científico 2018. 19th Congresso Nacional de Pediatria, Centro de Congressos do Estoril, Estoril, Portugal, October 24-26, 2018.

Ferreira JJ. Maladie de Parkinson, une ou plusieurs maladies? Journées Internationales, Réunion commune SOFMA/SFN, Pathologies du Mouvement, ICM, Hôpital Pitié Salpêtrière, Paris, France, November 8-9, 2018.

Ferreira JJ. Signes non-moteurs dans la maladie de Parkinson: de la phase prodromale à la phase évoluée. 24^{ème} Congrès National de Neurologie, Djerba, Tunisie, November 16-18, 2018.

Borges M. O custo e a Carga do cancro do pulmão em Portugal. XI Congresso Nacional da Associação Portuguesa de Farmacêuticos Hospitalares, Cascais, Portugal, November 21-24, 2018.

Borges M. O Impacto do envelhecimento nas pessoas com VIH – perspetivas presentes e desafios para o futuro. XIV Congresso Nacional Doenças Infecciosas e Microbiologia Clínica e XII Congresso Nacional VIH/SIDA, Porto, Portugal, November 28-December 1, 2018.

Borges M. A carga da DCV na Diabetes, Diabetes Experts Round Table at the Danish Embassador's Residence, Lisbon, Portugal, December 1, 2018.

Borges M. Abordagens Terapêuticas com Impacto Significativo na Evolução da Doença Cardiovascular – O desafio do financiamento numa patologia prevalente. Revista Portuguesa de Farmacoterapia, Lisbon, Portugal, December 6, 2018.

Communications in International Conferences

Silva Miguel L, Paquete AT, Guerreiro R, Fiorentino F, Costa J, Borges M. Treatment of metastatic castration-resistant prostate cancer patients previously treated with docetaxel in Portugal, PCN336, Value in Health, Vol. 21, S71. (Poster Presentation).

Sousa R, Silva Miguel L, Afonso C, Manata MJ, Méndez J, Piñeiro C, Valente C, Borges M, Therapeutic sequences for the treatment of people living with HIV type 1 in Portugal, PIN119, Value in Health, Vol. 21, S240-S241. (Poster Presentation).

Ascensão R, Fiorentino F, Costa J, Gouveia M, Borges M. Real world evidence on type 2 diabetes: identification and characterization of non-insulin treated patients who fulfil conditions for that treatment, PDB95, Value in Health, Vol. 21, S134-S135. (Poster Presentation).

Silva Miguel L, Borges M, Soulard S, Serpa Viana D, Jacinto V, Ferreira RP, Projecting savings in switching ICS-containing regimens to LAMA-LABA: COPD patients in Portugal, PRS19, Value in Health, Vol. 21. (Poster Presentation).

Florentino F, Ascensão R, Costa J, Gouveia M, Borges M, Insulin gap in type 2 diabetes: is it cost effective to intensify treatment? Evidence from Portugal using real world data, PDB66, Value in Health, Vol. 21, S129. (Poster Presentation).

Borges M, Gouveia M, Costa J, Fiorentino F, Sousa R, Jesus G, Teixeira Rodrigues A, Cary M, Guerreiro JP, Heudtlass P, Costa S, Vaz Carneiro A. Impact of transferring ARTS dispensing from hospital to community pharmacies: a pilot study in Portugal. PIN76. Value in Health, Vol. 21, S233-S234. (Poster Presentation).

Inês M, Coelho T, Conceição I, Landeiro F, Borges M, Carvalho M, Costa J, Economic burden of transthyretin familial amyloid polyneuropathy, PSY87, Value in Health, Vol. 21, S451. (Poster Presentation).

Alarcão J, Ascensão R, Costa J, Gouveia M, Borges M, Cost-effectiveness of sacubitril/valsartan for the treatment of symptomatic chronic heart failure with reduced ejection fraction in Portugal, PCV71, Value in Health, Vol. 21, S104. (Poster Presentation).

Silva Miguel L, Alarcão J, Pinheiro BA, Costa J, Inês M, Charbonneau C, Matias T, Pereira A, Borges M. Cost-effectiveness of Ceftazidime/avibactam for the treatment of infections due to Aerobic Gram-negative Organisms in patients with limited treatment options, PIN45, Value in Health, Vol. 21, S228. (Poster Presentation).

Guerreiro R, Silva Miguel L, Costa J, Paquete AT, Alarcão J, Fiorentino F, Borges M, Burden and Costs of Acute Myeloid Leukaemia in Portugal, PCN107, Value in Health, Vol. 21, S32. (Poster Presentation).

Paquete AT, Silva Miguel L, Costa J, Alarcão J, Fiorentino F, Guerreiro R, Borges M. Burden and costs of Acute Lymphoblastic Leukaemia in Portugal. PCN112. Value in Health, Vol. 21, S33. (Poster Presentation).

Silva Miguel L, Alarcão J, Pinheiro BA, Costa J, Inês M, Charbonneau C, Matias T, Pereira A, and others. Cost-effectiveness of ceftazidime/avibactam for the treatment of ofections due to aerobig gram-negative organisms in patients with limited treatment options, Value in Health, Vol. 21, S228. (Poster Presentation).

Laires PA, Carrilho M, Tavares-Costa J, Lucas P, Machado P, Cunha-Miranda L, Pimentel-Santos F, Rodrigues-Martins A, and others. Development of an outcomes measurement tool to evaluate the quality of biologic switch in psoriatic arthritis, Value in Health, Vol. 21, S303. (Poster Presentation).

Silva Miguel L, Paquete AT, Guerreiro R, Fiorentino F, Costa J, Borges M. Treatment of metastatic castration-resistant prostate cancer patients previously treated with docetaxel in Portugal. *Value in Health*, Vol. 21, S71. (Poster Presentation).

Borges, M, Gouveia, Costa J, Fiorentino F, Sousa R, Jesus G, Teixeira Rodrigues A, Cary M, and others. Impact of transferring arts dispensing from hospital to community pharmacies: a pilot study in Portugal. *Value in Health*, Vol. 21, S233–S234. (Poster Presentation).

Pinheiro BA, Guerreiro R, Costa J, Silva Miguel L. Cost-effectiveness of cladribine tablets in the treatment of patients with highly active relapsing of multiple sclerosis in Portugal. *Value in Health*, Vol. 21, S339. (Poster Presentation).

Maia-Lopes S, Costa J, Fernandes J, André S. Comparison of clinical and economic impact of prophylaxis with different hemophilic recombinant factors in Portugal. *Value in Health*, Vol. 21, S445. (Poster Presentation).

Guerreiro R, Silva Miguel L, Costa J, Paquete AT, Alarcão J, Fiorentino F, Borges M. Burden and costs of acute myeloid leukaemia in Portugal. *Value in Health*, Vol. 21, S32. (Poster Presentation).

Paquete AT, Silva Miguel L, Costa J, Alarcão J, Fiorentino F, Guerreiro R, Borges M. Burden and costs of acute lymphoblastic leukaemia in Portugal. *Value in Health*, Vol. 21, S33. (Poster Presentation).

Inês M, Coelho T, Conceição I, Landeiro F, Borges M, Carvalho M, Costa J. Economic burden of transthyretin familial amyloid polyneuropathy. *Value in Health*, Vol. 21, S451. (Poster Presentation).

Guimarães I. Member of the Scientific Board of the 10th European Congress of Speech and Language Therapy, organized by The Standing Liaison Committee of EU Speech and Language Therapists and Logopedists (CPLOL), Estoril, Portugal, May 10-12, 2018.

Ferreira JJ. Can people with PD drive? Focused workshop 6: EAN MDS-ES, Management of Parkinson disease on non-routine circumstances. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 16-19, 2018. (Oral Presentation).

Fiorentino F, Sousa R, Gouveia M, Borges M, Carneiro AV, Costa JO. Impacto do envelhecimento nas pessoas com VIH – perspetivas presentes e desafios para o futuro. Pharmaceutical Mornings, Lisbon, Portugal, June 23, 2018. (Oral Presentation).

Fiorentino F, Sousa R, Gouveia M, Borges M, Carneiro AV, Costa JO. Impacto do envelhecimento nas pessoas com VIH – perspetivas presentes e desafios para o futuro. Pharmaceutical Mornings, Porto, Portugal, June 30, 2018. (Oral Presentation).

Gouveia M, Borges M, Alarcão J, Jesus G, Ascensão R, Vaz Carneiro A, Bragança F, Costa J. O custo e a carga em Portugal da hipercolesterolemia familiar. 7º Congresso Internacional dos Hospitais, Lisbon, Portugal, November 21-23, 2018. (Oral Presentation).

Communications in National Conferences

Ferreira JJ. Diretor do 1º Congresso CNS, Será que a tecnologia pode tratar a Doença de Parkinson. Campus Neurológico Sénior, Torres-Vedras, Portugal, April 7, 2018. (Oral Presentation).

Gouveia M, Borges M, Alarcão J. Custo-efetividade do sacubitril/valsartan na insuficiência cardíaca com fração de ejeção reduzida. Congresso Português de Cardiologia, Albufeira, Portugal, April 30, 2018. (Oral Presentation).

Frota S, Oliveira P, Cruz M, Vicente S, Cardoso R, Guimarães I, Ferreira JJ, Pinto S, Vigário M. (Dys) Prosody in Parkinson's disease: A study of sentence modality and prosodic phrasing. 16th Conference on Laboratory Phonology, Lisbon, Portugal, June 19-22, 2018. (Poster Presentation).

Guimarães I, Torrejano G, Aires R, Gonçalves F, Vaz Freitas S, Correia P, Romeiro C, Silvestre I, Bom R, Martins P, Santos AR. Self-assessment of Communication experiences after laryngectomy. 4th Voice Symposium, Hospital de Gaia, Gaia, Portugal, November 30-December 1, 2018 (Oral Presentation).

Organisation of Conferences

Ferreira JJ. Director. Curso de Introdução à Investigação Clínica, Curso de Introdução à Investigação Clínica, Campus Neurológico Sénior, Torres-Vedras, Portugal, March 17 and 18, 2018.

Ferreira JJ. Director. 1^o Congresso CNS: Será que a tecnologia pode tratar a Doença de Parkinson, Campus Neurológico Sénior, Torres-Vedras, Portugal, April 7, 2018.

Ferreira JJ. Organizer. V Curso de Formação em Boas Práticas clínicas. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 8, 2018.

Ferreira JJ. Director. V Curso de Formação em Boas Práticas clínicas. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 8, 2018.

Ferreira JJ. Local Organizer. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 16-18, 2018.

Ferreira JJ. Director. MDS-ES Physiotherapy Summer School, Torres-Vedras, Portugal, September 14-16, 2018.

Internationalisation

Fernandes AR. Iowa, from March 6 to 23, 2018.

Prizes, Honours and Awards

Rodrigues FB. 2018 Huntington Study Group CME4HD Scholarship.

Rodrigues FB. 2018 European Huntington's disease Network, 10th Plenary Meeting poster award.

Rodrigues FB. 2018 International Parkinson and Movement Disorder, Society travel award.

Rodrigues FB. 2018 European Academy of Neurology/ International Parkinson and Movement Disorder Society – European Section travel award.

Caldeira D. Progresso no Tratamento das Doenças do Coração. 2018 Menção Honrosa, Prémios Nunes Corrêa Verdades de Faria, Santa Casa da Misericórdia de Lisboa.

Industry Contract Research

Infarmed, Unidade de Farmacovigilância de Lisboa e Vale do Tejo.

Fundação Merck, Sharp & Dohme, Base Editorial do Cochrane Movement Disorders Group.

Government / Organisation Contract Research

CHDI Foundation, Research Design and Data Analysis in Support of Clinical Trial Design and Clinical Research Projects. 2017-2020.

Advanced Teaching

Ferreira JJ. An approach to patients with Movement Disorders. 7th MDS-ES Winter School for Young Neurologists, Bordeaux, France, February 2-4, 2018.

Ferreira JJ. Pharmacological treatment of Parkinson's disease. 7th MDS-ES Winter School for Young Neurologists, Bordeaux, France, February 2-4, 2018.

Ferreira JJ. Management of Parkinson's Disease: updates. 19th CNC Movement Disorders Workshop: from basics to updates, Cairo, Egypt, February 7, 2018.

Ferreira JJ. Parkinson's disease and atypical parkinsonism: clinical approach. 19th CNC Movement Disorders Workshop: from basics to updates, Cairo, Egypt, February 7, 2018.

Ferreira JJ. Non-motor manifestation of Parkinson's disease: management. 19th CNC Movement Disorders Workshop: from basics to updates, Cairo, Egypt, February 7, 2018.

Ferreira JJ, Chorea; approach and updates. 19th CNC Movement Disorders Workshop: from basics to updates, Cairo, Egypt, February 7, 2018.

Ferreira JJ. Update on NeuroImaging in Neurodegenerative Disorders. Takamatsu International Symposium for PD & MD in Tokyo, Tokyo, February 23-25, 2018.

Ferreira JJ. Tremor e Doença de Parkinson: dicas práticas na avaliação e tratamento. VII Curso de atualização em geriatria e gerontologia, Hotel Real Palácio, Lisbon, Portugal, April 6, 2018.

Ferreira JJ. Estamos prontos a utilizar a tecnologia como ferramenta de avaliação em estudos clínicos? 1^o Congresso CNS: será que a tecnologia pode tratar a Doença de Parkinson, Campus Neurológico Sénior, Torres-Vedras, Portugal, April 7, 2018.

Ferreira JJ. What's new for the management of motor fluctuations in PD? 7th International Movement Disorders Teaching course, April 26-28, 2018.

Rosa MM. Introdução aos Princípios das Boas Práticas Clínicas, V Curso de Formação em Boas Práticas Clínicas. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 8, 2018.

Rosa MM. Segurança e relato de eventos adversos, V Curso de Formação em Boas Práticas Clínicas. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 8, 2018.

Costa J Protocolo do estudo clínico e documentos essenciais, V Curso de Formação em Boas Práticas Clínicas. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 8, 2018.

Ferreira JJ. Aspetos práticos da condução de estudos clínicos, V Curso de Formação em Boas Práticas Clínicas, Faculdade de Medicina. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 8, 2018.

Ferreira JJ. Diretor do V Curso de Formação em Boas Práticas Clínicas. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 8, 2018.

Ferreira JJ. Responsabilidades do investigador, V Curso de Formação em Boas Práticas Clínicas. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 8, 2018.

Ferreira JJ. Porque é preciso fazer formação em BPC? V Curso de Formação em Boas Práticas Clínicas. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 8, 2018.

Alarcão A. Como escrever um protocolo. Revisões sistemáticas e meta-análises: um workshop prático. CEMBE, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, June 8, 2018.

Alarcão A. Como pesquisar estudos de Medline: exercício prático. Revisões sistemáticas e meta-análises: um workshop prático. CEMBE, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, June 8, 2018.

Ferreira JJ. Chorea. MDS-ES Summer School for Young Neurologists, Copenhagen, June 6-8, 2018.

Correia Guedes L. EHDN and Registry/Enroll-HD studies in Portugal. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 16-19, 2018.

Sampaio C. The use of genetic information in the context of clinical trials. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 16-19, 2018.

Ferreira JJ. A importância de publicar. Revisão sistemática – o que é? Curso de Introdução às Revisões Sistemáticas como Projeto de Investigação Clínica. Gaptic, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, September 12, 2018.

Alarcão J. Bases de dados. Estratégias de pesquisa bibliográfica. Curso de Introdução às Revisões Sistemáticas como Projeto de Investigação Clínica. Gaptic, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, September 12, 2018.

Duarte G. Seleção de estudos. Avaliação de qualidade/viés. Avaliação de qualidade de evidência (GRADE). Curso de Introdução às Revisões Sistemáticas como Projeto de Investigação Clínica. Gaptic, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, September 12, 2018.

Fernandes R. Interpretar meta-análise: quando e como agregar dados. Curso de Introdução às Revisões Sistemáticas como Projeto de Investigação Clínica. Gaptic, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, September 12, 2018.

Costa J. Perspetivas de realização de uma revisão sistemática – exemplos. Curso de Introdução às Revisões Sistemáticas como Projeto de Investigação Clínica. Gaptic, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, September 12, 2018.

Ferreira JJ. Parkinson's disease phenomenology and progression. Physiotherapy Summer School, Torres-Vedras, Portugal, September 14-16, 2018.

Ferreira JJ. Wrap-up and overview of opportunities within MDS and how to get involved. Physiotherapy Summer School, Torres-Vedras, Portugal, September 14-16, 2018.

Costa J. Market Access, Programa de Gestão para a Indústria Farmacêutica. 8ª edição, Universidade Católica de Lisboa, Lisbon, Portugal, October 25, 2018.

Costa J. Revisões sistemáticas e meta-análises em rede: um novo paradigma científico? Meta-análises em rede e comparações indiretas de tecnologias de saúde: do debate à prática. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 6, 2018.

Rosa, MM. Meta-análises em rede e comparações indiretas no processo de tomada de decisão sobre tecnologias da saúde. Meta-análises em rede e comparações indiretas de tecnologias de saúde: do debate à prática. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 6, 2018.

Costa J. Meta-análise em rede: conceitos gerais e prática. Meta-análises em rede e comparações indiretas de tecnologias de saúde: do debate à prática. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 7, 2018.

Ferreira JJ. Os Princípios da Medicina baseada na Evidência. Revisões sistemáticas: revisões narrativas vs revisões sistemáticas. Evidência para a decisão. Introdução às Revisões Sistemáticas e Meta-análises. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 13, 2018.

Duarte G. O protocolo de uma revisão sistemática: principais componentes de um protocolo; formular a questão, definir objetivos e métodos. Introdução às Revisões Sistemáticas e Meta-análises. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 13, 2018.

Alarcão J. Estratégia de pesquisa: planear e desenhar a pesquisa de informação; gerir os resultados da pesquisa. Introdução às Revisões Sistemáticas e Meta-análises. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 13, 2018.

Fernandes RM. Avaliação de ensaios clínicos: os ensaios clínicos aleatorizados; riscos de viés. Introdução às Revisões Sistemáticas e Meta-análises. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 13, 2018.

Alarcão J. Exercício práticos: pesquisa de informação na Medline. Introdução às Revisões Sistemáticas e Meta-análises Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 13, 2018.

Duarte G. Exercício prático: análise crítica de ensaios clínicos. Introdução às Revisões Sistemáticas e Meta-análises. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 13, 2018.

Caldeira D. Seleção de estudos e extração de dados. Como proceder à seleção de estudos. Análise crítica dos dados. Introdução às Revisões Sistemáticas e Meta-análises. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 13, 2018.

Costa J. Introdução à meta-análise. Os diversos passos na elaboração da meta-análise. A interpretação de resultados e o sistema GRADE. Introdução às Revisões Sistemáticas e Meta-análises. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 14, 2018.

Costa J. Que dados agregar numa meta-análise? Como agregar resultados numa meta-análise? Introdução às Revisões Sistemáticas e Meta-análises. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 14, 2018.

Costa. J. Heterogeneidade e outros vieses em meta-análises. Introdução às Revisões Sistemáticas e Meta-análises. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 14, 2018.

Costa J Vieses em meta-análises e técnicas complementares. Introdução às Revisões Sistemáticas e Meta-análises. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 14, 2018.

Ferreira JJ. Ensaios clínicos. Mestrado em Cuidados Paliativos (10ª edição), Instituto de Ciências da Saúde, Lisbon, Portugal, December 15, 2018.

Science and Society

Caldeira D. Interview: “Os mais recentes progressos na terapêutica anticoagulante”. News Farma, January 12, 2018.

Ferreira JJ. Interview: Doença de Parkinson e o tratamento com DBS. SIC Notícias, Edição da Manhã, Dia Mundial da Doença de Parkinson, Lisbon, Portugal, April 11, 2018.

Coelho M. Reportagem: “Uma “batalha naval” no cérebro para controlar os sintomas de Parkinson”. Público, April 11, 2018.

Ferreira JJ. Interview: Doença de Parkinson e o tratamento com DBS. RTP1, Agora Nós, Rúbrica Diga Doutor, April 11, 2018.

Ferreira JJ. Artigo de opinião: Dia Mundial da Doença de Parkinson: “temos hoje disponíveis múltiplas abordagens terapêuticas”. Raio X, April 11, 2018.

Ferreira JJ. Interview: “Há sintomas de Parkinson que podem anteceder 10, 20, 30 anos o tremor”. Noticias Ao Minuto, April 11, 2018.

Valadas A. Interview: Dia Mundial da Doença de Parkinson. TVI24, Diário da Manhã, April 12, 2018.

Coelho M. Reportagem: “Novas descobertas no tratamento dos tremores”. Noticias Magazine, March 1, 2018.

Ferreira JJ. Interview: The relevance of music and dance in Parkinson's Disease patient's lives. Parkinson's In Minds, May 8, 2018.

Ferreira JJ. Reféns do Próprio Corpo, Fala Portugal, RTP, Lisbon, Portugal, May 20, 2018.

Ferreira JJ. Interview: Personal Highlights Hosting EAN 2018, Lisbon, Portugal, June 2018.

Valadas A. Press Release: Distonia Talks - 1.ª Reunião Nacional para Doentes e Cuidadores. News Farma 2018, Lisbon, Portugal, June 5, 2018.

Valadas A. Interview: Distonia afeta 5.000 portugueses, mas é pouco conhecida. Conheça os sinais de alarme segundo uma médica. Sapo 2018, Lisbon, Portugal, June 14, 2018.

Valadas A. Interview: Lisboa recebe 1.ª edição da Reunião Nacional para Doentes e Cuidadores. Tempo Medicina Online 2018, Lisbon, Portugal, June 11, 2018.

Ferreira JJ. Interview: Aprovado medicamento 100 por cento português. RTP1, Lisbon, Portugal, September 5, 2018.

Ferreira JJ. Interview: Parkinson: Sinemet só no próximo ano. Rádio Comercial, Lisbon, Portugal, September 14, 2018.

Ferreira JJ. Interview: Sensibilização para a Distonia. Bom Dia Portugal, RTP1, Lisbon, Portugal, September 20, 2018.

Ferreira JJ. Interview: O método e rigor de Joaquim Ferreira, News@fmul, Lisbon, Portugal, September 27, 2018.

Guedes LC. Interview: Descoberta de novo gene associado ao desenvolvimento da Doença de Parkinson e da Demência de Corpos de Lewy. News@fmul, Lisbon, Portugal.

José Ferro Lab

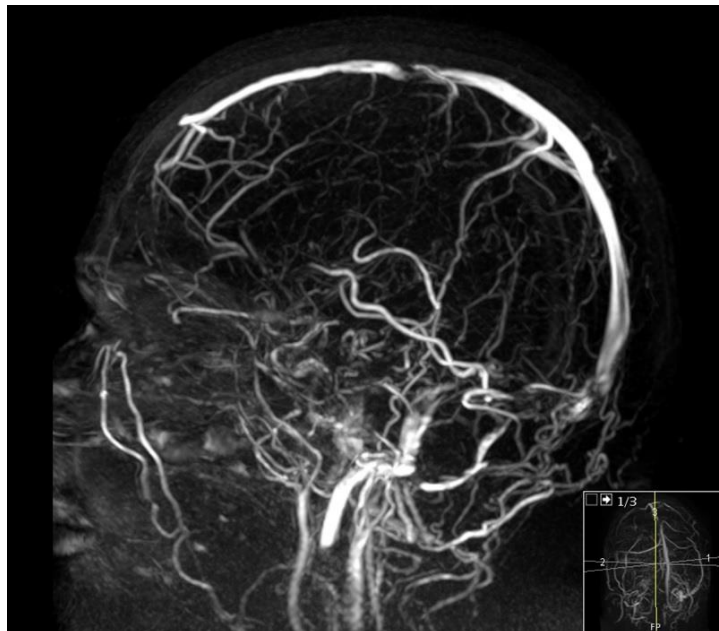
Major Interests / Objectives

General objective is to increase the knowledge and foster the prevention and treatment of the cerebrovascular diseases, one of the major prevalent and disabling disorders involving the brain. The main advantage is the strong collaboration among experienced PIs, based on common clinical investigation methodologies and particular features of research expertise, expanded by multiple national and international collaborations in the areas of basic neurosciences, clinical genetics, advanced statistical methods, neuropsychology, artificial intelligence, and neuroimaging. The researchers conduct observational and experimental studies clinical trials and assess the clinical impact of different interventions in multinational efforts to get new targeted and personalised treatments for these widespread and disabling brain disorders.

Head of Laboratory

José Manuel Morão Cabral Ferro, MD/PhD

Graphical Abstract



Team

Alexandre Valério de Mendonça	PhD	Clinical Staff Scientist
Ana Catarina Gaspar Fonseca	PhD	Clinical Researcher
Ana Isabel Figueira Verdelho	PhD	Clinical Staff Scientist
Ana Marta Teixeira Anes	Master	Clinical Researcher
Bruno André e Silva Miranda	PhD	Clinical Researcher
Carla Cristina Paulo Gabriel Bentes	PhD	Clinical Researcher
Carolina Pires Maruta	PhD	Clinical Researcher
Diana de Aguiar Dias de Sousa	Master	PhD Student
Dina Lúcia Gomes Silva	PhD	Visiting Researcher (Started November)
Frederico Simões Oliveira Fernandes do Couto	PhD	Clinical Researcher
Gislaine Castilho de Oliveira	Master	Lab Technician
José Manuel Borges Fonseca	PhD	Lab Technician
Lara Isabel Pires Melo Caeiro	PhD	Clinical Researcher
Lisa Silva Martins Ribeiro	Master	Lab Technician (Started February Left July)
Maria Gabriela Mariano Leal	Graduate	Lab Technician
Maria Isabel Segurado Pavão Martins Catarino Petiz	PhD	Clinical Staff Scientist
Maria Luísa Mendonça Correia Pires	Other	Administrative Technician
Maria Luísa Reis e Sousa de Abreu e Albuquerque	Graduate	Clinical Researcher
Maria Manuela Gil Guerreiro	PhD	Clinical Staff Scientist
Mariana Durão Borges	Master	Lab Technician
Mário Rui Jesus Santos Rodrigues	Master	Lab Technician
Marisa Marina Fatuda Costa	Other	Administrative Technician
Patrícia Martins Canhão	PhD	Clinical Staff Scientist
Patrícia Raquel dos Anjos Eugénio	Master	Lab Technician (Left January)
Pedro Miguel Nascimento Alves	Master	Clinical Researcher
Sandra Maria Dias Cardoso	Master	Lab Technician
Teresa Maria de Pinho e Melo Pereira Marques	Graduate	Clinical Researcher
Vanda Freitas	Master	Lab Technician

Laboratory Keywords / Research Areas

Cryptogenic stroke, Aphasia, Cognitive impairment, Cerebral venous thrombosis.

Major Scientific Achievements

1. Cerebral venous thrombosis (CVT): a) we defined that the recanalization rate after CVT is 85% and that no recanalization is associated with worse outcome; b) in a systematic review, we confirmed the results of our previous work showing that pregnancy is safe after CVT.

2. We demonstrated that patients with cryptogenic stroke, particularly women, had increased atrial fibrosis, suggesting that atrial cardiopathy without atrial fibrillation is a cause of stroke.
3. We showed that early EEG in acute stroke is useful to detect electric seizures, predict both the outcome and post-stroke epilepsy.

Selected Publications

Aguiar de Sousa D, Canhão P, Crassard I, Coutinho J, Arauz A, Conforto A, Béjot Y, Giroud M, Ferro JM; ISCVT-2-PREGNANCY Investigators (2017). Safety of Pregnancy After Cerebral Venous Thrombosis: Results of the ISCVT (International Study on Cerebral Vein and Dural Sinus Thrombosis)-2 PREGNANCY Study *Stroke*, 48(11):3130-3133. (IF: 6.232, Citations: 4. Source: Web of Science).

Amarenco P, Lavallée PC, Labreuche J, Albers GW, Bornstein NM, Canhão P, Caplan LR, Donnan GA, Ferro JM, Hennerici MG, Molina C, Rothwell PM, Sissani L, Školoudík D, Steg PG, Touboul PJ, Uchiyama S, Vicaut É, Wong LK; TIA registry.org Investigators (2016). One-year risk of stroke after transient ischemic attack or minor stroke. *N Engl J Med.*, 374(16): 1533-42. (IF: 79.26, Citations: 100. Source: Web of Science).

Dávalos A, Alvarez-Sabín J, Castillo J, Díez-Tejedor E, Ferro J, Martínez-Vila E, Serena J, Segura T, Cruz VT, Masjuan J, Cobo E, Secades JJ (2012). International Citicoline Trial on acUte Stroke (ICTUS) trial investigators. Citicoline in the treatment of acute ischaemic stroke: an international, randomised, multicentre, placebo-controlled study (ICTUS trial). *The Lancet*, 380(9839): 349-57. (IF: 53.25, Citations: 105. Source: Web of Science).

Traylor M, Farrall M, Holliday EG, Sudlow C, Hopewell JC, Cheng YC, Fornage M, Ikram MA, Malik R, Bevan S, Thorsteinsdottir U, Nalls MA, Longstreth W, Wiggins KL, Yadav S, Parati EA, Destefano AL, Worrall BB, Kittner SJ, Khan MS, Reiner AP, Helgadottir A, Achterberg S, Fernandez-Cadenas I, Abboud S, Schmidt R, Walters M, Chen WM, Ringelstein EB, O'Donnell M, Ho WK, Pera J, Lemmens R, Norrving B, Higgins P, Benn M, Sale M, Kuhlenbäumer G, Doney AS, Vicente AM, Delavaran H, Algra A, Davies G, Oliveira SA, Palmer CN, Deary I, Schmidt H, Pandolfo M, Montaner J, Carty C, de Bakker PI, Kostulas K, Ferro JM, van Zuydam NR, Valdimarsson E, Nordestgaard BG, Lindgren A, Thijs V, Slowik A, Saleheen D, Paré G, Berger K, Thorleifsson G; Australian Stroke Genetics Collaborative, Wellcome Trust Case Control Consortium 2 (WTCCC2),

Hofman A, Mosley TH, Mitchell BD, Furie K, Clarke R, Levi C, Seshadri S, Gschwendtner A, Boncoraglio GB, Sharma P, Bis JC, Gretarsdottir S, Psaty BM, Rothwell PM, Rosand J, Meschia JF, Stefansson K, Dichgans M, Markus HS; International Stroke Genetics Consortium. Genetic risk factors for ischaemic stroke and its subtypes (the METASTROKE collaboration): a meta-analysis of genome-wide association studies. *Lancet Neurol.*, 11(11): 951-62. (IF: 27.14, Citations: 238. Source: Web of Science).

Aguiar de Sousa D, Lucas Neto L, Canhão P, Ferro JM (2018). Recanalization in Cerebral Venous Thrombosis. A Systematic Review and Meta-Analysis. *Stroke*, (8): 1828-1835. (IF: 6.23, Citations: 1. Source: Web of Science).

Ongoing Research Projects

2016/2019: Randomised interventional prospective study of the effect of physical activity in vascular cognitive impairment. Coordinator: Ana Isabel Verdelho. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/DTP-DES/3706/2014. Amount: € 199 588,00. Total Amount: € 199 588,00.

2016/2018: Fundo de Investigação para a Saúde. Coordinator: Ana Catarina Fonseca. Funding Agency: Infarmed. Reference: FPJ001028. Amount: € 80 000,00. Total Amount: € 80 000,00.

2014/2018: Technology, Entrepreneurship and Innovation Policy Lab. Coordinator: Ana Sofia Oliveira. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: CMUP-ERI/TPE/0028/2013. Amount: € 89 300,00. Total Amount: € 350 000,00.

2014/2018: Stroke biobank. Coordinator: José Ferro. Funding Agency: Bayer. Reference: Bayer JMFerro. Amount: € 16 000,00. Total Amount: € 16 000,00.

2014/2018: Setting the stage for prevention trials in Genetic Frontotemporal Lobar Degeneration. Coordinator: Alexandre Mendonça. Funding Agency: Ana Paula dos Santos Marques da Costa. Reference: GenFi. Amount: € 10 000,00. Total Amount: € 10 000,00.

2013/2019: International study on dural sinus and cerebral vein thrombosis 2. Coordinator: José Ferro. Funding Agency: Congrex Schweiz AG. Reference: ISCVT-2. Amount: € 155 000,00 Total Amount: € 155 000,00.

2013/2018: Epilepsy in acute stroke. Coordinator: Carla Bentes. Funding Agency: Tecnifar. Reference: AVC. Amount: € 5 000,00. Total Amount: € 5 000,00.

2010/2018: Transient ischaemic attack. Coordinator: Patrícia Rodrigues. Funding Agency: SOS Ataque Cérébrale. Reference: TIA JM Ferro. Amount: € 14 520,00. Total Amount: € 14 520,00.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

Publications in Peer Review Journals

Aguiar de Sousa D, Canhão P, Ferro JM (2018). Safety of pregnancy after cerebral venous thrombosis: systematic review update. *Journal of Neurology*, 265(1): 211-212. (IF: 3.78, Citations: 0. Source: Web of Science).

Aguiar de Sousa D, Lucas Neto L, Canhão P, Ferro JM (2018). Recanalization in Cerebral Venous Thrombosis. A Systematic Review and Meta-Analysis. *Stroke*, 49(8): 1828-1835. (IF: 6.23, Citations: 1. Source: Web of Science).

Ali M, Elders A, Godwin J, Sandri AK, Williams LJ, Williams LR, VandenBerg K, Abel S, Abo M, Becker F, Bowen A, Brandenburg C, Breitenstein C, Copland D, Cranfill T, Pietro-Bachmann MD, Enderby P, Fillingham J, Galli F, Gandolfi M, Glize B, Godecke E, Hilari K, Hinckley J, Horton S, Howard D, Jaecks P, Jefferies B, Jesus L, Kambanaros M, Khedr E, Kong APH, Kukkonen T, Kang EK, Ralph ML, Laganaro M, Laska AC, Leemann B, Leff A, Lorenz A, MacWhinney B, Mattioli F, Maviş I, Meinzer M, Sebastián EN, Nilipour R, Paik NJ, Palmer R, Papathanasiou I, Patricio B, Martins IP, Price C, Jakovac TP, Rochon E, Rose ML, Rosso C, Lima RR, RubiFessen I, Ruitter M, Marshall RS, Small S, Snell C, Stahl B, Szaflarski JP, Thomas S, Van Der Meulen I, Van De Sandt-Koenderman M, Visch-Brink E, Worrall L, Harris Wright H & Brady MC (2018). Who participates in aphasia research? An analysis of the REhabilitation and recovery of peopLE with Aphasia after Stroke (RELEASE). *Aphasiology*, 32 (Suppl 1) 2-4. (IF: 1.70, Citations: 0. Source: Web of Science).

Almeida J, Amaral L, Garcea FE, Aguiar de Sousa D, Xu S, Mahon BZ, Martins IP (2018). Visual and visuomotor processing of hands and tools as a case study of cross talk between the dorsal and ventral streams. *Cognitive Neuropsychology*, 35(5-6): 288-303. (IF: 1.79, Citations: 0. Source: Web of Science).

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Bentes C, Peralta AR, Viana P, Martins H, Morgado C, Casimiro C, Franco AC, Fonseca AC, Geraldés R, Canhão P, Pinho e Melo T, Paiva T, Ferro JM (2018). Quantitative EEG and functional outcome following acute ischemic stroke. *Clinical Neurophysiology*, 129(8): 1680-1687. (IF: 3.61, Citations: 1. Source: Web of Science).

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Invited Lectures and Seminars

Fonseca J, Miranda F, Martins IP. Teste de memória dos 5 Objectos: Aplicação em pessoas com afasia. 12º Congresso Português do AVC, Porto, Portugal, February 1-3, 2018.

Ferro JM. AVC e Doenças hepáticas e gastroenterológicas. 12º Congresso Português do AVC, Porto, Portugal, February 2, 2018.

Martins IP. Influência da linguagem nos circuitos neurais/Influence of language on neural circuits. VI AEICBAS Biomedical Congress, Instituto de Ciências Biomédicas Abel Salazar, Porto, Portugal, March 15-18, 2018.

Fonseca J. Afasias ligeiras. VIII Congresso Nacional APTF, Hotel Palácio Estoril, Estoril, Portugal, May 10, 2018.

Fonseca AC. Acidente Vascular Cerebral. Mente-cérebro à conversa, Lisbon, Portugal, May 21, 2018.

Ferro JM. Vascular dementia. 4th European Academy of Neurology, Lisbon, Portugal, June 18, 2018.

Ferro JM. Neuropsychiatric consequences of stroke. 7th Word Stroke Organization International Meeting “Tbilisi 2018: Stroke prevention, diagnosis and treatment”, Tbilisi, Georgia, September 27-29, 2018.

Ferro JM. Stroke in the context of systemic and haematological diseases. 7th Word Stroke Organization International Meeting “Tbilisi 2018: Stroke prevention, diagnosis and treatment”, Tbilisi, Georgia, September 27-29, 2018.

Fonseca J. Avaliação clínica do discurso afásico. Relicário de sons, Lisbon, Portugal, October 13, 2018.

Fonseca J. Recuperação da afasia pós-AVC: evidência científica. 9ª Reunião Nacional das Unidades de AVC, Lisbon, Portugal, October 26, 2018.

Martins IP. Sequelas cognitivas de AVC da circulação posterior. 9ª Reunião Nacional de Unidades de AVC, Lisbon, Portugal, October 26, 2018.

Nascimento Alves P. Disfunção nervosa superior pouco comum (ou mais escondida) no AVC agudo” - Sequelas cognitivas de AVC de hemisfério direito. 9ª Reunião Nacional de Unidades de AVC, Lisbon, Portugal, October 26, 2018.

Fonseca J. Intervenção terapêutica na afasia: casos clínicos. Relicário de sons, Lisbon, Portugal, October 27, 2018.

Ferro JM. Exame neurológico. Congresso de Neurologia 2018, Porto, Portugal, November 15 2018.

de Mendonça A. Possibilities in the diagnosis of diferente dementias. Congresso de Neurologia 2018, Porto, Portugal, November 17, 2018.

Fonseca J. Pensar a Linguagem. Mesa 2 - Cognição e Comunicação. II Encontro Científico da Obra Social do Pousal, Cuidar na Multi Deficiência, Ericeira, Portugal, November 23, 2018.

Bentes C. Estado de mal não convulsivo. Diálogos em Epilepsia, Lisbon, Portugal, November 2018.

Communications in International Conferences

Miranda F, Fonseca J, Leal G. Typewriting is better than handwriting – a case report. 10th European Congress of Speech and Language. Effectiveness, Speech and Language Therapy, Science, Practice, Workshop: Written Language Disorders and School Age Language II, Cascais, Portugal, May 10-12, 2018. (Poster Presentation).

Branco R, Caldas J, Cardoso R, Dias JC, Carmona J, Carvalhal A, Fonseca J, Franco D, Loureiro R, Lousada M, Margarido E, Paixão R, Pestana P, Rocha M, Santos H, Freitas SV, Viana R, Vidal MM, Domingues D, Gomes S, Morgado MJ. Clinical guidelines for speech and language therapy: proposal of the Portuguese professional association. 10th European Congress of Speech and Language. Effectiveness, Speech and Language Therapy, Science, Practice, Initial Education II, Cascais, Portugal, May 10-12, 2018. (Oral Presentation).

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Fonseca C, Eugénio P, Marto JP, Inácio N, Nascimento PA, Viana-Baptista M, Melo TP, Ferro JM, Almeida AG. Evaluation of serum biomarkers related to atrial remodelling in patients with undetermined stroke etiology. 4th European Stroke Organisation Conference, Goteborg, Sweden, May 16-18, 2018. (Poster Presentation).

Coco MI, Maruta C, Carvalho M, Campos CF, Victor JS, Martins IP, Della Sala S. Attentional responses while looking for changes: effect of pathological ageing. Vision Sciences Society Eighteenth Annual Meeting, Florida, USA, May 18-23, 2018. (Oral Presentation).

Carvalho Dias M, Nave J, dos Santos Pinheiro L, Ferro JM. Carotid artery dissection after road cycling. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 16-19, 2018. (Poster Presentation).

Nascimento Alves P, Foulon C, Cerliani L, Karolis S, Thiebaut de Schotten M. Subcortical Anatomy of the Default Mode Network: a functional and structural connectivity study". 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 16-19, 2018. (Oral Presentation).

Sotero F, Melo TP, Canhao P. In-hospital stroke: characterisation in a tertiary hospital. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 16-19, 2018. (Oral Presentation).

Azevedo Kauppila L, Franco AC, Fonseca AC, Bentes C, Peralta AR. Caracterização electroencefalográfica de doentes com AVC isquémico bitalâmico. Congresso de Neurologia 2018, Porto, Portugal, November 15-17, 2018. (Poster Presentation).

Pompili A, Abad A, Martins de Matos D, Martins IP. Topic coherence analysis for the classification of Alzheimer's disease. IberSPEECH'2018, Barcelona, Spain, November 21-23, 2018. (Oral Presentation).

Nascimento Alves P, Fonseca AC, Martins IP. Spatial disorientation after stroke - characterization of symptoms and correlation with lesion connectomics. 4th workshop of the Portugal Clinical Scholars Research Training, Lisbon, Portugal, 2018. (Oral Presentation).

Communications in National Conferences

Rodrigues S, Soares F, Oliveira V, Melo TP, Ana Fonseca AC. Acuidade da escala ROPE para diagnostico de "Foramen ovale patente" associado a um padrão de cortina no Doppler

transcraniano. 12º Congresso Português do AVC, Porto, Portugal, February 1-3, 2018. (Oral Presentation).

Sotero F, Melo TP, Canhão P. Caracterização do AVC intra-hospitalar num hospital terciário. 12º Congresso Português do AVC, Porto, Portugal, February 1-3, 2018. (Oral Presentation).

Fonseca J, Morgado J, Leal G, Fonseca AC Melo TP, Martins IP. Trombólise e recuperação da afasia. 12º Congresso Português do AVC, Porto, Portugal, February 1-3, 2018. (Oral Presentation).

Fonseca J. A interferência da pragmática na comunicação das crianças. 1º ciclo de Conferencias do Centro de Medicina de Alcoitão, Alcoitão, Portugal, March 6, 2018. (Oral Presentation).

Nascimento Alves P, Foulon C, Cerliani L, Karolis S, Thiebaut de Schotten M. Anatomia subcortical da “Default Mode Network”: Estudo de conectividade estrutural e funcional. Congresso da Sociedade Portuguesa de Neurologia, Porto, Portugal, November 14-18, 2018. (Oral Presentation).

Nascimento Alves P, Silva DP, Fonseca AC, Martins IP. Delírio de espaço após lesão cerebral focal – revisão sistemática da paramnésia reduplicativa. Congresso da Sociedade Portuguesa de Neurologia, Porto, Portugal, November 14-18, 2018. (Poster Presentation).

Almeida AG, Marto JP, Inácio N, Alves PN, Baptista MV, Melo TP, Ferro JM, Fonseca AF. Miocardiopatias em doentes adultos com AVC isquémico: um estudo de ressonância magnética cardíaca. Congresso de Neurologia 2018, Porto, Portugal, November 15-17, 2018. (Oral Presentation).

Grenho Rodrigues S, Batista P, Bentes C. Síndrome de vasoconstricção cerebral reversível associado a trazodona. Congresso de Neurologia 2018, Porto, Portugal, November 15-17, 2018. (Poster Presentation).

Organisation of Conferences

Canhão P. Member of the Organising and Programme Committee. 12º Congresso Português do AVC, Porto, Portugal, February 1-3, 2018.

Ferro J, Pavão Martins I. Members of the Local Organising Committee. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 16-19, 2018.

Fonseca AC. Member of the Organising Committee. Congresso de Neurologia 2018, Porto, Portugal, November 15-17, 2018.

Internationalisation

Bentes C. Member. Epi-Care (European Reference Network on rare and complex epilepsies).

Bentes C. Co-investigator. MORE – Medtronic Registry on Epilepsy – international registry of refractory epilepsy patients submitted DBS surgery.

Bentes C. Co-investigator. EURAP – European Registry for Pregnancy and safety of anti-epileptic drugs.

Fonseca C. Member. Education Committee and of the Membership Committee of the European Stroke Organisation.

Fonseca C. Member of the domain 1 of the “Action plan for stroke 2018” endorsed by the European Stroke Organisation and SAFE.

Fonseca C. Fellow of the European Stroke Society.

Ferro JM. Principal Investigator and Member of Steering Committee of Boehringer Ingelheim sponsor clinical trial RESPECT CVT.

Ferro JM. Member Editorial Board “Stroke” and “European Journal of Stroke”, and of the Advisory Board of “Cerebrovascular Disease” and “Journal of Neurology”.

Ferro JM. Member Executive Board of the International Stroke Society.

Ferro JM. Member Scientific Panel for Health, Directorate-General for Research and Innovation (Directorate E – Health) European Commission.

Ferro JM. Member of the Global Advisory Board of Boehringer Ingelheim.

Prizes, Honours and Awards

Carla Bentes. Epilepsia open prize 2018.

Gil-Gouveia R, Loureiro C, Martins IP. Migraine, Headaches and Cognition: A follow-up study on cognitive decline. Bolsa Tecnifar 2018.

Nascimento Alves P, Foulon C, Cerliani L, Karolis S, Thiebaut de Schotten M. Subcortical anatomy of the Default Mode Network – functional and structural connectivity study. Runner-up prize of the basic tournament for neurologist in training - 4th Congress of the European Academy of Neurology. Entidade: European Academy of Neurology.

Nascimento Alves P. Spatial and mental topographical orientation after stroke. Orientação Científica: Professora Doutora Isabel Pavão Martins e Professora Doutora Ana Catarina Fonseca. Distinção Top 5 de melhores propostas de projeto de investigação do Programa Clinical Scholars Research Training. Entidade: Harvard Medical School Portugal.

Nascimento Alves P, Foulon C, Cerliani L, Karolis S, Thiebaut de Schotten M. Anatomia subcortical da Default Mode Network: estudo de conectividade. - Prémio Orlando Leitão - melhor comunicação oral no Congresso de Neurologia 2018. Entidade: Sociedade Portuguesa de Neurologia.

Nascimento Alves P. Estudo SNOS - Spatial Navigation and Orientation after Stroke. Prémio João Lobo Antunes – Programa Santa Casa Neurociências 2018. Entidade: Santa Casa da Misericórdia de Lisboa.

Nascimento Alves P. Spatial and mental topographical orientation after stroke. Research Experience Fellowship grant 2018 of the European Academy of Neurology Entidade: European Academy of Neurology

Nascimento Alves P. Orientação e navegação espacial após AVC - Análise cognitiva e dos padrões de conectividade lesional. Orientação Científica: Professora Doutora Isabel Pavão Martins e Professora Doutora Ana Catarina Fonseca. Bolsa de investigação em Doenças Vasculares Cerebrais 2018. Entidade: Sociedade Portuguesa do Acidente Vascular Cerebral.

Industry Contract Research

RESPECT-CVT: Randomised, Open-label, Exploratory Trial with Blinded Endpoint Adjudication (PROBE), Comparing Efficacy and Safety of Oral Dabigatran Etxilate Versus Oral Warfarin in Patients with Cerebral Venous and Dural Sinus Thrombosis Over a 24-week Period. Coordinator: José Ferro - Global Principal Investigator.

RESPECT-ESUS: Randomized, double-blind evaluation in secondary stroke prevention comparing the efficacy and safety of the thrombin inhibitor dabigatran etexilate 110 or 150 mg (twice daily)

versus acetylsalicylic acid (100 mg once daily) in patients with controlled clinical trial Embolic Stroke of Undetermined Source.

2018 - “A randomized, double-blind, placebo-controlled, parallel group study to evaluate the efficacy and safety of CNP520 in participants at risk for the onset of clinical symptoms of Alzheimer’s disease” (Novartis CNP520A2202J; 2018). Maruta C (in collaboration with Dementia Study Group).

2015-2018 - “A Phase 3 multicentre, randomised, double-blind, placebo-controlled, parallel-group study to evaluate the efficacy and safety of Aducanumab (BIIB037) in subjects with early Alzheimer's disease” (Biogen Idec BIIB037-221AD301 ENGAGE, 2015). Maruta C (in collaboration with Dementia Study Group).

Advanced Teaching

Ferro JM. Estado vegetative persistente. IV Curso Pós-graduado em Bioética, Lisbon, Portugal, April 12, 2018.

Ferro JM. Venous Stroke. ESO Regional Teaching Course, Belgrade, Serbia, April 10, 2018.

Ferro JM. Haemathological conditions and stroke. ESO Regional Teaching Course. , Belgrade, Serbia, April 10, 2018.

Martins IP. Functional organisation of the mind, methods in Cognitive assessment. Master in Neurosciences, Lisbon, Portugal, May 8, 2018.

Maruta C. Executive functions and the frontal lobes. Master in Neurosciences. Master in Neurosciences, Lisbon, Portugal, May 15, 2018.

Nascimento Alves P. Delírios de espaço após AVC: das redes funcionais até à apresentação clínica. Master in Neurosciences, Lisbon, Portugal, May 17, 2018.

Miranda B. Models of learning and decision-making. Master in Neurosciences, Lisbon, Portugal, May 22, 2018.

Science and Society

Martins IP (2018). «O atual estilo de vida é propício às dores de cabeça» Oitenta e oito por cento dos portugueses sofre de dores de cabeça, atingindo não só os adultos e idosos, mas também crianças e adolescentes. Porquê? Revista Prevenir Saúde, pp. 66, March.

Nascimento Alves P (2018). Como é que um AVC altera o “GPS cerebral”? Público, edição online, July 4.

Nascimento Alves P (2018). A orientação espacial é essencial para a vida diária, Lisboa Norte – revista informativa do Centro Hospitalar Universitário Lisboa Norte, nº 5, November.

MSc Thesis Completed

Sofia Ribeiro, 12/07/2018, Tratamento do acidente vascular cerebral na endocardite infecciosa, Faculty of Medicine, University of Lisbon. Supervisor: José M. Ferro.

Patricia Pires, 12/07/2018, Terapêutica antitrombótica do AVC cardioembólico na doença hepática crónica, Faculty of Medicine, University of Lisbon. Supervisor: José M. Ferro.

Flávia Varela, 12/07/2018, Stroke prevention with patients with atrial fibrillation and chronic hepatic disease, Faculty of Medicine, University of Lisbon. Supervisor: José M. Ferro.

PhD Thesis Completed

Ana Catarina da Costa Oliveira Santos Ermida de Oliveira, 05/04/2018, A ira no doente com acidente vascular cerebral. Determinantes e impacto na adesão ao tratamento e no bem-estar dos cuidadores, Faculty of Medicine, University of Lisbon. Supervisor: José M. Ferro.

Carla Bentes, 13/07/2018, O EEG na doença vascular cerebral: da fisiopatologia à terapêutica, Faculty of Medicine, University of Lisbon. Supervisor: José M. Ferro.

Leonor Saúde Lab

Major Interests / Objectives

We want to understand the cellular and molecular mechanisms controlling fundamental developmental processes and regenerative processes activated upon severe injuries.

Head of Laboratory

Maria Leonor Tavares Saúde, PhD, Invited Associate Professor

Team

Ana Catarina Esteves Ribeiro	PhD	Senior Post-Doctoral Researcher
Ana Filipa Canha Pereira	Master Student	MSc Student
Ana Filipa Carvalho Marques Dias	PhD	Junior Post-Doctoral Researcher (Started February)
Ana Margarida Pereira Cristóvão Pinto	Graduate	Lab Manager
Ana Paula Lopes Martins	Master Student	MSc Student
André João Ferreira Fontes	Master Student	MSc Student (Started April Left August)
Diana Sofia Chapela Duarte Pires	PhD Student	PhD Student
Diogo de Abreu Paramos de Carvalho	PhD Student	PhD Student (Started January)
Isaura Vanessa Antunes Martins	PhD	Junior Post-Doctoral Researcher
José Maria Lage de Sousa Leitão	Master Student	MSc Student (Left March)
Luís Miguel Beicinha Branco Estronca	PhD	Visiting Researcher
Marco António Benjamim Morais	Master Student	MSc Student (Left September)
Mariana Antas Rebocho da Costa	Graduate	Lab Technician
Niccolò Natanaele Vanni	Master Student	MSc Student (Started July Left September)
Rita Alexandra Rodrigues Pinto	Master	Trainee (Left April)
Sara Maria Ferreira Fernandes	Master	Lab Technician (Left December)

Laboratory Keywords / Research Areas

Early development, Regeneration, Spinal cord, Microenvironment, Zebrafish, Mouse.

Major Scientific Achievements

Our PhD students Sara Fernandes and Rita Pinto defended their PhD thesis successfully.

Sara Fernandes studied the role of alternative polyadenylation (APA) in the context of vertebrate embryonic development. The formation of distinct 3'UTRs through APA is a mechanism of gene expression regulation that has been implicated in many physiological and pathological processes. However, its functions in the context of vertebrate embryonic development have

been largely unaddressed, in particular with a gene-specific focus. Sara showed, for the first time, the functional importance of gene-specific alternative 3'UTR APA of a particular gene (*fgf8a*) in vertebrate embryonic development. Rita Pinto dedicated her time in the laboratory to understand the mechanism of action of *Dmrt2a*. *Dmrt2a* is a zinc finger-like transcription factor with several roles during zebrafish early development: left-right asymmetry, synchronisation of the somite clock genes and fast muscle differentiation. Despite the described functions, *Dmrt2a* mechanism of action is unknown. Rita generated and validated several genetic tools for *dmrt2a* and identified six genes downstream of this transcription factor.

Two members of our laboratory were successful in getting two grants to consolidate our spinal cord regeneration line of research. Leonor Saúde was awarded a grant to study the role of induced-senescent cells and Ana Ribeiro got a grant to uncover the mechanisms of vascular remodelling.

Selected Publications

Fernandes SF, Fior R, Pinto F, Gama-Carvalho M, Saúde L (2018). Fine-tuning of *fgf8a* expression through alternative polyadenylation has a selective impact on Fgf-associated developmental processes. *Biochimica Biophysica Acta - Gene Regulatory Mechanisms*. S1874-9399(18)30100-7. doi: 10.1016/j.bbagr.2018.07.012. (IF: 5.547, Citations: 0. Source: Web of Science).

Ribeiro A, Monteiro JF, Certal AC, Cristovão AM, Saúde L (2017). *Foxj1a* is expressed in ependymal precursors, controls central canal position and is activated in new ependymal cells during regeneration in zebrafish. *Open Biology*, 7(11): 170139. doi: 10.1098/rsob.170139. (IF: 5.36, Citations: 3. Source: Web of Science).

Tavares B, Jacinto R, Sampaio P, Pestana S, Pinto A, Vaz A, Roxo-Rosa M, Gardner R, Lopes T, Schilling B, Henry I, Saúde L, Lopes SS (2017). Notch/Her12 signalling modulates motile/immotile cilia ratio downstream of *Foxj1a* in zebrafish left-right organizer. *eLife*, e25165. doi: 10.7554/eLife.25165. (IF: 7.616, Citations: 2. Source: Web of Science).

Mendes RV, Martins GG, Martins AM, Saúde L (2014). N-cadherin locks left-right asymmetry by ending the leftward movement of Hensen's node cells. *Developmental Cell*, 30(3):353-60. (IF: 9.616, Citations: 5. Source: Web of Science).

Fior R, Maxwell AA, Ma TP, Vezzano A, Moens CB, Amacher SL, Lewis J, Saúde L (2012). Differentiation and movement of presomitic mesoderm progenitor cells are both controlled by Mesogenin1. *Development*, 139(24): 4656-65. (IF: 7.09, Citations: 29. Source: Web of Science).

Azevedo AS, Grotek B, Jacinto A, Weidinger G, Saúde L (2011). The regenerative capacity of the zebrafish caudal fin is not affected by repeated amputations. *PLoS ONE*, Vol. 6(7); e22820. (IF: 3.54, Citations: 35. Source: Web of Science).

Ongoing Research Projects

2018/2021: A função das células senescentes induzidas na regeneração da medula espinal. Coordinator: Maria Leonor Saúde. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MED-NEU/30428/2017. Amount: € 211 843,35. Total Amount: € 239 343,35.

2018/2021: Modulação da reparação vascular durante a regeneração da medula espinal. Coordinator: Ana Catarina Ribeiro. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIA-BID/28572/2017. Amount: € 239 365,16. Total Amount: € 239 365,16.

2018: Using the regenerative potential of zebrafish extracellular matrix to promote spinal cord repair in mammals. Coordinator: Maria Leonor Saúde. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IP (BIG 2017). Amount: € 42.000,00.

2016/2019: Angiocrine factors as modulators of spinal cord regeneration. Coordinator: Maria Leonor Saúde. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIM-MED/3295/2014. Amount: € 186 229,00. Total Amount: € 186 229,00.

Other Projects

2016/2018: ReTuBi: Towards outstanding research and training in tumour. Coordinator: Edgar Gomes. Funding Agency: European Commission. Reference: Twinning 692322. Amount: € 788 725,00. Total Amount: € 999 975,00.

Publications in Peer Review Journals

Fernandes SF, Fior R, Pinto F, Gama-Carvalho M, Saúde L (2018). Fine-tuning of fgf8a expression through alternative polyadenylation has a selective impact on Fgf-associated developmental processes. *Biochimica Biophysica Acta - Gene Regulatory Mechanisms*, S1874-9399(18)30100-7. doi: 10.1016/j.bbagr.2018.07.012.

Pinto RA, Almeida-Santos J, Lourenço R, Saúde L (2018). Identification of Dmrt2a downstream genes during zebrafish early development using a timely controlled approach. *BMC Developmental Biology*, 18(1):14. doi: 10.1186/s12861-018-0173-5.

Invited Lectures and Seminars

Saúde L. Left-Right from chickens to fish to humans. 3rd BEAT-PCD Conference European Cooperation in Science & Technology, Lisbon, Portugal, February 7, 2018.

Saúde L. Modulation of the vascular repair during spinal cord regeneration. The 5th European Zebrafish Principal Investigator Meeting, University of Trento, Italy, March 23, 2018.

Saúde L. Bridging the regeneration gap: insights from the zebrafish. IBIMED, University of Aveiro, Aveiro, Portugal, May 16, 2018.

Saúde L. Modulation of the vascular repair during spinal cord regeneration. The EMBO Conference on The Molecular and Cellular Basis of Regeneration and Tissue Repair, Valletta, Malta, September 16, 2018.

Saúde L. Modulation of the vascular repair during spinal cord regeneration. Symposium on Tumour Biology, Twinning Network ReTuBi, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, December 5, 2018.

Communications in International Conferences

Ribeiro A. Vascular repair after spinal cord injury in zebrafish. Joint Meeting of the Portuguese, Spanish and French Societies for Developmental Biology, Porto, Portugal, November 7-10, 2018. (Poster Presentation).

Communications in National Conferences

Saúde L. Creating therapeutic opportunities for spinal cord injury using zebrafish larvae. The 4th Meeting of the Portuguese Network for Spinal Cord Injury Research, IBIMED, University of Aveiro, Aveiro, Portugal, May 21, 2018.

Chapela D. From fish bowl to bedside: the power of zebrafish to accelerate the discovery of new therapies for spinal cord injury. XII CAML PhD Students Meeting, Lisbon, May 2018.

Organisation of Conferences

The 7th EMBO Conference on “The molecular and cellular basis of regeneration and tissue repair”, Valetta, Malta, September 15-19, 2018.

The 4th Meeting of the Portuguese Society of Developmental Biology (SPBD) jointly with the Spanish Society for Developmental Biology (SEBD) in association with the French Society for Developmental Biology (SFBD), Porto, Portugal, November 7-10, 2018.

Internationalisation

We established a collaboration with Pedro Baptista (Aragon Biomedical Research Institute, Zaragoza, Spain) to look at the role of the extracellular matrix on spinal cord regeneration in zebrafish and in mammals. This is part of the PhD project of Dalila Silva (SFRH/BD/138636/2018) that will be co-supervised by Leonor Saúde and Pedro Baptista.

We established a collaboration with Caetano Reis e Sousa (The Francis Crick, London, UK) to look at new neural stem cell niches within the mammalian spinal cord.

We established a collaboration with Marco Demaria (European Research Institute for the Biology of Ageing, Groningen, The Netherlands) and with José Bessa (I3S, Porto) to explore the role of induced-senescent in spinal cord regeneration in mice and in zebrafish, respectively.

Advanced Teaching

Saúde L. Lecturer. LisBonBioMed PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 22, 2018.

Saúde L. Lecturer. GABBA PhD Programme, Instituto de Biologia Molecular e Celular, Porto, Portugal, February 23, 2018.

Saúde L. Lecturer. PhD Programme in Bioengineering – Cell Therapies and Regenerative Medicine, IST/Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, March 5, 2018.

Ribeiro A. Lecturer. Genes and Molecules in Development, BED Master, Faculdade de Ciências da Universidade de Lisboa, March 15, 2018.

Saúde L. Lecturer. ProRegeM - PhD Programme in Mechanisms of Disease and Regenerative Medicine, CEDOC, Lisbon, Portugal, April 12, 2018.

Saúde L. Lecturer. GABBA PhD Programme, Instituto de Biologia Molecular e Celular, Porto, Portugal, May 28, 2018.

Science and Society

Ribeiro A, Costa M. Participated in European Researchers' Night, Lisbon, Portugal, September 28, 2018.

Saúde L. Prova Oral, Antena 3, November 28, 2018.

MSc Thesis Completed

Mariana Costa, 23/11/2018, Uncovering the role of blood vessels during spinal cord regeneration in zebrafish, Mestrado em Mestrado em Genética Molecular e Biomedicina, Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa. Supervisors: Ana Ribeiro and Leonor Saúde.

José Maria Leitão, 02/02/2018, The role of Cadherin 11 (Cdh11) in the establishment of laterality in the zebrafish, Mestrado em Biologia Evolutiva e do Desenvolvimento, Faculdade de Ciências da Universidade de Lisboa. Supervisor: Leonor Saúde.

PhD Thesis Completed

Sara Fernandes, 14/11/2018, Post-transcriptional regulation in the developing embryo, Faculty of Medicine, University of Lisbon. Supervisors: Leonor Saúde and Margarida Gama-Carvalho.

Rita Pinto, 10/10/2018, Identification of Dmrt2a downstream genes during zebrafish early development, Faculty of Medicine, University of Lisbon. Supervisor: Leonor Saúde.

Luís Costa Lab

Major Interests / Objectives

Metastases are the hallmark of cancer lethality. They represent a unique and complex phenomenon associated, not only with genomic alterations in cancer cell, but also with a heterotypic signalling between cancer cells and host tissues. Our aim is to better understand the molecular mechanisms involved in tumour progression at the metastatic site (using bone metastases as a paradigm) and to unravel molecular signatures of organotropism through identification of “leader gene signatures” common to the primary tumour and corresponding metastasis (using colorectal cancer (CRC) as a model). Ultimately, we are successfully constructing an Oncodynamics Biobank that will contribute to interpret the different time points of metastatic cancer progression by comprehensive analysis of clonal evolution and host immune response.

Head of Laboratory

Luís António Marques da Costa, MD/PhD

Team

António Manuel Marujo Palma	Graduate	MSc Student
Arlindo Júlio Rebelo da Silva Ferreira	Master	Clinical Researcher
Catarina Pinheiro Barracha Pinto de Abreu	Graduate	MSc Student
Daniela Maria Grou Ramalho	Graduate	MSc Student
Inês Fernandes Gomes	Master	PhD Student
Isabel Cristina Ferreira Fernandes Borges da Costa	PhD	Clinical Researcher
Marta Sofia Alves Martins	PhD	Staff Scientist
Patrícia Alexandra Parda Martins	Master	Lab Technician (Left October)
Patrícia Borges Alves	Graduate	MSc Student
Patrícia Isabel Martins Corredeira	Master	Lab Technician
Paulina Flávia da Costa Piai	Graduate	Lab Technician
Pedro Nuno Lopes Mendes Calheiros Andrade	Master	Lab Technician
Raquel Sofia Cruz Duarte	Master	PhD Student
Sandra Cristina Cara de Anjo Casimiro	PhD	Staff Scientist
Sandra Sofia Chorão Lavajo Lucas	Graduate	Lab Technician (Left November)
Teresa Raquel Duarte Pacheco	PhD	Senior Post-Doctoral Researcher
Tito Miguel Palmela Leitão	Graduate	Clinical Researcher (Started December)

Laboratory Keywords / Research Areas

Metastasis, Metastatic organotropism, Tumour microenvironment, Leader genes signatures, Therapy resistance, Oncodynamics, Liquid Biopsy.

Major Scientific Achievements

During 2018, we consolidated our Oncodynamics Biobank, which is a clinically annotated prospective collection of liquid biopsies from breast, prostate, colorectal and melanoma cancer patients, designed to characterise both the host immune response and tumour clonal evolution during cancer progression under therapy. In this last year, we recruited up to 80% of the expected breast cancer cases, which allowed us to start the proposed analyses. We have also initiated the multi-institutional RAMBO-223 trial, a prospective, single-cohort, observational study of patients with metastatic castration resistant prostate cancer treated with radium-223 dichloride. Finally, we started an international collaboration with Illumina towards the comprehensive genetic and genomic portrait of our large and clinically annotated biobank of human colorectal cancers, focusing in the identification of new prognostic and predictive biomarkers, which will be expanded to other types of cancer.

Selected Publications

Costa L, Ferreira AR (2017). Adjuvant zoledronic acid to treat breast cancer: not for all. *Lancet Oncology*, 18(11): 1437-1439. (IF: 36.421, Citations: 0. Source: Web of Science).

Ferreira A, Alho I, Vendrell I, Melo M, Brás R, Costa AL, Sousa AR, Mansinho A, Abreu C, Pulido C, Macedo D, Pacheco T, Correia L, Costa L, Casimiro S (2016). The prognostic role of RANK SNP rs34945627 in breast cancer patients with bone metastases. *Oncotarget*, 7(27): 41380-9. (IF: 5.168, Citations: 2. Source: Web of Science).

Body JJ, Casimiro S, Costa L (2015). Targeting bone metastases in prostate cancer: improving clinical outcome. *Nature Reviews Urology*, 12: 340-56. (IF: 8.089, Citations: 33. Source: Web of Science).

Pakala SB, Rayala SK, Wang RA, Ohshiro K, Mudvari P, Reddy SD, Zheng Y, Pires R, Casimiro S, Pillai MR, Costa L, Kumar R (2013). MTA1 promotes STAT3 transcription and pulmonary metastasis in breast cancer. *Cancer Research*, 73: 3761. (IF: 9.13, Citations: 41. Source: Web of Science).

Henry D, Costa L, Goldwasser F, Hirsh V, Hungria V, Prausova J, Scagliotti GV, Sleeboom H, Spencer A, Vadhan-Raj S, von Moos R, Willenbacher W, Woll PJ, Wang J, Jiang Q, Jun S, Dansey R, Yeh H (2011). A Randomized, Double-blind Study of Denosumab Versus Zoledronic Acid in the Treatment of Bone Metastases in Patients With Advanced Cancer (Excluding Breast and Prostate Cancer) or Multiple Myeloma. *Journal of Clinical Oncology*, 9(9): 1125-1132. (IF: 26.36, Citations: 554. Source: Web of Science).

Ongoing Research Projects

2018/2021: Fisiopatologia e implicações clínicas da mutação RANK c.1386C>T (R450W) em doentes com cancro da mama. Coordinator: Sandra Casimiro. Funding Agency: Fundação para a Ciência e para a Tecnologia. Reference: PTDC/MED-ONC/28636/2017. Amount: € 234 615,31. Total Amount: € 234 615,31.

2018/2021: Inervação patológica em metástases ósseas: OSTEOCLASTOS, o que estão a fazer? Coordinator: Sandra Casimiro. Funding Agency: Fundação para a Ciência e para a Tecnologia. Reference: POCI-01-0145-FEDER-030158. Amount: € 6 250,00. Total Amount: € 239 504,80.

2017/2018: ONCODYNAMICS. Coordinator: Luis Costa. Funding Agency: Several. Reference: ODB. Amount: € 60 000,00. Total Amount: € 60 000,00.

2016/2018: Involvement of PLCY1 in the resistance Mechanism to Anti-EGFR Therapy in Metastatic Colorectal Cancer. Coordinator: Marta Martins. Funding Agency: Liga Portuguesa Contra o Cancro - Terry Fox Foundation. Reference: Terry Fox - MMartins. Amount: € 15 000,00. Total Amount: € 15 000,00.

2015/2018: Analysis of RANK protein expression in Cohort 2 using immunohistochemistry (IHC) in 70 matched primary breast cancer tumors and distant metastasis. Coordinator: Luis Costa. Funding Agency: Amgen Inc. Reference: Amgen LCosta. Amount: € 29 105,60. Total Amount: € 29 105,60.

2009/2019: Cancer Genomics Consortium. Coordinator: Luis Costa. Funding Agency: Several. Reference: GCGC. Amount: € 437 174,00. Total Amount: € 437 174,00.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

2016/2018: ReTuBi: Towards outstanding research and training in tumour. Coordinator: Edgar Gomes. Funding Agency: European Commission. Reference: Twinning 692322. Amount: € 788 725,00. Total Amount: € 999 975,00.

Publications in Peer Review Journals

Ferreira AR, Palha A, Correia L, Filipe P, Rodrigues V, Miranda A, Andre R, Fernandes J, Gouveia J, Passos-Coelho JL, Moreira A, Brito M, Ribeiro J, Metzger O, Lin NU, Costa L, Vaz-Luis L (2018). Treatment adoption and relative effectiveness of aromatase inhibitors compared to tamoxifen in early breast cancer: A multi-institutional observational study. *Breast*, 37:107-113. (IF: 2.951, Citations: 1. Source: Web of Science).

Kakoo-Brioso E, Costa L, Quakinin S (2018). Association of Anger Expression-Out with NK Cell Counts in Colorectal Cancer Patients. *Acta Médica Portuguesa*, 31(3): 152-158. (IF: 0.581, Citations: 0. Source: Web of Science).

Segaert P, Lopes MB, Casimiro S, Vinga S, Rousseeuw PJ (2018). Robust Identification of Target Genes and Outliers in Triple-negative Breast Cancer Data. *Statistical Methods in Medical Research*, Aug 27: 962280218794722. (IF: 2.284, Citations: 0. Source: Web of Science).

Lopes MB, Veríssimo A, Carrasquinha E, Casimiro S, Beerewinkel N, Vinga S (2018). Ensemble outlier detection and gene selection in triple-negative breast cancer data. *BMC Bioinformatics*, 19: 168. (IF: 2.213, Citations: 0. Source: Web of Science).

Neves JF, Doffinger R, Barcena-Morales G, Martins C, Papapietro O, Plagnol V, Curtis J, Martins M, Kumararatne D, Cordeiro AI, Neves C, Borrego LM, Katan M, Nejentsev S (2018). Novel PLCG2 Mutation in a Patient with APLAID and Cutis Laxa. *Front Immunol.*, 9: 2863 (IF: 6.429, Citations: 0. Source: Web of Science).

Metzger-Filho O, Ferreira AR, Jeselsohn R, Barry WT, Dillon DA, Brock JE, Vaz-Luis I, Hughes ME, Winer EP, Lin NU (2018). Mixed Invasive Ductal and Lobular Carcinoma of the Breast: Prognosis and the Importance of Histologic Grade. *The Oncologist*, pii: theoncologist.2018-0363. doi: 10.1634/theoncologist.2018-0363. (IF: 5.306, Citations: 0. Source: Web of Science).

Ferreira AR, Metzger-Filho O, Sarmiento RM, Bines J (2018). Neoadjuvant treatment of stage IIB/III triple negative breast cancer with cyclophosphamide, doxorubicin, and cisplatin (CAP regimen): a single arm, single center phase II study (GBECAM 2008/02). *Frontiers in Oncology*, 7: 329 (IF: 4.416, Citations: 1. Source: Web of Science).

Maurer C, Ferreira AR, Martel S, Lambertini M, Pondé N, Aftimos P, de Azambuja E, Piccart M (2018). Endocrine therapy and palbociclib within a compassionate use program in heavily pretreated hormone receptor-positive, HER2-negative metastatic breast cancer. *The Breast*, 39: 14-18. (IF: 2.951, Citations: 1. Source: Web of Science).

Vendrell I, Ferreira AR, Abrunhosa-Branquinho NA, Semedo PM, Pulido CF, Jorge M, de Pina MF, Pinto C, Costa L (2018). Chemoradiotherapy completion and neutropenia risk in HIV patients with cervical cancer. *Medicine*, 97(30): e11592. (IF: 2.028, Citations: 0. Source: Web of Science).

Other International Publications

Martins M, Mansinho A, Duarte R, Martins SL, Costa L (2018). Anti-EGFR Therapy to treat Metastatic Colorectal Cancer: not for all. In *Targeted Therapy of Colorectal Cancer Subtypes. Advances in Experimental Medicine and Biology*, 1110: 113-131.

Mansinho A, Macedo D, Fernandes I, Costa L (2018). Castration-Resistant Prostate Cancer: Mechanisms, Targets and Treatment. *Molecular & Diagnostic Imaging in Prostate Cancer*. Springer, Cham, 117-133.

Other National Publications

Fernandes I, Rueff MC, Paiva R, Quintela A (2018). Utilização off-label de medicamentos. *Revista de ciências criminais – Anatomia do crime* 6: 61-72, Almedina.

Fernandes I, Paiva R (2018). Farmacologia clínica - Carcinoma da Próstata Resistente à Castração. *F. Calais da Silva – Grupo Português Génito-Urinário*, 119.

Ferreira AR, Vendrell I, Costa L (2018). O osso como alvo no tratamento do cancro da mama. F. Cardoso (Ed.), 100 Perguntas Chave no Cancro da Mama, Permanyer Portugal.

Invited Lectures and Seminars

Costa L. What have we learned so far about liquid biopsies? III Simposio Biopsia Liquida 2018, Spain, January 25-27, 2018.

Costa L. Targeting the microenvironment of solid tumors: Clinical achievements and challenges. 8th International Conference on Tumor Microenvironment, Progression, Therapy & Prevention, Lisbon, Portugal, June 14, 2018.

Costa L. Tumor microenvironment in cancer progression. 2nd Onco Emergence Forum, Barcelona, Spain, June 21, 2018.

Ferreira A, Fernandes I. Carcinoma adenoneuroendócrino do pâncreas – gestão em contexto de prática clínica de mundo real. 6^a Network de Tumores Neuroendócrinos, Lisbon, Portugal, June 22, 2018.

Dionísio MR, Ferreira AR, Mansinho A. Múltiplas faces da investigação em Oncologia: Oportunidades para os doentes. Sessão do CAML (Centro Académico de Medicina de Lisboa), Lisbon, Portugal, June 28, 2018.

Costa L. Como otimizar o tratamento do cancro da mama avançado HER2+ Sociedade Portuguesa de Senologia, Figueira da Foz, Portugal, October 13, 2018.

Casimiro S. Elevated Receptor Activator of NFkB expression drives stemness and chemoresistance in ER+/HER2- breast cancer. Guest Lecture, Oslo University Hospital, Oslo, Norway, October 15, 2018.

Costa L. O futuro da situação oncológica: o que se prevê e o que não se prevê. Situação Oncológica: abordagem multidisciplinar. Infarmed e Associação Portuguesa de Ciências da Saúde e do Comportamento, Lisbon, Portugal, October 17, 2018.

Costa L. CDK inhibitors in Breast Cancer. Oncologia D'OR, Rio de Janeiro, Brazil, November 9, 2018.

Costa L. Conferência LPCC-Coimbra, Coimbra, Portugal, November 15, 2018.

Costa L. Sociedade Portuguesa de Oncologia: Clinica e Investigação em Oncologia, Coimbra, Portugal, November 22, 2018.

Communications in International Conferences

Corredeira P*, Martins P, Andrade P, Mansinho A, Ferreira A, Casimiro S, Ribot J, Silva-Santos B, Dieguez L, Costa L. Oncodynamics Liquid Biobanking: A holistic perspective towards predictive medicine in metastatic cancer. III Simposio Biopsia Liquida 2018, Spain, January 25-27, 2018. (Poster Presentation).

Magno L*, Martins M, Bilsland J, Bictash M, Lashky T, Katan M, Whiting P. Expression and function of genetic variants of phospholipase c gamma2, a possible target for modulating microglial function in Alzheimer's disease. EMBO Workshop in Microglia 2018, Germany, March 18-21, 2018. (Poster Presentation).

Cruz-Duarte R*, Fernandes A, Borralho P, Pacheco TR, Abreu C, Fior R, Negrão M, Ferreira MG, Costa L, Martins M. PLCγ1 Mediates Resistance to Anti-EGFR Therapy in Metastatic Colorectal Cancer. 3rd ASPIC International Congress, Portugal, May 2018. (Oral Presentation).

Gomes I, Alnas G, Félix P, Ferreira A, Kyte JA, Kristensen V, Naume B, Costa L, Casimiro S*. Normal minor allele frequency of the R450W RANK mutation in breast cancer patients: a large cohort retrospective study. 3rd ASPIC International Congress, Portugal, May 2018. (Poster Presentation).

Gallego-Paez L*, Martins M, Barbosa-Morais N. CELF2 at the core of a prognostic alternative splicing signature in colorectal cancer. 3rd ASPIC International Congress, Portugal, May 2018. (Poster Presentation).

Lobo Martins S*, Mansinho A, Costa AL, Macedo D, Filipe P, Fernandes I, Quintela A, Teixeira de Sousa R, Costa L. Neutrophil to lymphocyte ratio (NLR) as a predictor of overall survival in patients with metastatic castration resistant prostate cancer (mCRPC) treated with Radium-223. 8th International Conference on Tumor Microenvironment, Progression, Therapy & Prevention, Lisbon, Portugal, June 10-14, 2018. (Oral Presentation).

Bello AR, Rocha J, Ferreira A, Costa L, Casimiro S*. Prognostic role of secreted YB-1 in patients with breast cancer. 8th International Conference on Tumor Microenvironment, Progression, Therapy & Prevention, Lisbon, Portugal, June 10-14, 2018. (Oral Presentation).

Lopes MC, Veríssimo A, Casimiro S, Carrasquinha E, Vinga S*. Network-based penalized logistic regression for the identification of common gene signatures in breast and prostate cancers. Data Science, Statistics and Visualisation (DSSV 2018), Austria, July 9-11, 2018. (Oral Presentation).

Gallego-Paez L*, Martins M, Barbosa-Morais N. CELF2 at the core of a prognostic alternative splicing signature in colorectal cancer. Splicing2018, Portugal, July 2018. (Poster Presentation).

Carrasquinha E*, Lopes MB, Veríssimo A, Casimiro S, Beerenwinkel N, Vinga S. Ensemble outlier detection in cancer gene expression data. 17th European Conference on Computational Biology, Greece, September 8-12, 2018. (Poster Presentation).

Pena H*, Cantinho G, Fernandes I, Costa L. Two Years of Clinical Experience Outcome Review on Radium 223 Therapy in Bone Metastatic Castrate-resistant Prostate Cancer. EANM'18 - Annual Congress of the European Association of Nuclear Medicine, Germany, October 13-17, 2018. (Poster Presentation).

Mansinho A*, Ferreira A, Casimiro S, Alho I, Vendrell I, Costa AL, Sousa R, Abreu C, Pulido C, Macedo D, Pacheco T, Correia L, Costa L. Levels of circulating fibroblast growth factor (FGF) 23 and prognosis in patients with bone metastases. ESMO 2018, Germany, October 19-23, 2018. (Poster Presentation).

Alvim C*, Mansinho A, Fernandes I, Paiva R, Macedo D, Brás R, Costa L. Potential prognostic factors for metastatic castration resistant prostate cancer with Abiraterone Acetate. 10th European Multidisciplinary Meeting on Urological Cancers, The Netherlands, November 8-11, 2018. (Poster Presentation).

Paiva R, Pacheco T, Alvim C, Mansinho A, Brás R, Fernandes I, Macedo D, Costa L. Enzalutamide in metastatic castration resistant prostate cancer, a single center experience. 10th European Multidisciplinary Meeting on Urological Cancers, The Netherlands, November 8-11, 2018. (Poster Presentation).

Borges da Ponte C*, Leitão T, Pereira e Silva R, Castro A, Paiva R, Mendes de Almeida J, Fernandes I, Varela J, Palma dos Reis J, Lopes T. Ewing sarcoma of the prostate – a case with rare longevity in a disease with dismal prognosis. 10th European Multidisciplinary Meeting on Urological Cancers, The Netherlands, November 8-11, 2018. (Poster Presentation).

Alvim C*, Pacheco T, Fernandes I, Paiva R, Macedo D, Brás R, Soares de Almeida L, Costa L, Borges-Costa J. Kaposi sarcoma, a single center experience. 2018 CTOS Annual Meeting, Italy, November 14-17, 2018. (Poster Presentation).

Paiva R*, Fernandes I, Pacheco T, Alvim C, Pais H, Brás R, Mansinho A, Macedo D, Costa L. Hepatotoxicity as a predictive factor for soft tissue sarcoma treated with trabectedin. 2018 CTOS Annual Meeting, Italy, November 14-17, 2018. (Poster Presentation).

Ferreira AR*, Casimiro S, Ali S, Leitzel K, Lipton A, Costa L. Impact of the metastatic compartment on bone biomarkers and bone outcomes in patients (pts) with breast cancer (BC) and bone metastases (BM) in trial NCT00321464 of denosumab vs. zoledronic acid. San Antonio Breast Cancer Symposium 2018, USA, December 4-8, 2018. (Poster Presentation).

Communications in National Conferences

Paiva R*, Pacheco T, Alvim C, Mansinho A, Brás R, Fernandes I, Macedo D, Costa L. Enzalutamide in metastatic castration resistant prostate cancer. 15.º Congresso Nacional de Oncologia, Coimbra, Portugal, November 22-24, 2018. (Oral Presentation).

Alvin C*, Paiva R, Brás R, Fernandes I, Ribeiro L, Costa L. Potenciais Fatores de Prognóstico no Tratamento do Carcinoma da Próstata Metastático Resistente à Castração sob Acetato de Abiraterona. Prossyga'18. (Oral Presentation).

Martins S*, Semedo P, Alvim C, Pais H, Costa A, Mansinho A, Palma A, Quintela A, Miranda C, Abreu C, Pinto C, Macedo D, Ramalho D, Aldeia F, Gomes I, Vendrell I, Fernandes I, Cantante I, Ribeiro L, Miranda L, Coutinho C, Malaquias J, Freire J, Rocha J, Martins M, Alves N, Figueiredo N, Corredeira P, Duarte R, Sousa R, Esteves R, Casimiro S, Costa L. Adjuvant chemotherapy in Stage II colon cancer: still a challenge. Congresso Nacional de Cancro Digestivo 2018. (Poster Presentation).

Ferreira AR*, Alves S, Ribeiro J, Silva T, Castro A, Miranda A, Brito C, Mayer A, Passos Coelho JL, Brito M, Nave M, Casa-Nova M, Abreu M, Costa L, Vaz-Luis I. Efetividade Terapêutica de Pertuzumab, Trastuzumab e Quimioterapia no Tratamento em Primeira Linha de Carcinoma da Mama Metastático HER2+. XXV Jornadas do Registo Oncológico Regional do Sul, 2018. (Oral Presentation).

Organisation of Conferences

Costa L, Casimiro S, Ferreira. Scientific & Organising Committee. 3rd ASPIC International Congress, Portugal, May 2018.

Costa L, Casimiro S. Local Committee. 8th International Conference on Tumor Microenvironment, Progression, Therapy & Prevention, Lisbon, Portugal, June 10-14, 2018.

Costa L. Oncology Series: Head and Neck Cancer, Instituto de Medicina Molecular João Lobo Antunes and Lisbon Medical School, October 25, 2018.

Prizes, Honours and Awards

Alvin C, Paiva R, Brás R, Fernandes I, Ribeiro L, Costa L. Potenciais Fatores de Prognóstico no Tratamento do Carcinoma da Próstata Metastático Resistente à Castração sob Acetato de Abiraterona. Prossyga'18. First Award – Prostate Cancer.

Industry Contract Research

Luis Costa, Research Collaboration Agreement between Illumina, Inc. and iMM. Characterization of CCR tumors.

Luis Costa & Sandra Casimiro, Preclinical Research Program Agreement between Amgen Inc. and iMM. Elevated Receptor Activator of NFκB expression drives stemness and resistance to cyclin inhibitors in ER+/HER2- breast cancer.

Luis Costa, Grant Support from Roche to “Oncodynamics”.

Luis Costa, Grant Support from Servier to “Oncodynamics”.

Luis Costa, Grant Support from MSD to “Oncodynamics”.

Government / Organisation Contract Research

Sandra Casimiro, Physiopathology and clinical implications of the RANK c.1386C>T (R450W) mutation in breast cancer patients, PTDC/MED-ONC/28636/2017, FCT.

Advanced Teaching

Costa L, Casimiro S. Preceptorship in Bone Metastases - Treating & Evaluating: from bone markers to imaging. Instituto de Medicina Molecular João Lobo Antunes and Lisbon Medical School, March 8, 2018.

Costa L. Preceptorship in Oncoimmunology. Instituto de Medicina Molecular João Lobo Antunes and Lisbon Medical School, October 12, 2018.

Science and Society

Casimiro S. Fundo iMM-Laço, participation in CC All Stars, SIC Radical, March 12, 2018.

Casimiro S. Fundo iMM-Laço, meeting with Society, Instituto de Medicina Molecular João Lobo Antunes, April 6, 2018.

Costa L. A “BRCA VIEW” of HEREDITARY CANCER, Lisbon, Portugal, September 11, 2018.

Costa L. Grande Reportagem, SIC, September 2018.

Casimiro S. Acção de Sensibilização Cancro, Ciência e Eu, organizada pelo Fundo iMM-Laço, Hotéis Real, October 30, 2018.

Casimiro S. Acção de Sensibilização Cancro, Ciência e Eu, organizada pelo Fundo iMM-Laço, Hotéis Real, October 3, 2018.

MSc Thesis Completed

Ana Catarina Matos, 23-07-2018, “Subtipos moleculares no carcinoma urotelial e a sua importância na terapêutica neoadjuvante”, Faculty of Medicine, University of Lisbon. Supervisor: Isabel Fernandes.

Daniela Ramalho, 19-11-2018, "Alternative Splicing of EXOC7 in Colorectal Cancer Development". Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa. Supervisor: Marta Martins. Co-supervisor: Lina Gallego-Paez.

Ricardo Oliveira, 06-11-2018, “Avaliação económica para remoção de Tecidos de Dadores Humanos em Portugal: proposta para um novo sistema de remoção”, Faculty of Medicine, University of Lisbon. Supervisor: Isabel Fernandes.

Luís Graça Lab

Major Interests / Objectives

Our Unit studies mechanisms underlying induction and maintenance of immune tolerance. In other words, we research methods to reprogramme the immune response in situations where the immune system is causing a disease, such as allergy, autoimmunity and transplant rejection.

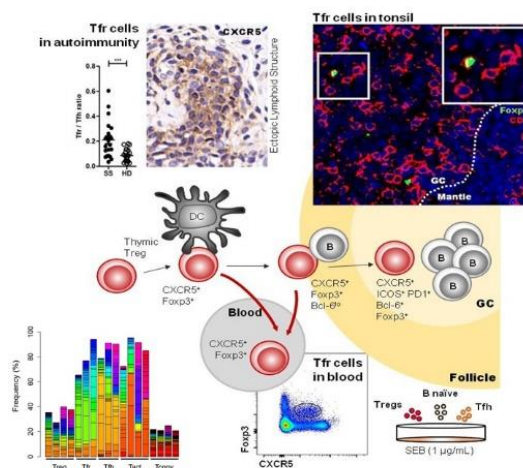
In addition, we are interested in defining the functional properties of lymphocytes that can promote immune tolerance by suppressing pathogenic immune responses. We have been studying how different types of lymphocytes with regulatory function can be induced in the periphery.

We believe that in the foreseeable future antibody therapy, as well as other strategies to modulate the immune system, will have an important repercussion in the quality of life of people suffering from immune mediated diseases.

Head of Laboratory

Luís Graça, MD/PhD, Associate Professor

Graphical Abstract



Team

Afonso Silva Pinto Basto	PhD	Senior Post-Doctoral Researcher
Ana Catarina Jorge Mendes	Graduate	Lab Manager
Ana Isabel Neves de Matos	Master	Trainee
Ana Margarida Tito Martins Água-Doce	PhD	Senior Post-Doctoral Researcher (Left August)

Anna Ntalli	Master	PhD Student (Started May Left June)
Carina Sofia Gonçalves Peres	Master	PhD Student
Filipa Ramos de Moura Ribeiro	Master	PhD Student
Kátia Ribeiro de Jesus	Master	Lab Technician (Started August)
Raquel Filipa Reis de Freitas	Master	PhD Student (Started March Left September)
Ricardo Jorge Pires Correia	Graduate	MSc Student
Ricardo Wesley Alberca Custódio	Graduate	Visiting Researcher (Started July Left August)
Ruy Miguel Sousa Soeiro de Figueiredo Ribeiro	PhD	Senior Post-Doctoral Researcher
Saumya Dileep Kumar	Master	PhD Student
Válter Bruno Ribeiro Fonseca	PhD	Junior Post-doctoral Researcher
Vanessa Alexandra Gonçalves de Oliveira Martins	PhD	Clinical Researcher
Yaquelin Ortiz Miranda	Master	Lab Technician (Left May)

Laboratory Keywords / Research Areas

Immune tolerance, Regulatory T-cell subsets, T follicular helper (Tfh) cells, T follicular regulatory (Tfr) cells, germinal centre, Allergy, Autoimmunity, Transplantation.

Major Scientific Achievements

We found that Tfh and Tfr cells in the same germinal centre differ in their TCR usage: Tfh cells are specific to the immunizing antigen, and Tfr cells retain a TCR specificity similar to Tregs. These results suggest Tfh cells select high-affinity BCRs during affinity maturation, while Tfrs prevent autoimmunity.

We established, using human samples, that human circulating Tfr cells are generated in lymphoid tissues following exposure to antigens, and are not fully mature.

We have shown that adoptive transfer of Foxp3+ iNKT cells, due to CXCR6-mediated preferential hepatic homing, leads to liver-specific immune suppression allowing long-term survival of allogeneic islet transplants delivered through intra-portal route in mice.

Finally, we have started a number of clinical studies regarding the impact of Tfh subsets in antibody-mediated human diseases, and how Tfh and Tfr subsets can be used as biomarkers.

Selected Publications

Fonseca VR, Romão VC, Agua-Doce A, Santos M, López-Presa D, Ferreira AC, Fonseca JE, Graca L (2018). The Ratio of Blood T Follicular Regulatory Cells to T Follicular Helper Cells Marks Ectopic Lymphoid Structure Formation While Activated Follicular Helper T Cells Indicate Disease Activity in Primary Sjögren's Syndrome. *Arthritis Rheumatology*. 70: 774-784. (IF: 7.873, Citations: 10. Sources: Web of Science and Scopus).

Fonseca VR, Agua-Doce A, Maceiras AR, Pierson W, Ribeiro F, Romão VC, Pires AR, Silva SL, Fonseca JE, Sousa AE, Linterman MA, Graca L (2017). Human Blood CXCR5+Foxp3+ T cells Are Indicators of Ongoing Humoral Activity Not Fully Licensed With Suppressive Function. *Science Immunol*, 2: eaan1487. (IF: --, Citations: 19. Source: Scopus).

Maceiras R, Almeida SCP, Mariotti-Ferrandiz E, Chaara W, Jebbawi F, Six A, Hori S, Klatzmann D, Faro J, Graca L (2017). T follicular helper and T follicular regulatory cells from the same germinal centers have different TCR-specificity. *Nature Communications*, 8: 15067. (IF: 12.353, Citations: 18. Sources: Web of Science and Scopus).

Oliveira VG, Água-Doce A, Curotto de Lafaille MA, Lafaille JJ, Graça L (2013). Adjuvant facilitates tolerance induction to factor VIII in hemophilic mice through a Foxp3-independent mechanism that relies on IL-10. *Blood*, 121, 3936. (IF: 15.132, Citations: 12. Sources: Web of Science and Scopus).

Wollenberg I, Água-Doce A, Hernández A, Almeida C, Oliveira VG, Faro J, Graça L (2011). Regulation of the germinal center reaction by Foxp3+ follicular regulatory T cells. *J Immunol*, 187, 4553. (IF: 4.539, Citations: 244. Sources: Web of Science and Scopus).

Ongoing Research Projects

2018/2019: Material Transfer Agreement. Coordinator: Luís Graça. Funding Agency: Alpine Immune Sciences, Inc. Reference: ALPINE. Amount: € 26 875,00. Total Amount: € 26 875,00.

2016/2019: Mechanisms used by T follicular helper (Tfh) cells to determine antibody isotype production in Th1 versus Th2 responses. Coordinator: Ana Margarida Água-Doce. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/IMI-IMU/7038/2014. Amount: € 199 971,00. Total Amount: € 199 971,00.

2016/2019: Immunomodulatory effect of CD6-targeting in neuroinflammation. Coordinator: Vanessa Martins. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/DTP-FTO/3080/2014. Amount: € 162 488,00. Total Amount: € 193 092,00.

2015/2019: Multidisciplinary strategy to develop novel multicomponent nanoscale systems for immune modulation. Coordinator: Luís Graça. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: UTAP-ICDT/DTP-FTO/0016/2014. Amount: € 27 000,00. Total Amount: € 189 274,00.

2015/2019: ENLIGHT-TEN: European Network linking informatics and genomics of helper T cells. Coordinator: Luís Graça. Funding Agency: European Commission. Reference: MSCA ITN 675395. Amount: 433 512,72. Total Amount: € 3 354 685,20.

2015/2018: Characterization of T follicular helper (T_{fh}) cells and B cell isotype switching induced by type 1 and type 2 adjuvants. Coordinator: Luís Graça. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: FAPESP/19906/2014. Amount: € 200 000,00. Total Amount: € 200 000,00.

2015/2018: Immune modulatory activity of CD6-targeting monoclonal antibodies. Coordinator: Luís Graça. Funding Agency: Centre of Molecular Immunology. Reference: CUBA - CD6. Amount: € 43 700,00. Total Amount: € 43 700,00.

Other Projects

2016/2018: TwinToInfect: Unleash iMM's research excellence in immunity and infection through twinning to infect Lisbon and Portugal with its increase in competitiveness and innovation. Coordinator: Maria Manuel Mota. Funding Agency: European Commission. Reference: TWINNING 692022. Amount: € 893 500,00. Total Amount: € 999 996,25.

Publications in Peer Review Journals

Stebegg M, Kumar S, Silva-Caetano A, Fonseca VR, Linterman MA, Graça L (2018). Regulation of the germinal centre response. *Frontiers in Immunology*, 9: 2469. (IF: 5.511, Citations: 0. Sources: Web of Science and Scopus).

Fonseca VR, Romão VC, Água-Doce A, Santos M, López-Presa D, Ferreira AC, Fonseca JE, Graça L (2018). Blood Tfr / Tfh ratio marks ectopic lymphoid structure formation and activated Tfh cells indicate disease activity in primary Sjögren's syndrome. *Arthritis and Rheumatology*, 70: 774-784. (IF: 7.873, Citations: 10. Sources: Web of Science and Scopus).

Romão VC, Agua-Doce A, Fonseca JE, Graça L (2018). T follicular regulatory cells are decreased in established treated rheumatoid arthritis patients with active disease. *Arthritis and Rheumatology*, 70: 1355-1356. (IF: 7.873, Citations: 0. Source: Web of Science and Scopus).

Fonseca VR, Romão VC, Água-Doce A, Fonseca JE, Graça L. Reply to: Is the Tfr / Tfh cell Ratio in Blood a Biomarker for Ectopic Lymphoid Structure Formation in Sjögren's Syndrome? Comment on the Article by Fonseca VR et al. (Letter to the Editor). *Arthritis Rheumatol*, 70: 1355-1356.

Agua-Doce A, Caridade M, Oliveira VG, Bergman L, Curotto de Lafaille M, Lafaille JJ, Demengeot J, Graça L (2018). Route of antigen presentation can determine the selection of Foxp3-dependent or Foxp3-independent immune tolerance. *J Immunol*, 200: 101-109. (IF: 4.539, Citations: 0. Sources: Web of Science and Scopus).

Carmenate T, Ortíz Y, Enamorado M, García-Martínez K, Avellanet J, Moreno E, Graça L, León K (2018). Blocking IL-2 Signal In Vivo with an IL-2 Antagonist Reduces Tumor Growth through the Control of Regulatory T Cells. *J Immunol*, 200: 3475-3484. (IF: 4.539, Citations: 2. Sources: Web of Science and Scopus).

Fonseca VR, Graça L (2018). Contribution of Foxp3+ Tfr cells for overall human blood CXCR5+ T lymphocytes. *Clin Exp Immunol*, 10.1111/cei.13245.

Minskaia E, Saraiva BC, Soares M, Azevedo RI, Ribeiro RM, Kumar SD, Vieira A, Lacerda, JF (2018). Molecular Markers Distinguishing T Cell Subtypes With TSDR Strand-Bias Methylation. *Frontiers in Immunology*, 9: 2540. DOI:10.3389/fimmu.2018.02540. (IF: 5.511, Citations: 0. Sources: Web of Science and Scopus).

Codner GF, Mianné J, Caulder A, Loeffler J, Fell R, King R, Allan AJ, Mackenzie M, Pike FJ, McCabe CV, Christou S, Joynson S, Hutchison M, Stewart ME, Kumar S, Simon MM, Agius L, Anstee QM, Volynski KE, Kullmann DM, Wells S, Teboul L (2018). Application of long single-stranded DNA donors in genome editing: generation and validation of mouse mutants. *BMC Biology*, 16(1): 70. DOI:10.1186/s12915-018-0530-7. (IF: 5.77, Citations: 2. Sources: Web of Science and Scopus).

Corrochano S, Blanco G, Williams D, Wettstein J, Simon M, Kumar S, Moir L, Agnew T, Stewart M, Landman A, Kotiadis VN, Duchon MR, Wackerhage H, Rubinsztein DC, Brown S, Acevedo-Arozena A (2018). A genetic modifier suggests that endurance exercise exacerbates Huntington's disease. *Human molecular genetics*, 27(10): 1723-1731. (IF: 4.902, Citations: 1. Sources: Web of Science and Scopus).

Esapa CT, Piret SE, Nesbit MA, Thomas GP, Coulton LA, Gallagher OM, Simon MM, Kumar S, Mallon AM, Bellantuono I, Brown MA, Croucher PI, Potter PK, Brown SD, Cox RD, Thakker RV (2018). An N-Ethyl-N-Nitrosourea (ENU) Mutagenized Mouse Model for Autosomal Dominant Nonsyndromic Kyphoscoliosis Due to Vertebral Fusion. *JBMR Plus*, 2(3): 154-163. DOI:10.1002/jbm4.10033. (IF:--, Citations:--).

Invited Lectures and Seminars

Graça L. Regulation of autoimmunity. European Midwinter Workshop 2018, Angerer Alm, Austria, January 22-24, 2018.

Graça L. Imuno-oncologia e Cancro. I-Curso pós-graduado em cardio-oncologia, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, January 26, 2018.

Graça L. Unconventional regulatory T cell populations in health and disease. University of Toulouse, France, February 1, 2018.

Fonseca VR. Clinical reasoning. AIMS (Annual International Medical Students) Meeting, Lisbon, Portugal, March 16-18, 2018.

Graça L. Unconventional regulatory T cell populations in health and disease. IGO- Meeting 2018, Nantes, France, April 17-18, 2018.

Graça L. Regulação da Inflamação: Passado, Presente e Futuro. As Fronteiras das Ciências Médicas, SCML – Faculdade de Ciências Médicas, Nova Medical School, Lisbon, Portugal, April 19, 2018.

Graça L. Regulation of germinal center responses and antibody production. Departmental Seminar, University of São Paulo, São Paulo, Brazil, May 23, 2018.

Fonseca VR. From T cell subsets in mice to disease stratification in autoimmune patients. MAIS INOVAÇÃO, MAIS SAÚDE. Fundação Calouste Gulbenkian e Sociedade das Ciências Médicas de Lisboa, Lisbon, Portugal, June 15, 2018.

Fonseca VR. Anticoagulation strategies in autoimmune patients. Centro Hospitalar Lisboa Norte – Hospital de Santa Maria, Lisbon, Portugal, June 16, 2018.

Graça L. Tolerance induction to recombinant clotting factors. Heimbürger Symposium, Marburg, Germany, June 22, 2018.

Graça L. Unconventional regulatory T cell populations in health and disease. Institut Pasteur, Paris, France, September 6, 2018.

Graça L. Tfh and Tfr cells in human autoimmunity. Cancer & Autoimmunity 2018, Varadero, Cuba, September 17-20, 2018.

Graça L. T cell modulation through CD6 targeting. Seminar. Centro de Inmunologia Molecular (CIM), Havana, Cuba, September 24, 2018.

Fonseca VR. Skills of a good undergraduate teaching assistant. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, September 27, 2018.

Graça L. Tfh and Tfr cells in human autoimmunity. Congresso da Sociedade Brasileira de Imunologia, Ouro Preto, Brasil, October 1-4, 2018.

Graça L. Regulation of Humoral Responses. Internal Seminar, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 10, 2018.

Graça L. Specialization of regulatory T cells. 2nd Meeting on Stochasticity and Control in Adaptive Immune Repertoires, Institut des Systèmes Complexes, Paris, France, October 28-31, 2018.

Graça L. Da imunossupressão à imunoterapia. Workshop de Imunoterapia no Carcinoma Urotelial, Ílhavo, Portugal, November 10, 2018.

Graça L. Immune Regulation. iMM Summit, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, November 17, 2018.

Graça L. Da imunossupressão à imunoterapia. Jornadas do Instituto Português de Reumatologia, Faculdade de Medicina Dentária da Universidade de Lisboa, Lisbon, Portugal, November 29, 2018.

Communications in International Conferences

Basto AP, Maceiras AR, Almeida SCP, Campos P, Ribeiro F, Kumar S, Russo M, Graça L. Impact of type-1 and type-2 adjuvants on T follicular helper and T follicular regulatory cells and germinal centre responses. TwinnToInfect Spring School in Infection and Immunity, Instituto de Medicina Molecular João Lobo Antunes and Hotel do Mar, Lisbon and Sesimbra, Portugal, March 19-22, 2018. (Oral Presentation).

Basto AP, Maceiras AR, Almeida SCP, Campos P, Ribeiro F, Kumar S, Russo M, Graça L. Impact of type-1 and type-2 adjuvants on T follicular helper and T follicular regulatory cells and germinal center responses. TwinnToInfect Spring School in Infection and Immunity, Instituto de Medicina Molecular João Lobo Antunes and Hotel do Mar, Lisbon and Sesimbra, Portugal, March 19-22, 2018. (Poster Presentation).

Kumar S, Almeida SCP, Campos P, Bastos A, Russo M, Carvalho M, Graça M. Modelling transcriptomics of T follicular helper cells across different strains of mice. ENLIGHT-TEN summer school “Translational Research & Medicine Development”, Bayer AG, Berlin, Germany, April 16-19, 2018.

Peres C, Matos A, Moura L, Conriot J, Carreira B, Scomparin A, Yeini E, Viana AS, Graça L, Prétat V, Satchi-Fainaro R, Florindo HF. Nanoparticle- based vaccine improved OX40 anti-tumor efficacy in breast cancer. 16th CIMT Annual Meeting – Pushing Frontiers in Cancer Immunotherapy, Mainz, Germany, May 15-17, 2018. (Poster Presentation).

Matos AI, Peres C, Moura L, Carreira B, Viana AS, Graça L, Gaspar R, Conde JP, Florindo HF. Multivalent polymeric nanoparticles for combinatorial innovative colorectal cancer immunotherapy and immunomodulation. 16th CIMT Annual Meeting – Pushing Frontiers in Cancer Immunotherapy, Mainz, Germany, May 15-17, 2018. (Poster Presentation).

Ribeiro F, Fonseca VR, Graça L. Imbalance of blood Tfh and Tfr cells in systemic and organ-specific autoimmunity. 11th International Congress on Autoimmunity (NEDAI Session), Lisbon, Portugal, May 16-20, 2018. (Oral Presentation).

Matos AI, Peres C, Moura L, Carreira B, Viana AS, Graça L, Gaspar R, Conde JP, Florindo HF. Multivalent polymeric nanoparticles as an innovative cancer immunotherapy for colorectal cancer. EACR25: From Fundamental Insight to Rational Cancer Treatment, Amsterdam, Netherlands, June 30-July 3, 2018. (Poster Presentation).

Florindo HF, Peres C, Conriot J, Moura LIF, Matos AI, Yeini E, Viana AS, Graça L, Prémat V, Satchi-Fainaro R. Polymeric nano-vaccines improved OX40 anti-tumor efficacy against breast cancer. Controlled Release Society Annual Meeting and Exposition, New York City, USA, July 22-24, 2018. (Poster Presentation).

Kumar S, Almeida SCP, Campos P, Bastos A, Graça L. Transcriptional profile of T follicular helper cells using type 1 and type 2 adjuvants. ENLIGHT-TEN Annual Network Meeting 2018, Waag-technology & society, Amsterdam, Netherlands, August 31-September 1, 2018. (Oral Presentation).

Ribeiro F, Fonseca VR, Graca L. Imbalance of blood Tfh and Tfr cells in systemic and organ-specific autoimmunity. 5th European Congress of Immunology, Amsterdam, Netherlands, September 2-5, 2018. (Poster Presentation).

Basto AP, Maceiras A, Almeida SC, Campos P, Ribeiro F, Kumar S, Russo M, Graca L. Impact of type-1 and type-2 adjuvants on T follicular helper, T follicular regulatory and germinal centre B cell populations. 5th European Congress of Immunology, Amsterdam, Netherlands, September 2-5, 2018. (Poster Presentation).

Kumar S, Almeida SCP, Campos P, Bastos A, Russo M, Carvalho M, Graça M. Modelling transcriptomics of T follicular helper cells across different strains of mice. 5th European Congress of Immunology, Amsterdam, Netherlands, September 2-5, 2018. (Poster Presentation).

Fonseca VR et al. Late-onset granulomatous hepatic disease and lymphocytosis in perforinopathy. 18th Meeting of the European Society for Immunodeficiencies, Lisbon, Portugal, October 24-27, 2018. (Poster Presentation).

Florindo HF, Peres C, Matos AI, Moura L, Conriot J, Yeini E, Viana AS, Graça L, Prémat V, Satchi-Fainaro R. Polymeric nano-vaccines improved immune checkpoint anti-tumour efficacy against breast cancer. NanoBio&Med2018, Barcelona, Spain, November 20-22, 2018. (Oral Presentation).

Communications in National Conferences

Basto AP, Maceiras AR, Almeida SCP, Campos P, Ribeiro F, Kumar S, Russo M, Graca L. Characterization of T follicular helper (Tfh) cells in type-1 and type-2 responses. IMM Scientific Retreat, Cine-Teatro Nazaré and Instituto de Medicina Molecular João Lobo Antunes, Nazaré and Lisbon, Portugal, April 23-24, 2018. (Oral Presentation).

Matos AI, Peres C, Moura L, Carreira B, Viana AS, Graça L, Gaspar R, Conde JP, Florindo HF. Multivalent PLGA-based nanoparticles for combinatorial innovative colorectal cancer immunotherapy and immunomodulation. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018. (Poster Presentation).

Ribeiro F, Fonseca VR, Graca L. Imbalance of blood Tfh and Tfr cells in systemic and organ-specific autoimmunity. XLIV SPI Annual Meeting 2018, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Basto AP, Maceiras AR, Almeida SCP, Campos P, Ribeiro F, Kumar S, Russo M, Graca L. Characterization of T follicular helper, T follicular regulatory and germinal center B cells induced by type-1 and type-2 adjuvants. XLIV Annual Meeting Sociedade Portuguesa de Imunologia (SPI), Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Kumar S, Almeida SCP, Campos P, Bastos A, Russo M, Carvalho M, Graça M. Modelling transcriptomics of T follicular helper cells across different strains of mice. XLIV Annual Meeting Sociedade Portuguesa de Imunologia (SPI), Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation National).

Peres C, Matos AI, Moura L, Coniot J, Carreira B, Viana AS, Graça L, Prêat V, Satchi-Fainaro R, Florindo HF. Nanoparticle-based vaccine improved the anti-tumor efficacy of the immune checkpoint co-stimulator OX40 in breast carcinoma. 10th iMed.Ulissboa Postgraduate Students Meeting & 3rd i3DU Meeting, Lisbon, Portugal, July 24-25, 2018. (Poster Presentation).

Organisation of Conferences

Cayetano A, Ntalli A, Almeida L, Stebegg M, Ricco M, Tenorio M, Dhele N, Edner N, Nigatu Ayele N, Kumar S, Faux T, Gomes T. ENLIGHT-TENed by big data: Advancing T-cell immunology, RAI, Amsterdam Convention Centre, Amsterdam, Netherlands, September 2, 2018.

Graça L. Mais Inovação, Mais Saúde. (One day symposium on clinical research, organized by Sociedade das Ciências Médicas de Lisboa, Fundação Calouste Gulbenkian, MSD Portugal). Fundação Calouste Gulbenkian, Lisbon, Portugal, June 15, 2018.

Graça L. As Fronteiras das Ciências Médicas (conference series being on advances on medical sciences, being held alternately in the two medical schools in Lisbon, organized by Sociedade das Ciências Médicas de Lisboa). One monthly seminar at NOVA Medical School and Faculdade de Medicina da Universidade de Lisboa 2018.

Graça L, Figueiredo L. Spring School on Immunology and Infection. Sesimbra, Portuga, March 19-22, 2018.

Graça L. Congress of the Portuguese Society for Immunology. Lisbon, Portugal, July 27-29, 2018.

Graça L. Mini-Symposium: Regulation of antibody production in humans and mice. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, March 2, 2018.

Internationalisation

During 2018 our group has been involved in several international projects.

We have been leading a collaboration with an expert on adjuvants, Momtchilo Russo, from the University of São Paulo in Brazil. In this project, our groups joined resources to investigate how adjuvants influence Tfh subsets during the course of humoral responses.

We have also an ongoing collaborative project with the group of Kalet Leon (Center of Molecular Immunology, Havana, Cuba) for the study of immunomodulatory role of several molecular products.

We participate in a Marie Curie initial training network (ENLIGHT-TEN) that brings together experts in bioinformatics and immunology across Europe.

Finally, we became founders of the European T cell interest group, under the auspices of EFIS (European Federation of Immunology Societies).

Prizes, Honours and Awards

Best Poster Award at the 10th iMed.Ulisboa Postgraduate Students Meeting & 3rd i3DU Meeting, in Lisbon (Portugal), granted by the iMed.Ulisboa Postgraduate Students Commission.

Travel Award to attend the 16th CIMT Annual Meeting – Pushing Frontiers in Cancer Immunotherapy in Mainz (Germany), granted by the Association for Cancer Immunotherapy (CIMT).

Travel and free registration awards from the Association for Cancer Immunotherapy CIMT to attend the 16th CIMT Annual Meeting – Pushing Frontiers in Cancer Immunotherapy, Mainz, Germany (15-17 May 2018).

R&D@PhD Grant from FLAD (1500€) for an internship at Icahn School of Medicine at Mount Sinai, New York, USA. To be held between May 1-June 15, 2019.

EACR meeting bursary (travel and free registration awards) from the European Association for Cancer Research - EACR to attend the 25th Biennial Congress - EACR25: From Fundamental Insight to Rational Cancer Treatment, Amsterdam, the Netherlands (June 30-July 3 2018).

EFIS-ACTERIA Travel Grant (600€) to attend the 5th European Congress of Immunology (ECI 2018) in Amsterdam, September 2-5, 2018.

Advanced Teaching

Advanced Teaching: Supervision of MD Master Thesis

Miguel Schön. Tfh and Tfr cells in Systemic Lupus Erythematosus. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, June 19, 2018. (Supervisor: Valter Fonseca).

Cláudia Brazão. Superior vena cava syndrome presenting as angioedema. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 3, 2018. (Supervisor: Valter Fonseca).

MSc Student:

Ricardo Correia (Supervisor: Luis Graça and Valter Fonseca).

Advanced Teaching: Lecturer in Postgraduate Programs

Fonseca VR. Germinal centre responses. MSc in Clinical Microbiology. Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 3, 2018.

Basto AP. Vaccines and Adjuvants – MSc in Clinical Microbiology and Emergent Infectious Diseases, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, 2018.

Graça L. Lisbon BioMed PhD Programme, organisation of the immunology module, February 2018.

Fonseca V. Lisbon BioMed PhD Programme, lecturer at the immunology module, February 2018.

Graça L. PhD Programme Regenerative Medicine, lecturer in immunology module, IMM/IST, Lisbon, Portugal.

Graça L. WORKSHOP “writing a scientific article”. Organized by Student Union of Licenciatura em Ciências da Saúde. Faculdade de Ciências da Universidade de Lisboa, March 16, 2018.

Science and Society

Graça Lab collaborated with visual artist Marta de Menezes towards the creation of a new artwork inspired by the lab research exhibited internationally in 2018. The art residency was funded under Enlight-ten. This artwork created in Graça Lab during 2018 was part of exhibitions in Amsterdam, New York and Mexico City.

Graça Lab collaborated with visual artist Andrew Carnie, towards the creation of an artwork inspired by the lab research, exhibited internationally in 2018. The art residency was funded under Enlight-Ten.

Graça Lab collaborated with visual artist Herwig Turk, towards the creation of an artwork inspired by the lab research, exhibited internationally in 2018. The art residency was funded under Enlight-ten.

Graça L, de Menezes M. Enlightened by Immunology (Exhibition of immunology-inspired artworks coincident with the European Congress of Immunology). The Waag, Amsterdam, The Netherlands, August 31-September 5, 2018.

Graça Lab collaboration with visual artist Nigel Helyer leading to the development of a new artwork, to be completed in 2019.

Graça L has been invited to the organizing committee of FACTT Festival as scientific consultant. FACTT organized in 2018 visual art exhibitions and seminars, exploring the interface of science

and art, in Lisbon (MAAT and Culturgest), New York (School of Visual Arts, Parsons School of Design, and NYU), and Mexico City (Centro de Cultura Digital and UNAM). FACTT is coordinated by the ARTE Institute, New York.

Graça L. Co-organiser of international conference: Taboo, Transgression and Transcendence, dedicated to the intersection of Art, Science, technology and Philosophy, Toronto, Canada, 2018.

Graça L. Imortalidade em Arte e Ciência. Seminário. Fundação Eugénio de Almeida, Évora, Portugal, May 16, 2018.

Graça L. The Two Cultures. Culture Action Europe. Timisoara, Roménia, October 26-27, 2018.

Graça L. The intersection of art and biology, summer school (co-organiser), Cultivamos Cultura, Odemira, Portugal, July 2018.

The Graça Lab participated in activities to promote the awareness of immunology among young audiences as part of the “International Immunology Day”. Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, March 2018.

Fonseca V, Graça L. Jury member of AIMS Meeting Research Competition, Lisbon, Portugal, March 16-18, 2018.

Fonseca V. Coordinator of AIMS Meeting Scientific Competition, Lisbon, Portugal, March 16-18, 2018.

MSc Thesis Completed

Manuel António, 10/05/2017, Antiphospholipid-associated immune thrombocytopenia, University of Lisbon. Supervisor: Válter Fonseca.

PhD Thesis Completed

Fonseca VR, 02/03/2018, T follicular regulatory cells in human adaptive immunity and autoimmunity, Faculty of Medicine, University of Lisbon.

Luísa Figueiredo Lab

Major Interests / Objectives

Parasitism relies on the ability of an organism to exploit its host. *Trypanosoma brucei* is a unicellular parasite responsible for a fatal disease in humans (sleeping sickness), and for a chronic disease in cattle (nagana) in Sub-Saharan Africa. We are interested in understanding the cellular and molecular mechanisms employed by trypanosomes to maintain a chronic disease in the host. Our group studies the cellular and molecular mechanisms by which parasites sense and adapt to the surrounding environment.

Head of Laboratory

Luisa Miranda Figueiredo, PhD

Graphical Abstract

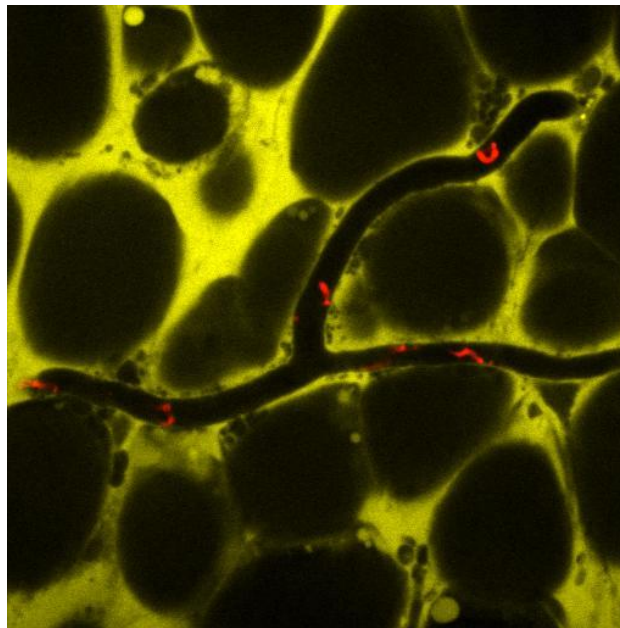


Image 1: Trypanosomes (red) invading the adipose tissue (green)

Team

Aila Akosua Kattner	Master Student	MSc Student (Started June)
Alexandra Isabel Vidigal Teixeira	Master	Lab Technician
Amanda de Ornellas Gonçalves	Master Student	MSc Student (Started February Left March)
Ana Catarina Dias Pena	PhD	Junior Post-Doctoral Researcher (Left July)
Ana Filipa de Almeida Rijo Ferreira	PhD	Junior Post-Doctoral Researcher (Left July)
Ana Margarida Roque Sanches Vaz	PhD Student	PhD Student

Christina Huber	Master Student	MSc Student (Started January Left July)
Daniela Filipa Travanca dos Santos	Master	Lab Technician (Started March Left July)
Fabien Marc Guegan	PhD	Senior Post-Doctoral Researcher
Francisco Maria dos Santos e Silva Aresta Branco	PhD	Senior Post-Doctoral Researcher (Started October Left October)
Henrique Pedro Pereira da Silva Amaral Machado	PhD Student	PhD Student
Idálio de Jesus Contreiras Viegas	PhD Student	PhD Student
Inês de Haan Vicente	Master Student	MSc Student (Started September)
João Alexandre Guarita da Silva Rodrigues	PhD	Staff Scientist
Juan Pereira Macedo	PhD	Senior Post-Doctoral Researcher (Started December)
Leonor Duarte Pinho	PhD	Lab Manager
Mariana Costa Sequeira	Master	Lab Technician (Left December)
Mariana Isabel de Niz Hidalgo	PhD	Junior Post-Doctoral Researcher (Started October)
Rafael Espinheira Alves	Other	Trainee (Left February)
Sandra Isabel Gonçalves Trindade	PhD	Senior Post-Doctoral Researcher
Sara Isabel Guerreiro Mota	Other	BSc Student (Started January Left February)
Sara Silva Pereira	PhD	Junior Post-Doctoral Researcher (Started October)
Tiago Bizarra Rebelo	Master	Lab Technician (Left December)

Laboratory Keywords / Research Areas

Parasite, Adipose tissue, Metabolism, Circadian rhythm, Antigenic variation, Gene expression, Sleeping sickness, Nagana.

Major Scientific Achievements

- Chair of Gordon Conference in Host-Parasite Interactions 2018, Newport, RI, USA.
- Award of FCT project to Sandra Trindade, post-doctoral fellow of the laboratory.
- Publication of paper from Filipa Rijo-Ferreira and colleagues in Nature Communications and invited presentation at Society for Research in Biological Rhythms (Florida, USA)

Selected Publications

Rijo-Ferreira F, Carvalho T, Afonso C, Sanches-Vaz M, Costa RM, Figueiredo LM, Takahashi JS (2018). Sleeping sickness is a circadian disorder. Nature Communications, 9: 62. doi: 10.1038/s41467-017-02484-2. (IF: 12.4, Citations: 5. Source: Web of Science and Scopus).

Rijo-Ferreira F, Pinto-Neves D, Barbosa-Morais NL, Takahashi J, Figueiredo LM (2017). *Trypanosoma brucei* metabolism is under circadian control. *Nature Microbiology*, 2: 17032, doi: 10.1038/nmicrobiol.2017.32. (IF: 14.2, Citations: 12. Sources: Web of Science and Scopus).

Tanowitz HB, Scherer PE, Mota MM, Figueiredo LM (2017). Adipose tissue: A safe haven for parasites? *Trends Parasitology*, 33(4): 276-284. doi: 10.1016/j.pt.2016.11.008. (IF: 6.3, Citations: 15. Sources: Web of Science and Scopus).

Trindade S & Rijo-Ferreira F, Carvalho T, Pinto-Neves D, Guegan F, Aresta-Branco F, Bento F, Young SA, Pinto A, van Den Abbeele J, Ribeiro RM, Dias S, Smith TK, Figueiredo LM (2016). *Trypanosoma brucei* parasites occupy and functionally adapt to the adipose tissue in mice. *Cell Host & Microbe*, 9 (6): 837–848. doi: 10.1016/j.chom.2016.05.002. (IF: 17.9, Citations: 66. Source: Web of Science and Scopus).

Aresta-Branco F, Pimenta S, Figueiredo LM (2015). A transcription-independent epigenetic mechanism is associated with antigenic switching in *Trypanosoma brucei*. *Nuclei Acids Research*, 44(7): 3131-46. doi:10.1093/nar/gkv1459. (IF: 11.6, Citations: 10. Sources: Web of Science and Scopus).

Ongoing Research Projects

2018/2022: FatTryp: Exploring the hidden life of African trypanosomes: parasite fat tropism and implications for disease. Coordinator: Luisa Figueiredo. Funding Agency: European Commission. Reference: ERC- FATTRYP - 771714. Amount: € 2 000 000,00. Total Amount: € 2 000 000,00.

2018/2021: FatReservoir: Importância dos Reservatórios de Parasitas Extravasculares em Gado e Modelos Laboratoriais de Ratinhos. Coordinator: Sandra Trindade. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: LISBOA-01-0145-FEDER-029161. Amount: € 231 666,35. Total Amount: € 239 970,42.

2018/2021: Quando a célula hospedeira já não é tão acolhedora...uma quebra de energia ou um aumento da toxicidade? Coordinator: João Rodrigues. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIA-CEL/28456/2017. Amount: € 50 189,13. Total Amount: € 236.529,90.

2016/2019 Long non-coding RNAs as new diagnostic biomarkers for African sleeping sickness. Coordinator: Fabien Guegan. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/DTP-EPI/7099/2014. Amount: € 165 079,00. Total Amount: € 165 079,00.

2016/2019: Metabolic consequences of an infection by African trypanosomes. Coordinator: Luísa Figueiredo. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIM-MET/4471/2014. Amount: € 186 946,00. Total Amount: € 186 946,00.

2016/2019: An integrated systems approach to uncover the key players in complex protein N-glycosylation in *Trypanosoma brucei*. Coordinator: João Rodrigues. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BBB-BSS/0827/2014. Amount: € 96 106,00. Total Amount: € 149 450,00.

2015/2019: Molecular basis for the efficient biology of trypanosome parasitism. Coordinator: Luisa Figueiredo. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/01050/2014/CP1236/CT0008. Amount: € 46 000,00. Total Amount: € 46 000,00.

Other Projects

2017/2019: ONEIDA: Plataforma Ómica para prevenção e controlo de infeções e de resistência aos antimicrobianos. Coordinator: Mário Ramirez. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: LISBOA-01-0145-FEDER-016417. Amount: € 696 698,00. Total Amount: € 2 459 635,55.

2016/2018: TwinToInfect: Unleash iMM's research excellence in immunity and infection through twinning to infect Lisbon and Portugal with its increase in competitiveness and innovation. Coordinator: Maria Manuel Mota. Funding Agency: European Commission. Reference: TWINNING 692022. Amount: € 893 500,00. Total Amount: € 999 996,25.

Publications in Peer Review Journals

Rijo-Ferreira F, Carvalho T, Afonso C, Sanches-Vaz M, Costa RM, Figueiredo LM, Takahashi JS (2018). Sleeping sickness is a circadian disorder. *Nature Communications* 9, 62. doi: 10.1038/s41467-017-02484-2. (IF: 12.4, Citations: 5. Sources: Web of Science and Scopus).

Büscher P, Bart JM, Boelaert M, Bucheton B, Cecchi G, Chitnis N, Courtin D, Figueiredo LM, Franco JR, Grébaut P et al (2018). Do Cryptic Reservoirs Threaten Gambiense-Sleeping Sickness

Elimination? *Trends Parasitology* 34, 197–207. doi: 10.1016/j.pt.2017.11.008. (IF: 4.88, Citations: 9. Sources: Web of Science and Scopus).

Carvalho T, Trindade S, Pimenta S, Santos AB, Rijo-Ferreira F, Figueiredo LM (2018). *Trypanosoma brucei* triggers a marked immune response in male reproductive organs. *PLoS Negl Trop Dis*, 12: e0006690. DOI: 10.1371/journal.pntd.0006690 (IF: 4.36, Citations: 1. Sources: Web of Science and Scopus).

Invited Lectures and Seminars

Figueiredo LM. Livestock trypanosome symposium. Parasites in blood and adipose tissue are phenotypically different. University of Edinburgh, Edinburgh, UK, January 10-12, 2018.

Figueiredo LM. JorTec. Sleeping sickness is a circadian disease. Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Monte de Caparica, Portugal, February 2, 2018.

Figueiredo LM. Cell Press. What can Trypanosomes teach us about the role of adipose tissue in infections? Cambridge, MA, USA, June 15, 2018.

Figueiredo LM. Workshop on Biophysical Constraints and Evolutionary Cell Biology. Living inside and outside blood circulation. Instituto Gulbenkian de Ciência, Oeiras, Portugal, July 20, 2018.

Figueiredo LM. Liverpool School of Tropical Medicine. Unexpected phenotypic variability of *Trypanosoma brucei* parasites. University of Liverpool, Liverpool, UK, August 21, 2018.

Figueiredo LM. EMBO Workshop on Molecular advances and parasite strategies in host infection. Tissue immunity against African trypanosomes. Les Embiez Island, France, September 30-October 3, 2018.

Figueiredo LM. RNA modifications in parasite immune evasion. Weill Medical College, Cornell University, New York, USA, October 30, 2018.

Figueiredo LM. Unexpected phenotypic variability of *Trypanosoma brucei* parasites. Ludwig Maximilian University, Munich, Germany, November 12, 2018.

Communications in International Conferences

Rijo-Ferreira F, Pinto-Neves D, Barbosa-Morais N, Takahashi J, Figueiredo LM. Circadian rhythms of early divergent parasites. Society for Research on Biological Rhythms, Amelia Island, Florida, USA, May 12-16, 2018. (Oral Presentation).

Rijo-Ferreira F, Carvalho T, Afonso C, Sanches-Vaz M, Costa RM, Figueiredo LM, Takahashi JS. Sleeping sickness is a circadian disorder. Society for Research on Biological Rhythms, Amelia Island, Florida, USA, May 12-16, 2018. (Oral Presentation).

Guegan F, Pinto-Neves D, Sequeira M, Notredame C, Figueiredo LM. Genome-wide identification of lncRNA genes in *Trypanosoma brucei* parasite. Gordon Research Conference on the Biology of Host-Parasite Interactions, Salve Regina University, Newport RI, USA, June 10-15, 2018. (Poster Presentation).

Machado H, Figueiredo LM. *Trypanosoma brucei* mouse infection increases lipolysis in adipose tissue. Gordon Research Conference on the Biology of Host-Parasite Interactions, Salve Regina University, Newport RI, USA, June 10-15, 2018. (Poster Presentation).

Rijo-Ferreira F, Carvalho T, Afonso C, Sanches-Vaz M, Costa RM, Figueiredo LM, Takahashi JS. Sleeping sickness is a circadian disorder. Gordon Research Conference on the Biology of Host-Parasite Interactions, Salve Regina University, Newport RI, USA, June 10-15, 2018. (Oral Presentation).

Rijo-Ferreira F, Carvalho T, Afonso C, Sanches-Vaz M, Costa RM, Figueiredo LM, Takahashi JS. Sleeping sickness is a circadian disorder. Gordon Research Conference on the Biology of Host-Parasite Interactions, Salve Regina University, Newport RI, USA, June 10-15, 2018. (Poster Presentation).

Trindade S, Sequeira M, Dejung M, Bento F, Pinto-Neves D, Butter F, Bringaud F, Figueiredo LM. Adipose Tissue *T. brucei* Parasites Have a Reduced Proliferation State. Gordon Research Conference on the Biology of Host-Parasite Interactions, Salve Regina University, Newport RI, USA, June 10-15, 2018. (Poster Presentation).

Organisation of Conferences

Figueiredo LM, Phillips M. Chairs of Gordon Research Conference on the Biology of Host-Parasite Interactions, Salve Regina University, Newport RI, USA, June 10-15, 2018.

Figueiredo LM, Graça L. Chairs of TwinToInfect Spring School in Infection and Immunity, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, March 2018.

Internationalisation

Our research group acts internationally at several levels. First, by organising two international meetings (Gordon Conference in Host-Parasite Interactions, Newport, USA and a Spring School in Infection and Immunity, Lisbon). Second by participating and presenting our work at international meetings including the Society for Research in Biological Rhythms meeting (Florida, USA). Third by establishing and maintaining collaborations (Joseph Takahashi, University of Texas Southwestern Medical Center, USA; Samie Jaffrey, Cornell University, USA; Frederic Bringaud, Université de Bordeaux, France; Falk Butter, University of Mainz, Germany; Catarina Gadelha, Nottingham University, UK). Fourth by being a member of editorial board of iScience, a new journal from Cell Press and by acting as a reviewer for Nature Microbiology, Nature Communications, Nucleic Acids Research, Journal of Cell Science and PLoS Pathogens. Fifth, by participating in an international collaborative grant by the Wellcome Trust Fund.

Patents / Prototypes

Patent submission: "Método de diagnóstico de tripanossomíase animal", reference 110842, 12/07/2018.

Advanced Teaching

Figueiredo LM. Main examiner in PhD jury of Aitor Casas Sanchez, 21st August 2018. Thesis title: "Identification and characterisation of novel vaccine targets for the control of trypanosomiasis". Liverpool School of Tropical Medicine. Supervisor: Alvaro Acosta-Serrano.

Science and Society

Science Communication by Filipa Rijo-Ferreira:

<https://youtu.be/W0NWUSy30MM>

SIC Notícias, August 30, 2018, Live commentary on Biological rhythms and EU proposal to end daylight time saving.

MSc Thesis Completed

Christina Huber, 21/09/2018, “Exploring the role of metabolic enzymes in parasite fat tropism”, IMC, University of Applied Sciences Krems. Supervisor: Luisa M. Figueiredo.

Alexandra Teixeira, 20/11/2018. “Understanding the role of glycerol in triggering parasite differentiation”, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa. Supervisor: Luisa M. Figueiredo.

PhD Thesis Completed

Jessica Grace Morgan Bevan, 27/04/2018. “Chemical Tools for the Study of Nglycosylation in Protozoan Parasites”, Instituto de Medicina Molecular João Lobo Antunes, Faculdade de Medicina de Lisboa, Universidade de Lisboa. Supervisor: João Rodrigues.

Luísa Lopes Lab

Major Interests / Objectives

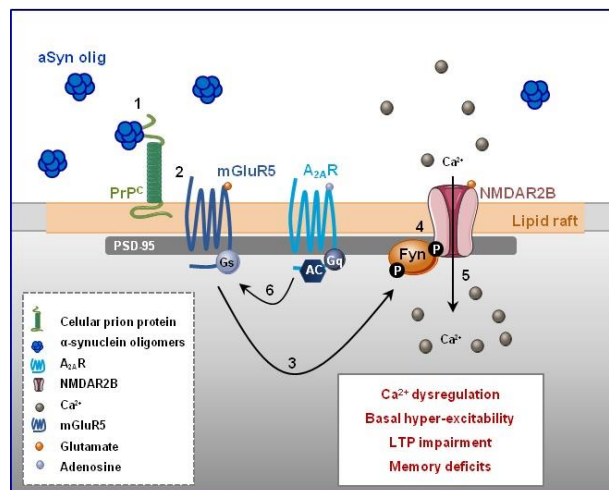
Aging, stress and neurodegenerative diseases are among the conditions that contribute to the accelerated loss of cognitive function. Our group's work is focused on understanding the mechanisms inducing this "early-ageing", which render the hippocampus - the brain area related to learning and memory – particularly susceptible.

We focus on characterizing the molecular mechanisms associated to hippocampal loss of function and its outcome in behavior performance and synaptic function, using rodent models. We ensure the translation to the human brain, by testing these molecular imprints in healthy and diseased human brain tissue. We are currently focused into exploring the contribution of glutamatergic synapses in early dysfunction.

Head of Laboratory

Luísa Maria Vaqueiro Lopes, PhD

Graphical Abstract



Team

Ana Carolina Amaral Peixoto	Graduate	MSc Student (Left July)
Ana Inês Marques Morgado	Master	PhD Student
Hayley Lynn Reichner	Other	BSc Student (Started June Left July)
Joana Fernandes Esteves Soares Coelho	PhD	Senior Post-Doctoral Researcher
Joana Gomes Ribeiro	Master	PhD Student (Started January)
Joana Isabel Rajão Saraiva	Master	PhD Student (Started March)

João Pedro da Costa Alvares Viegas Nunes	PhD	Junior Post-Doctoral Researcher (Left December)
Mariana de Brito Morais	Graduate	MSc Student (Started October)
Mariana Temido Mendes Ferreira	Master	Lab Technician
Marit Anne Vink	Master Student	MSc Student (Started June Left December)
Raquel Lagoa Madruga da Costa	Graduate	MSc Student (Started September)
Rui Artur Paiva Loureiro Gomes	PhD	Senior Post-Doctoral Researcher

Laboratory Keywords / Research Areas

Neurosciences, Cognition, Aging, Hippocampus.

Major Scientific Achievements

1) Publications: A significant association of the ADORA2A gene, encoding the adenosine A2A receptor (A2AR), with hippocampal volume (synaptic loss) in mild cognitive impairment and AD patients was reported. In this manuscript, we explored the synaptic function of A2AR in age-related conditions, and report, for the first time, a significant overexpression of A2AR in hippocampal neurons of aged human brain, which is aggravated in AD patients. A similar profile of A2AR overexpression was sufficient to mimic age-like memory impairments in young animals, and to induce a LTD-to-LTP shift in the hippocampus. This shift was due to an increased NMDA receptor gating, consequent activation of mGluR5 and increased Ca²⁺ influx. Importantly, we revealed a similar LTD-to-LTP shift in memory impaired aged rats and in APP/PS1 mice modeling AD, a phenotype that we rescued upon A2AR blockade. This newly found A2AR/mGluR5/NMDAR interaction is as a suitable alternative for regulating aberrant mGluR5/NMDAR signaling without disrupting their constitutive activity.

2) Awards: Santa Casa da Misericórdia Mantero Belard Award 2018 for the project MonoGram: Mechanistic insight On Alzheimer's disease using Novel Aging- based Models. Our strategy (in collaboration with PPousinha from University of Cote d'Azur) is to elucidate the physiological role of APP (amyloid precursor protein) in glutamatergic neurons, identify the mechanisms underlying the control of NMDARs and assess if they are dysregulated in pathophysiological contexts.

Selected Publications

Ferreira DG, Temido-Ferreira M, Miranda HV, Batalha VL, Coelho JE, Szegö EM, Marques-Morgado I, Vaz SH, Rhee JS, Schmitz M, Zerr I, Lopes LV*, Outeiro TF* (2017). α -Synuclein interacts with PrPC to induce cognitive impairment through mGluR5 and NMDAR2B. *Nature Neuroscience*, DOI: 10.1038/nn.4648 *Co-senior author. (IF: 17.8, Citations 33. Source: Web of Science).

Temido-Ferreira M, Ferreira DG, Batalha VL, Marques-Morgado I, Coelho JE, Pereira P, Gomes R, Pinto A, Carvalho S, Canas PM, Cuvelier L, Buée-Scherrer V, Faivre E, Baqi Y, Müller CE, Pimentel J, Schiffmann SN, Buée L, Bader M, Outeiro TF, Blum D, Cunha RA, Marie H, Pousinha PA, Lopes LV (2018). Age-related shift in LTD is dependent on neuronal adenosine A_{2A} receptors interplay with mGluR5 and NMDA receptors. *Molecular Psychiatry*. (IF: 15.4, Citations 8. Source: Web of Science).

Batalha VL, Pego JM, Fontinha BM, Costenla AR, Valadas JS, Baqi Y, Radjainia H, Müller CE, Sebastião AM, Lopes LV (2013). Adenosine A_{2A} receptor blockade reverts hippocampal stress-induced deficits and restores corticosterone circadian oscillation. *Molecular Psychiatry*, 320-331. (IF: 15.4, Citations 80. Source: web of Science).

Laurent C, Burnouf S, Ferry B, Batalha VL, Coelho JE, Baqi Y, Malik E, Mariciniak E, Parrot S, Van der Jeugd A, Faivre E, Flaten V, Ledent C, DHooge R, Sergeant N, Hamdane M, Humez S, Muller CE, Lopes LV, Buee L, Blum D (2014). A_{2A} adenosine receptor deletion is protective in a mouse model of Alzheimer disease. *Molecular Psychiatry*, DOI: 10.1038/mp.2014.151. (IF: 15.4, Citations: 63. Source: Web of Science).

Ongoing Research Projects

2016/2019: Targeting the glycation defenses as a protective strategy for Parkinson's disease. Coordinator: Luísa Lopes. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/NEU-OSD/5644/2014. Amount: € 51 000,00. Total Amount: € 199 961,00.

2016/2019: Microglia dysregulation as trigger for chronic brain inflammation. Coordinator: Joana Coelho. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIM-MEC/4778/2014. Amount: € 195 035,00. Total Amount: € 195 035,00.

Other Projects

2016/2018: SynaNet: Neurologic and Psychiatric disorders: from synapses to networks. Coordinator: Ana Sebastião. Funding Agency: European Commission. Reference: TWINNING 692340. Amount: € 525 437,50. Total Amount: € 999 996,25.

Publications in Peer Review Journals

Temido-Ferreira M, Ferreira DG, Batalha VL, Marques-Morgado I, Coelho JE, Pereira P, Gomes R, Pinto A, Carvalho S, Canas PM, Cuvelier L, Buée-Scherrer V, Faivre E, Baqi Y, Müller CE, Pimentel J, Schiffmann SN, Buée L, Bader M, Outeiro TF, Blum D, Cunha RA, Marie H, Pousinha PA, Lopes LV (2018). Age-related shift in LTD is dependent on neuronal adenosine A2A receptors interplay with mGluR5 and NMDA receptors. *Molecular Psychiatry*, DOI: 10.1038/s41380-018-0110-9. (IF: 15.4, Citations: 5. Source: Web of Science and Scopus).

Brás IC, Lopes LV, Outeiro TF (2018). Sensing α -Synuclein From the Outside via the Prion Protein: Implications for Neurodegeneration. *Movement Disorders*, 33(11):1675-1684. DOI: 10.1002/mds.27478. (IF: 8.324, Citations: 1. Sources: Web of Science and Scopus).

Faivre E, Coelho JE, Zornbach K, Malik E, Baqi Y, Schneider M, Cellai L, Carvalho K, Sebda S, Figeac M, Eddarkaoui S, Caillierez R, Chern Y, Heneka M, Sergeant N, Müller CE, Halle A, Buée L, Lopes LV, Blum D (2018). Beneficial Effect of a Selective Adenosine A2A Receptor Antagonist in the APP^{swe}/PS1^{dE9} Mouse Model of Alzheimer's Disease. *Frontiers in Molecular Neuroscience*, 11:235. DOI: 10.3389/fnmol.2018.00235. (IF: 3.902, Citations: 2. Sources: Web of Science and Scopus).

Tanqueiro SR, Ramalho RM, Rodrigues TM, Lopes LV, Sebastião AM, Diógenes MJ. Inhibition of NMDA Receptors Prevents the Loss of BDNF Function Induced by Amyloid β . *Frontiers in Pharmacology*, 9:237. DOI: 10.3389/fphar.2018.00237. (IF: 3.831, Citations: 3. Sources: Web of Science and Scopus).

Invited Lectures and Seminars

Lopes LV. Learning from synaptic aging to study neurodegeneration. Meeting of the Biomedical Students, ICBAS, Porto, Portugal, March 17, 2018.

Lopes LV. NMDA receptors and calcium in early synaptic dysfunction. 8th Kuopio Alzheimer Symposium, Finland, June 5-6, 2018.

Lopes LV. Adenosine, stress and aging. Purines Meeting, Foz Iguaçu, Brazil, June 19-22, 2018.

Lopes LV. PrPc and aSynuclein love affair in neurodegeneration. 9th Meeting on Signal Transduction, Lisbon, Portugal, September 21-22, 2018.

Communications in International Conferences

Brigas HC, Wilharm A, Ribeiro M, Sandrock I, Amado T, Carvalho T, Reinhardt A, Oberdorfer L, Silva-Santos B, Prinz I, Ribot JC. Characterization of gd T cell subsets in the male reproductive tract. TwinnToInfect Spring School in Infection and Immunity, Instituto de Medicina Molecular João Lobo Antunes and Hotel do Mar, Lisbon and Sesimbra, Portugal, March 19-22, 2018. (Oral Presentation).

Brigas HC, Wilharm A, Ribeiro M, Sandrock I, Amado T, Carvalho T, Reinhardt A, Oberdorfer L, Silva-Santos B, Prinz I, Ribot JC. Characterization of gd T cell subsets in the male reproductive tract. TwinnToInfect Spring School in Infection and Immunity, Instituto de Medicina Molecular João Lobo Antunes and Hotel do Mar, Lisbon and Sesimbra, Portugal, March 19-22, 2018. (Poster Presentation).

Carvalho K, Faivre E, Gomez-Murcia V, Coelho JE, Cellai L, Mériaux C, Deleau A, Eddarkaoui S, Le Gras S, Dumoulin M, Bégard S, Tailieu D, Colin M, Vieau D, Hamdane M, Buée L, Lopes LV, Boutillier AL, Blum D. Impact of a neuronal upsurge of the adenosine A2A receptor in a Tau mouse model of Alzheimer's disease. EUROTau Meeting 2018, Lille, France, 26-27 April, 2018.

Brigas HC, Wilharm A, Ribeiro M, Sandrock I, Reinhardt A, Oberdorfer L, Silva-Santos B, Prinz I, Ribot JC. gamma-delta T cell home to the male reproductive tract and expand at puberty to keep pathogens at bay. 8th International gamma-delta-T-Cell Conference, Bordeaux, France, June 7-10, 2018. (Oral Presentation).

Marques-Morgado I, Coelho JE, Dias M, Remondes M, Dawson N, Lopes LV. Impact of circadian modulation and ageing on Suprachiasmatic Nucleus functional connectivity. 11th FENS Forum of Neuroscience, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Ribeiro M, Brigas HC, Temido-Ferreira M, Santa C, Coelho JE, Marques-Morgado I, Valente C, Omenetti S, Stockinger B, Manadas B, Lopes LV, Silva-Santos B, Ribot JC. Meningeal gamma-delta T cell-derived IL-17 controls synaptic plasticity and cognitive behavior. 11th FENS Forum of Neuroscience, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Temido-Ferreira M, Ferreira DG, Gomes R, Coelho JE, Bader M, Blum D, Outeiro TF, Lopes LV. LTD shift through mGluR5-dependent NMDAR overactivation upon aging. 11th FENS Forum of Neuroscience, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Brigas HC, Wilharm A, Ribeiro M, Sandrock I, Reinhardt A, Oberdorfer L, Silva-Santos B, Prinz I, Ribot JC. gamma-delta T cell home to the male reproductive tract and expand at puberty to keep pathogens at bay. 5th European Congress of Immunology (ECI), Amsterdam, Netherlands, September 2-5, 2018. (Oral Presentation).

Marques-Morgado I, Coelho JE, Dias M, Remondes M, Dawson N, Lopes LV. Impact of circadian modulation and ageing on Suprachiasmatic Nucleus functional connectivity. CAJAL course "Linking Neural Circuits and Behaviour", CAJAL Advanced Neuroscience Training Programme, Bordeaux Neurocampus, University of Bordeaux, Bourdeaux, France, October 2018. (Poster Presentation).

Temido-Ferreira M, Ferreira DG, Gomes R, Coelho JE, Bader M, Blum D, Outeiro TF, Marie H, Pousinha PA, Lopes LV. mGluR5-dependent NMDAR activation is associated with LTD shift upon aging. 48th Annual Meeting of the Society for Neuroscience, San Diego, USA, November 2018.

Lopes LV, Temido-Ferreira M, Ferreira DG, Coelho JE, Blum D, Marie H, Outeiro TF, Pousinha PA. Early synaptic dysfunction in aging and Alzheimer's disease. 48th Annual Meeting of the Society for Neuroscience, San Diego, USA, November 2018. (Oral Presentation).

Carvalho K, Faivre E, Gomez-Murcia V, Coelho JE, Cellai L, Meriaux C, Deleau A, Eddarkaoui S, Le Gras S, Dumoulin M, Bégard S, Taillieu D, Vieau D, Hamdane M, Buee L, Boutilliers AL, Lopes LV, Blum D. Adenosine A2A receptor dysregulation in Alzheimer's Disease: Impact of neuronal A2A receptor upsurge in a mouse model of Tauopathy. 48th Annual Meeting of the Society for Neuroscience, San Diego, USA, November 2018.

Gomez-Murcia V, Faivre E, Carvalho K, Coelho JE, Cellai L, Meriaux C, Deleau A, Dumoulin M, Tailleu D, Vieau D, Hamdane M, Buée L, Lopes LV, Blum D. Adenosine A2A receptor dysregulation in Alzheimer's Disease: Impact of astrocytic A2AR upsurge in a mouse model of Tauopathy. 48th Annual Meeting of the Society for Neuroscience, San Diego, USA, November 2018.

Temido-Ferreira M, Ferreira DG, Gomes R, Coelho JE, Bader M, Blum D, Outeiro TF, Marie H, Pousinha PA, Lopes LV. mGluR5-dependent NMDAR activation is associated with LTD shift upon aging. Synanet 3rd Annual Meeting "Neurologic and Psychiatric Disorders: from synapses to networks", Lisbon, Portugal, December 2018. (Oral Presentation).

Brigas HC, Coelho JE, Ribeiro M, Wilharm A, Ribeiro M, Silva- Santos B, Lopes LV, Ribot JC. Elucidating the Impact of IL-17 on Alzheimer's Disease. 2018 Champalimaud Research Symposium, "Quantitative approaches to Behaviour & Neural Systems", Lisbon, Portugal, October 23-26, 2018. (Poster Presentation).

Communications in National Conferences

Temido-Ferreira M, Ferreira DG, Marques-Morgado I, Coelho JE, Pereira P, Gomes R, Canas PM, Pimentel J, Outeiro TF, Blum D, Cunha RA, Marie H, Pousinha PA, Lopes LV. Age-related shift in LTD is dependent on neuronal adenosine A2A receptors interplay with mGluR5 and NMDA receptors. XLVIII Meeting of the Portuguese Society for Pharmacology, Lisbon, Portugal, February 2018. (Oral Presentation).

Brigas HC, Wilharm A, Ribeiro M, Sandrock I, Amado T, Carvalho T, Reinhardt A, Oberdorfer L, Silva-Santos B, Prinz I, Ribot JC. Characterisation of gd T cell subsets in the male reproductive tract. XII CAML PhD Students Meeting, Lisboa (Portugal), 23-25 May 2018 (Poster presentation)

Brigas HC, Wilharm A, Ribeiro M, Sandrock I, Amado T, Carvalho T, Reinhardt A, Oberdorfer L, Silva-Santos B, Prinz I, Ribot JC. Characterisation of gd T cell subsets in the male reproductive tract. Portuguese Society for Immunology, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Organisation of Conferences

Brigas HC. XII CAML PhD Students Meeting, Lisbon, Portugal, May 23-25, 2018.

Internationalisation

STUDY IN PORTUGAL NETWORK - hosting of an undergraduate student in the lab for an internship; Hayley Reichner from the University of Pittsburgh, for 2 months (June and July 2018).

Prizes, Honours and Awards

Lopes LV. Prémio Mantero Belard – Santa Casa da Misericórdia.

Temido-Ferreira M. Portuguese Society for Neurosciences Travel Award to participate in the 11th FENS Forum of Neuroscience, Berlin, Germany, July 7-11, 2018.

Marques-Morgado I. CAJAL Advanced Neuroscience Training Programme Award for the course “Linking Neural Circuits and Behaviour”.

Advanced Teaching

Brigas HC. Participant on Hands-on the rodent brain: from intracellular trafficking to brain connectome, ICVS/EM-UMinho, Braga, Portugal, February 19-March 9, 2018.

Lopes LV. Lecturer at the doctoral course BEB Coimbra 2018.

Lopes LV. Teaching at the LisbonBiomed course, neuroscience module 2018.

Lopes LV. Teaching at the Neurosciences PhD/MSc Faculty of Medicine, University of Lisbon, Lisbon, Portugal, 2018.

Marques-Morgado I. Participant on CAJAL course “Linking Neural Circuits and Behaviour” of the CAJAL Advanced Neuroscience Training Programme, Bordeaux Neurocampus, University of Bordeaux, Bordeaux, France, October 2018.

Science and Society

Lopes LV. Presentation of the book “Na Memória dos Rouxinóis” Quetzal, by Filipa Martins in bookshop “Ler Devagar”, March 6, 2018.

Lopes LV. Round-table about the book “Na Memória dos Rouxinóis” Quetzal, by Filipa Martins in bookshop Bertrand-Chiado, April 14, 2018.

Lopes LV. CUF Descobertas Hospital, lecture to clinical staff on “Research in Neurosciences”, December 5, 2018.

Lopes LV. Participation in the Portuguese edition of Pint of Science 2018, as lecturer in the Bar Crafty Corner, Lisbon, Portugal, May 14, 2018.

Lopes LV. Participation in the radioshow “Da Capa à Contracapa” from Rádio Renascença to discuss myths about the brain, November 11, 2018.

Lopes LV. Participation in Instituto de Medicina Molecular João Lobo Antunes Campaign (vídeo and flyers) for lay audience public about research@IMM.

Lopes LV. Participation with a science booth at Noite Europeia dos Investigadores, Escola Filipa de Lencastre, Lisbon, Portugal, May 9, 2018.

MSc Thesis Completed

Carina Santos Henriques, 11/2018, “Modified-Exosomes As A Gene Delivery Vectors For The Treatment Of Machado-Joseph Disease”, Mestrado em Biologia Molecular e Genética, Faculty of Sciences, University of Lisbon. Supervisor: Luísa V. Lopes. Co-supervisor: Rui Gomes.

PhD Thesis Completed

Mariana Temido-Ferreira, 29/10/2018, The role of A2A receptors in cognitive decline – decoding the molecular shift towards neurodegeneration, Faculty of Medicine, University of Lisbon. Supervisor: Luísa V. Lopes.

Diana Ferreira, 26/02/2018, Unravelling the role od adenosine A2A receptors on a-synuclein mediated neurotoxicity Faculty of Medicine, University of Porto. Supervisor: Luísa V. Lopes.

Mamede de Carvalho Lab

Major Interests / Objectives

This Unit aims to further develop the main areas where it has been highly competitive internationally. In particular: markers for early diagnosis, including wet biomarkers; epidemiology and treatment effectiveness/costs in amyloid peripheral neuropathy; neurophysiology, phenotype-genotype and data mining in amyotrophic lateral sclerosis (ALS); and computational models in behaviour and basal ganglia dysfunction. We intend to increment the progressive involvement in international projects associated with very productive centres located in Europe and USA, promoting scientific development and higher output in topics of this Unit expertise.

Head of Laboratory

Mamede de Carvalho, MD/PhD

Team

Ana Catarina de Oliveira da Silva Pronto Laborinho	Graduate	Lab Technician
Ana Catarina dos Santos Farinha	Master	PhD Student
Ana Rita Mendes Londral Gamboa	PhD	Clinical Researcher
Anabela Leuschner Fernandes Cardoso Pinto Noronha Sanches	PhD	Clinical Researcher
Andreia Leitão Tavares Ribeiro dos Santos	Graduate	PhD Student
Ângelo Rodrigo Neto Dias	Master	PhD Student
Anna Caroline Marques dos Anjos Braga	Master	Clinical Researcher
Benjamim Abraham Ohana	Graduate	Clinical Researcher (Left September)
Bruno André e Silva Miranda	PhD	Clinical Researcher
Cristiano Torres Tavares dos Santos	Master	Lab Technician
Fernando Manuel Pinto Ferreira Domingos	PhD	Clinical Researcher
Gabriel Miltényi-Miltenberger	PhD	Senior Post-Doctoral Researcher
Isabel Maria dos Santos Conceição	Graduate	Clinical Researcher
Isabel Martins de Castro	Graduate	Junior Technician
João Daniel Galvão Antunes	Graduate	MSc Student
João Nuno Marques Parracho Guerra da Costa	PhD	Clinical Researcher (Left September)
José Filipe Oliveira Castro	Graduate	Lab Technician
Lena Helene Ernst	PhD	Senior Post-Doctoral Researcher
Leonel Almeida Luis	Graduate	Clinical Researcher
Maria da Conceição Jonet de Azevedo Coutinho	PhD	Clinical Researcher
Mariana Fernandes Alves Pereira	Master	Trainee

Marta Luisa Gromicho Morgado Silva	PhD	Senior Post-Doctoral Researcher
Michael Swash	PhD	Clinical Researcher
Pedro Jorge Filipe Pereira	Master	Lab Technician (Started June)
Pedro Miguel Tojais Rodrigues Alves	Graduate	Clinical Researcher
Sofia Rita Cardoso Fernandes	Master	PhD Student
Susana Cristina da Costa Pinto	PhD	Visiting Researcher
Tiago Vaz Maia	PhD	Staff Scientist
Vasco Manuel Aranha da Conceição	Master	PhD Student

Laboratory Keywords / Research Areas

Amyotrophic lateral sclerosis (ALS), Neurophysiology and respiratory involvement, Atrial fibrillation and autonomic nervous system, Neurocomputational modelling of brain disorders, Familial amyloid polyneuropathy and early markers of disease, Attention deficit hyperactivity disorder, Biological signal processing.

Major Scientific Achievements

Our Unit is involved in neuromuscular disorders, in particular amyotrophic lateral sclerosis (ALS) and familial amyloid polyneuropathy (FAP), and in the nascent field of computational psychiatry. We have increased our output in the main areas of research, with critical contributions published regarding the dopaminergic dysfunction in Tourette Syndrome, learning and corticostriatal activation in Obsessive-Compulsive Disorder. Additionally, we have contributed to the epidemiology of FAP in Portugal, the impact of liver of transplantation and tafamidis treatment on disease progression, natural history and survival in FAP. Also, we have published results on the phenotype of late-onset ALS, the epidemiology of the genetic mutations of ALS in Portugal, wet-biomarkers for respiratory insufficiency in ALS, the role of phrenic nerve studies in ALS, and the potential of transcutaneous spinal direct current stimulation of the spinal cord to modulate motor neuron excitability.

Selected Publications

Maia TV, Frank MJ (2017). An integrative perspective on the role of dopamine in schizophrenia. *Biological Psychiatry*, 81(1): 52-66. (IF: 11.982, Citations: 63. Source: Web of Science).

Conceicao VA, Dias Â, Farinha AC, Maia TV (2017). Premonitory urges and tics in Tourette syndrome: computational mechanisms and neural correlates. *Current Opinion in Neurobiology*, 46: 187-99. (IF: 6.541, Citations: 11. Source: Web of Science).

de Carvalho M, Kiernan MC, Swash M (2017). Fasciculation in amyotrophic lateral sclerosis: origin and pathophysiological relevance. *J Neurol Neurosurg Psychiatry*, 88(9): 773-9. (IF: 7.144, Citations: 15. Source: Web of Science).

Pinto S, de Carvalho M (2017). Correlation between forced vital capacity and slow vital capacity for the assessment of respiratory involvement in amyotrophic lateral sclerosis: a prospective study. *Amyotrophic Lateral Sclerosis and Frontotemporal Degeneration*, 18(1-2): 86-91. (IF: 3.080, Citations: 13. Source: Web of Science).

Conceição I, González-Duarte A, Obici L, Schmidt HH, Simoneau D, Ong ML, Amass L (2016). “Red-flag” symptom clusters in transthyretin familial amyloid polyneuropathy. *Journal of the Peripheral Nervous System*, 21(1): 5-9. (IF: 2.550, Citations: 48).

Ongoing Research Projects

2018/2021: Avaliação detalhada de microRNA circulantes como biomarcadores de diagnóstico e prognóstico em Esclerose Lateral Amiotrófica. Coordinator: Mamede de Carvalho. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MEC-NEU/31195/2017. Amount: € 155 615,31. Total Amount: € 239 294,65.

2018/2019: Investigação Síndrome Tourette. Coordinator: Tiago Maia. Funding Agency: Ampastta. Reference: Investigação Síndrome Tourette. Amount: € 5 683,50. Total Amount: € 5 683,50.

2017/2018: Computational Psychiatry Consulting on Pediatric Mental Illnesses. Coordinator: Tiago Maia. Funding Agency: National Institutes of Health. Reference: NIH - Reference 4464450 - Computational Psychiatry. Amount: € 13 205,39. Total Amount: € 13 205,39.

2016/2019: Unravelling Prognostic markers in NEUROdegenerative diseases through CLINical and OMICS data integration. Coordinator: Mamede de Carvalho. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/EEI-SII/1937/2014. Amount: € 48 791,00. Total Amount: € 197 346,00.

2015/2018: ONTology-based web database for understanding Amyotrophic Lateral Sclerosis. Coordinator: Mamede de Carvalho. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: JPND-PS/001/2013. Amount: € 140 000,00. Total Amount: € 1 278 935,00.

2015/2018: Slow vital capacity and Forced Vital Capacity in Amyotrophic Lateral Sclerosis : Are they equally sensitive?. Coordinator: Mamede de Carvalho. Funding Agency: Cytokinetics. Reference: Cytokinetics. Amount: € 7 700,00. Total Amount: € 7 700,00.

Other Projects

2016/2018: SynaNet: Neurologic and Psychiatric disorders: from synapses to networks. Coordinator: Ana Sebastião. Funding Agency: European Commission. Reference: TWINNING 692340. Amount: € 525 437,50. Total Amount: € 999 996,25.

2008/2018: THAOS: Transthyretin-associated amyloidoses outcomes survey - A Global, Multi-Center, Longitudinal, Observational Survey of Patients with Documented Transthyretin (TTR) Mutations or Wild-Type TTR Amyloidoses. Coordinator: Claudio Rapezzi. Funding Agency: Fold Rx Pharmaceuticals. Reference: THAOS. Amount: Not Applicable. Total Amount: Not Applicable.

Publications in Peer Review Journals

de Carvalho M (2018). Cramps and Vinpocetine in ALS (letter). *Amyotr Lat Scler Frontotemporal Degener.* (IF: 3.080, Citations: 0. Source: Web of Science).

Pronto-Laborinho A, Gromicho M, Pereira M, Pinto S, Barros MA, Swash M, de Carvalho M (2018). Plasma Level of Club Cell CC-16 Predicts Outcome in ALS. *Acta Neur Scand*, 137: 233-237. (IF: 3.126, Citations: 0. Source: Web of Science).

Braga AC, Pinto A, Pinto S, de Carvalho M (2018). The Role of Moderate Aerobic Exercise as Determined by Cardiopulmonary Exercise Testing in ALS. *Neurol Res Int.* (IF: 1.489, Citations: 0. Source: Web of Science).

de Carvalho M (2018). Fasciculation: does distance really matter? *Clinical Neurophysiology (Editorial)*, 129: 462–463. (IF: 3.42. Citations: 0. Source: Web of Science and Scopus).

de Carvalho M, Pinto S, Swash M (2018). Diaphragm Motor Responses to phrenic nerve stimulation in ALS: Surface and Needle Recordings. *Clinical Neurophysiology*, 129: 349–353. (IF: 3.42, Citations: 0. Source: Web of Science and Scopus).

Cooper-Knock J, Robins H, Niedermoser I, Wyles M, Heath PR, Higginbottom A, Walsh T, Kazoka M; Project MinE ALS Sequencing Consortium, Ince PG, Hautbergue GM, McDermott CJ, Kirby J, Shaw PJ (2018). Targeted Genetic Screen in Amyotrophic Lateral Sclerosis Reveals Novel Genetic Variants with Synergistic Effect on Clinical Phenotype. *Front Mol Neurosci*, 10: 370. (IF: 5.36. Citations: 5. Source: Web of Science).

van der Spek R, van Rheenen W, Pulit S, Kenna K, Ticozzi N, Kooyman M, Mclaughlin R, Moisse M, van Eijk K, van Vugt J, Andersen P, Basak N, Blair I, de Carvalho M, Chiò A, Corcia P, Couratier P, Drory V, Glass J, Hardiman O, Mora J, Morrison K, Mitne-Neto M, Robberecht W, Shaw P, Povedano M, Van Damme P, Silani V, Gotkine M, Weber M, van Es M, Landers J, Al-Chalabi A, van den Berg L, Veldink J (2018). Reconsidering the causality of TIA1 mutations in ALS. *Amyotr Lat Scler Frontotemporal Degener*, 19: 1-3. (IF: 3.080, Citations: 3. Source: Web of Science).

Campos C, de Carvalho M (2018) Neurophysiologic characterization of periodic paralysis episode in a patient with Andersen-Tawil syndrome. *Clin Neurophysiol*. (IF: 3.42, Citations: 0. Source: Web of Science).

Alves P, de Carvalho M, Reimão S, Castro J, Fonseca AC, Canhã P (2018). Voluntary control of a plegic limb during yawning after stroke. *J Neurol*, 265: 433-435. (IF: 3.578, Citations: 0. Source: Web of Science).

Braga AC, Pinto A, Pinto S, de Carvalho M (2018). The role of moderate aerobic exercise as determined by cardiopulmonary exercise testing (CPET) in ALS. *Eur J Phys Rehabil Med*. (IF: 2.06, Citations: 0. Source: Web of Science).

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Invited Lectures and Seminars

Conceição I. Are we diagnosing early enough? The follow up of asymptomatic carriers: Neurologic phenotypes (Workshop). ARiA VII – “ARiA VII – The journey to a multidisciplinary approach”, Frankfurt, Germany, February 2-3, 2018.

Conceição I. Será Doença de Pompe? A experiência de um Centro de Referência. V Simpósio Doenças Raras Sintomas Comuns, Porto, Portugal, February 24, 2018.

De Carvalho M. Diagnosis in ALS: current state and clues for the future. Università Campus Bio-Medico di Roma, Roma, February 2018.

Conceição I. Defining the Minimum Criteria for Diagnosis of Active Disease in an Identified Carrier of a TTR Gene Mutation. XVI International Symposium on Amyloidosis, Kumamoto, Japan, March 26-29, 2018.

De Carvalho M. Utility of EDX in Amyotrophic Lateral Sclerosis. 31st International Congress of Clinical Neurophysiology, Washington, USA, May 2018.

De Carvalho M. Respiratory Evaluation in Intensive Care. 31st International Congress of Clinical Neurophysiology, Washington, USA, May 2018.

De Carvalho M. Hands-on Course: phrenic nerve conduction. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 2018.

De Carvalho M. Plenary Symposium: Highlights and Breaking News – Neuromuscular Disorders and Neurophysiology. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 2018.

Conceição I. Hereditary amyloidosis related to transthyretin (hATTR): recent advances in therapy. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 2018.

Conceição I. A man with limb girdle muscle weakness and respiratory involvement: a clue to an expected diagnosis? Latest tales of the unexpected: illuminating the path to earlier diagnosis in muscle diseases. Genzyme Satellite Symposium, 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 2018.

Maia TV. The role of dopamine in Tourette syndrome: a computational account. 11th European Conference on Tourette Syndrome and Tic Disorders: Annual Meeting of the European Society for the Study of Tourette Syndrome, Copenhagen, Denmark, June 2018.

Conceição I. Diagnosing and Assessing Burden of hATTR Amyloidosis: A case of late onset V30M: delaying diagnosis. 15th International Congress of Neuromuscular Diseases, Vienna, Austria, July 6, 2018.

Maia TV. Tourette syndrome: dopamine and motor habits in overdrive. Parallel Distributed Processing and the Emergence of an Understanding of Mind, Princeton, USA, September 2018.

Maia TV. The role of dopamine in Tourette syndrome. Keynote Speaker (“Invité d’Honneur”). 11th Annual Meeting of the French Reference Centres for Gilles de la Tourette Syndrome, Hôpital Universitaire Pitié Salpêtrière, Paris, France, October 2018.

Communications in International Conferences

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NC, Carvalho FA. Using AFM to study erythrocytes morphology and elasticity on Amyotrophic Lateral Sclerosis. XX Annual Linz Winter Workshop 2018 – Advances in Single-Molecule Research for Biology & Nanoscience, Linz, Austria, February 2-5, 2018. (Poster Presentation).

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NC, Carvalho FA. Using AFM to study erythrocytes morphology and elasticity on Amyotrophic Lateral Sclerosis. Talking molecules: the networks that shape the living world, Warsaw, Poland, March 19-21, 2018. (Poster Presentation).

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NC, Carvalho FA. Using AFM to study erythrocytes morphology and elasticity on Amyotrophic Lateral Sclerosis. Talking molecules: the networks that shape the living world, Warsaw, Poland, March 19-21, 2018. (Oral Presentation).

Conceição I, Damy T, Romero MA, Attarian S, Galán L, Luigetti M, Sadeh M, Sarafov S, Tournev I, Ueda M. Defining the minimum criteria for diagnosis of active disease in the follow-up of an identified carrier of a TTR gene mutation. XVI International Symposium on Amyloidosis, Kumamoto, Japan, March 26-29, 2018. (Poster Presentation).

Conceição I, Castro I, Castro J. Correlation between Sudoscan and COMPASS 31: assessment of autonomic dysfunction on hATTR V30M patients XVI International Symposium on Amyloidosis, Kumamoto, Japan, March 26-29, 2018. (Poster Presentation).

Falcão de Campos C, Parreira S, Conceição I. Misdiagnosis in late versus early onset hATTR amyloidosis patients: experience from a reference center. XVI International Symposium on Amyloidosis, Kumamoto, Japan, March 26-29, 2018. (Poster Presentation).

Falcão de Campos C, Conceição I, de Castro I, Castro J. Early diagnostic tools in hereditary amyloidosis related to transthyretin (hATTR) V30M autonomic neuropathy. XVI International Symposium on Amyloidosis, Kumamoto, Japan, March 26-29, 2018. (Poster Presentation).

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Thibaud Damy T, Conceição I, Planté-Bordeneuve V, Mundayat R, Schumacher J, Coelho T. Cardiac Disorders in THAOS Subjects With V30M Transthyretin Amyloidosis. XVI International Symposium on Amyloidosis, Kumamoto, Japan, March 26-29, 2018. (Poster Presentation).

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Mónica Inês, Teresa Coelho, Isabel Conceição, Marta Soares, Mamede de Carvalho, João Costa Clinical paradigms in treatment effectiveness for. hereditary transthyretin amyloidosis. XVI International Symposium on Amyloidosis, Kumamoto, Japan, March 26-29, 2018. (Oral Presentation).

Alejandra González-Duarte, Isabel Conceição, Leslie Amass, Marc F Botteman, John A Carter, Michelle Stewart. Impact of non-cardiac baseline characteristics on survival in transthyretin familial amyloid polyneuropathy. XVI International Symposium on Amyloidosis, Kumamoto, Japan, March 26-29, 2018. (Poster Presentation).

Thomas Brannagan, Annabel K. Wang, Teresa Coelho, Marcia Waddington Cruz, Michael J. Polydefkis, Peter J. Dyck, Morton Scheinberg, Violaine Plante-Bordeneuve, John L. Berk, Fabio Barroso, David Adams, Carol Whelan, Giampaolo Merlini, Brian M. Drachman, Stephen B. Heitner, Isabel Conceicao, Hartmut Schmidt, Giuseppe Vita, Josep M. Campistol, Josep Gamez, Peter Gorevic, Brett P. Monia, Steven G. Hughes, Jesse Kwoh, Bradley W. McEvoy, Brenda F. Baker, Elizabeth J. Ackermann, Merrill D. Benson, Morie Gertz. Open label extension of the phase 3 NEURO-TTR study to assess the long-term efficacy and safety of inotersen in patients with hereditary transthyretin amyloidosis (hATTR). XVI International Symposium on Amyloidosis, Kumamoto, Japan, March 26-29, 2018. (Poster Presentation).

Morie Gertz, Annabel K. Wang, Teresa Coelho, Marcia Waddington Cruz, Michael J. Polydefkis, Peter J. Dyck, Morton Scheinberg, Violaine Plante-Bordeneuve, John L. Berk, Fabio Barroso, David Adams, Thomas Brannagan, Carol Whelan, Giampaolo Merlini, Brian M. Drachman, Stephen B. Heitner, Isabel Conceicao, Hartmut Schmidt, Giuseppe Vita, Josep M. Campistol, Josep Gamez, Edward Gane, Peter Gorevic, Acary Souza Bulle Oliveira, Brett P. Monia, Steven G. Hughes, Jesse Kwoh, Bradley W. McEvoy, Brenda F. Baker, Elizabeth J. Ackermann, Merrill D. Benson. Safety and efficacy of inotersen in patients with hereditary transthyretin amyloidosis (hATTR) with polyneuropathy (hATTR-PN) in the NEURO-TTR study. XVI International Symposium on Amyloidosis, Kumamoto, Japan, March 26-29, 2018. (Poster Presentation).

Lopes CS, Carvalho FA, Bernardi P, Lin K, Mehrabian S, Radunovic A, Irvine G, Bader B, Walker R, Santos NS, de Carvalho M, Miltenberger-Miltenyi. Clinical, Genetic and Biophysical Characterization of Chorea-Acanthocytosis – the Portuguese, March 2018. (Poster Presentation).

John L. Berk, Annabel K. Wang, Teresa Coelho, Marcia Waddington Cruz, Michael J. Polydefkis, Peter J. Dyck, Morton Scheinberg, Violaine Plante-Bordeneuve, Fabio Barroso, David Adams, Thomas Brannagan, Carol Whelan, Brian M. Drachman, Stephen B. Heitner, Isabel Conceicao, Hartmut Schmidt, Giuseppe Vita, Josep M. Campistol, Josep Gamez, Edward Gane, Peter Gorevic, Acary Souza Bulle Oliveira, Brett P. Monia, Steven G. Hughes, Jesse Kwoh, Bradley W.

McEvoy, Brenda F. Baker, Elizabeth J. Ackermann, Spencer Guthrie, Asia Sikora Kessler, Morie Gertz, Merrill D. Benson, Giampaolo Merlini. Burden of hereditary transthyretin amyloidosis with polyneuropathy in patients enrolled in the phase 3 study NEURO-TTR. American Academy of Neurology 70th Annual Meeting, Los Angeles, California, USA, April 21-27, 2018. (Poster Presentation).

Thomas Brannagan, Annabel K. Wang, Teresa Coelho, Marcia Waddington Cruz, Michael J. Polydefkis, Peter J. Dyck, Morton Scheinberg, Violaine Plante-Bordeneuve, John L. Berk, Fabio Barroso, David Adams, Carol Whelan, Giampaolo Merlini, Brian M. Drachman, Stephen B. Heitner, Isabel Conceicao, Hartmut Schmidt, Giuseppe Vita, Josep M. Campistol, Josep Gamez, Peter Gorevic, Brett P. Monia, Steven G. Hughes, Jesse Kwoh, Bradley W. McEvoy, Brenda F. Baker, Elizabeth J. Ackermann, Merrill D. Benson, Morie Gertz. Open label extension of the phase 3 NEURO-TTR study to assess the long-term efficacy and safety of inotersen in patients with hereditary transthyretin amyloidosis (hATTR). American Academy of Neurology 70th Annual Meeting, Los Angeles, California, USA, April 21-27, 2018. (Poster Presentation).

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Michael J. Polydefkis, Teresa Coelho, Marcia Waddington Cruz, Peter J. Dyck, Morton Scheinberg, Violaine Plante-Bordeneuve, John Berk, Fabio Barroso, David Adams, Thomas Brannagan, Carol Whelan, Giampaolo Merlini, Brian M. Drachman, Stephen B. Heitner, Isabel Conceicao, Hartmut Schmidt, Giuseppe Vita, Josep M. Campistol, Josep Gamez, Edward Gane, Peter Gorevic, Acary Souza Bulle Oliveira, Brett P. Monia, Steven G. Hughes, Jesse Kwoh, Bradley W. McEvoy, Brenda F. Baker, Elizabeth J. Ackermann, Morie Gertz, Merrill D. Benson, Annabel K. Wang. Inotersen Improves Norfolk Quality of Life-Diabetic Neuropathy Measures in Patients With Hereditary Transthyretin Amyloidosis with Polyneuropathy in the Phase 3 Study NEURO-

TTR". American Academy of Neurology 70th Annual Meeting, Los Angeles, California, USA, April 21-27, 2018. (Oral Presentation).

Pronto-Laborinho AC, Lopes C, Gromicho M, Santos NC, Carvalho FA, de Carvalho M. Molecular Biomarkers Associated with Respiratory Insufficiency in Amyotrophic Lateral Sclerosis. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 16-19, 2018. (E-Poster Presentation).

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NC, Carvalho FA. Changes on elasticity and morphology of erythrocytes from amyotrophic lateral sclerosis patients. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018. (Oral Presentation).

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NC, Carvalho FA. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018.

Fernandes S, de Carvalho M, Miranda PC. Promoting axonal regeneration in motor neuron diseases using non-invasive electrical stimulation. Workshop on Integrative Approaches in Neurodegeneration, Lisbon, Portugal, June 2018. (Poster Presentation).

Brenner D, Yilmaz R, Müller K, Grehl T, Petri S, Meyer T, Grosskreutz J, Weydt P, Ruf W, Neuwirth C, Weber M, Pinto P, Claeys KG, Schrank B, Jordan B, Knehr A, Günther K, Hübers A, Zeller D. The German ALS network MND-NET; Kubisch, G; Jablonka, S; Sendtner, M; Klopstock, T; de Carvalho, M; Sperfeld, A; Borck, G; Volk, AE; Dorst, J; Weis, J; Otto, M; Schuster, J; del Tredici, K; Braak, H; Danzer, KM; Freischmidt, A; Meitinger, T; Strom, TM; Ludolph, AC; Andersen, PM; Weishaupt, JH. Hot-spot KIF5A Mutations Cause Familial ALS. ENCALS Meeting 2018. Oxford, United Kingdom, June 2018. (Poster Presentation).

Miranda B, Pinto S, de Carvalho M. Phrenic nerve motor amplitude predicts function decline in amyotrophic lateral sclerosis. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 2018. (E-Poster Presentation).

Campos C, Viana P, Castro I, Castro J, de Carvalho M, Conceição I. Non-invasive evaluation of sudomotor function in patients with Myasthenia Gravis. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 2018. (Poster Presentation).

Pronto Laborinho AC, Gromicho M, Pereira M, Lopes C, Santos N, Carvalho F, de Carvalho M. Molecular biomarkers associated with respiratory insufficiency in Amyotrophic Lateral Sclerosis. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 2018. (E-Poster Presentation).

Santos Silva C, Brogueira Rodrigues F, Duarte G, de Carvalho M, Costa J. Prognostic value of phrenic nerve conduction study in amyotrophic lateral sclerosis: a systematic review and meta-analysis. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 2018. (Poster Presentation).

Catarina Falcão de Campos, Miguel Oliveira Santos, Isabel Conceição, Mamede de Carvalho. Clinical and molecular features of distal myopathies in a Portuguese cohort: reporting novel gene mutations. 15th International Congress of Neuromuscular Diseases, Vienna, Austria, July 6, 2018. (Poster Presentation).

T. Moreno, R. Siva, I. Conceição, J. Castro, I.D. Castro, F. Furtado, O. Moldovan. Unclassified congenital axonal neuropathy in gipsy families in Portugal. 15th International Congress of Neuromuscular Diseases, Vienna, Austria, July 6, 2018.

Swash M; de Carvalho, M. The Myopathic EMG Myology Oxford Meeting 2018, Oxford, United Kingdom, July 2018. (Oral Presentation).

Gromicho, M; Pinto, S; Andersen, PM; Grosskreutz, J; Kuźma-Kozakiewicz, M; Petri, S; Uysal, H; de Carvalho, M. Peripheral Neuropathy in ALS: phenotype association. PNP Annual Meeting 2018, Baltimore, USA, July 2018. (Poster Presentation).

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NC, Carvalho FA. Changes on elasticity and morphology of erythrocytes from amyotrophic lateral sclerosis patients. 14th Greta Pifat Mrzljak International School of Biophysics, Split, Croatia, August 23- September 1, 2018. (Oral Presentation).

Oliveira Santos M, Falcão de Campos C, Guarrido C, Conceição I, Palavra F, Negrão L, Pedro Vieira J, Mendonça C, Coelho T, Fineza I, Santos M, Moreno T. Clinical and molecular features of proximal spinal muscle atrophy in Portugal: a multicentre retrospective study. 23rd International Annual Congress of the WMS, Mendoza, Argentina, October 2-6, 2018. Neuromuscul Disord October 2018, Vol. 28 (Suppl. 2): S53 (Poster Presentation).

Oliveira Santos M, Conceição I. Late-onset Pompe disease: still a missing diagnosis?. 23rd International Annual Congress of the WMS, Mendoza, Argentina, October 2-6, 2018. *Neuromuscul Disord* October 2018, Vol. 28 (Suppl. 2): S135. (Poster Presentation).

Gromicho, M; Pinto, S; Gisca, E; Pronto-Laborinho, AC; de Carvalho, M. Genetic Profile of ALS Patients in Portugal. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation).

Miltenberger Miltenyi, G; Conceição, VA; Gromicho, M; Pronto-Laborinho, AC; Pinto, S; de Carvalho, M. C9orf72 Expansion is Associated with Accelerated Decline of Respiratory Function and Decreased Survival in Amyotrophic Lateral Sclerosis. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation).

de Carvalho, M; Pinto; Andersen, PM; Grosskreutz, J; Kuzma-Kozakiewicz, M; Petri; Uysal, H; Gromicho, M. Peripheral Neuropathy in ALS: prevalence and risk factors. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation).

Stubendorff, B; Gromicho, M; Szacka, K; Fartmann, F; de Carvalho, M; Kuzma-Kozakiewicz, M; Petri, P; Uysal, H; Grosskreutz, J. Enhancing the Comparability of Individual Disease Courses in Partner Centers of the ONWebDUALS Project Using the D50 Progression Model. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation).

Pinto, S; Gromicho, M; Andersen, PM; Grosskreutz, J; Kuzma-Kozakiewicz, M; Petri, S; Uysal, H; de Carvalho, M. Regional Spreading of Bulbar-Onset ALS Patients: implications of UMN vs LMN phenotypes. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation).

Szacka, K; Andersen, PM; de Carvalho, M; Gromicho, M; Grosskreutz, J; Petri, S; Stubendorff, B; Uysal, H; Kuzma-Kozakiewicz, M. Factors Influencing Diagnosis Delay in Amyotrophic Lateral Sclerosis. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation).

Nieporecki, K; Szacka, K; Andersen, PM; de Carvalho, M; Gromicho, M; Grosskreutz, J; Petri, S; Stubendorff, B; Uysal, H; Kuzma-Kozakiewicz, M. A Diagnostic Pathway in Patients with Amyotrophic Lateral Sclerosis. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation).

Pinto, P; Gromicho, M; de Carvalho, M. The Impact of Hand Dominance in the ALSFRS-R Scoring. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation).

Gromicho, M; Pinto, P; Pronto-Laborinho, A; Andersen, PM; Grosskreutz, J; Kuzma-Kozakiewicz, M; Petri, S; Hilmi, U; de Carvalho, M. ALS with FTD-Onset: features and progression pattern. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation).

Korner, S; Kammeyer, J; Zapf, A; KuzmaKozakiewicz, M; Piotrkievicz, M; Kuraszkiewicz, B; Goszczynska, H; Gromicho, M; Grosskreutz, J; Andersen, PM; de Carvalho, M; Petri, S. Influence of Environment and Lifestyle Factors on Onset and Progression of Amyotrophic Lateral Sclerosis (ALS) in a German Population. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation).

Pronto Laborinho, AC; Gromicho, M; Pereira, M; Pinto, S; Swash, M; de Carvalho, M. Club-cell Protein (CC-16): prognostic biomarker in ALS. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation). *(Poster Presentation-candidate for Clinical Poster Prize candidate - for a highly commended clinical poster presentation during the 29th International Symposium on ALS/MND).

Pronto-Laborinho, AC; Gromicho, M; Pereira, M; Pinto, S; Swash, M; de Carvalho, M. Interleukin (IL)-6 in Amyotrophic Lateral Sclerosis: correlation with respiratory function. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation).

Pronto Laborinho, AC; Lopes, C; Gromicho, N; Santos, N; Carvalho, FA; de Carvalho, M. γ' Fibrinogen and Changes in Morphology of Erythrocytes in Amyotrophic Lateral Sclerosis. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 2018. (Poster Presentation).

Gromicho, M; Pinto, S; Figueiral, M; Madeira, SC; Andersen, PM; Grosskreutz, J; Kuzma-Kozakiewicz, M; Petri, S; Szacka, K; Stubendorff, B; Uysal, H; Swash, M; de Carvalho, M. OnWebDuals Consortium: Spreading in ALS. Encals Satellite Meeting, Glasgow, United Kingdom, December 2018. (Oral Presentation).

Cyr M, Horga G, Maia TV, Schiff S, Steinberg E, Simpson HB, Marsh R. Altered corticostriatal activations and connectivity during reinforcement learning in unmedicated adults with obsessive-compulsive disorder. *Biological Psychiatry* 83(9):S260-S261, 2018. (Oral Presentation).

JL Berk T Coelho AK Wang M Waddington-Cruz MJ Polydefkis PJ Dyck M Scheinberg V Plante-Bordeneuve F Barroso D Adams TH Brannagan C Whelan G Merlini BM Drachman SB Heitner I Conceicao H Schmidt G Vita JM Campistol P Gorevic BP Monia SG Hughes J Kwoh B Jung EJ Ackermann M Gertz MD Benson. Inotersen Improves Quality of Life and Neuropathy in Patients with Hereditary Transthyretin (HATTR) Amyloidosis with Polyneuropathy: Results of the Phase 3 Study Neuro-TTR. ISPOR 2018 May 19-23 Baltimore. *Value in Health*, Volume 21, S202. (Oral Presentation).

Communications in National Conferences

Pronto-Laborinho AC, Gromicho M, Pereira M, Pinto S, Barros MA, Swash M, de Carvalho M. Biomarcadores Respiratórios na Abordagem Clínica da Esclerose Lateral Amiotrófica. XXV Congresso de Pneumologia do Norte, Porto, Portugal, February 2018. (Oral Presentation).

Rosário M, de Carvalho M. Descrição da evolução da neuropatia motora com bloqueios de condução: a propósito de um caso com acompanhamento de 27 anos. Reunião da Primavera da Sociedade Portuguesa de Estudos de Doenças Neuromusculares, Coimbra, Portugal, April 2018. (Oral Presentation).

Pronto-Laborinho AC, de Carvalho M. Molecular Biomarkers Associated with Respiratory Insufficiency in Amyotrophic Lateral Sclerosis". XII IMM/CAML PhD Student Meeting, Lisbon, Portugal, May 2018. (Poster Presentation).

Lopes CS, Laborinho-Pronto AC, de Carvalho M, Santos NC, Carvalho AF. Changes in elasticity and morphology of erythrocytes from amyotrophic lateral sclerosis patients. XII IMM/CAML PhD Student Meeting, Lisbon, Portugal, May 2018. (Poster Presentation).

Fernandes S, Pereira M, Miranda PC, de Carvalho M. Transcutaneous Direct Current Stimulation of the Cervical Spinal Cord: combining modelling and experimental studies. Encontro Ciência 2018, Lisbon, Portugal, July 2018. (Poster Presentation).

Pronto-Laborinho AC, de Carvalho M. Molecular Biomarkers Associated with Respiratory Insufficiency in Amyotrophic Lateral Sclerosis. 4th PhD Students Meeting of the Mind-Brain College of the Universidade de Lisboa, Reitoria da Universidade de Lisboa, Portugal, November 14-15, 2018. (Pitch Presentation).

Pronto-Laborinho AC, de Carvalho M. Molecular Biomarkers Associated with Respiratory Insufficiency in Amyotrophic Lateral Sclerosis. 4th PhD Students Meeting of the Mind-Brain College of the Universidade de Lisboa, Reitoria da Universidade de Lisboa, Portugal, November 14-15, 2018. (Pitch Presentation).

Pronto Laborinho, AC; Gromicho, M; Pereira, M; Lopes, C; Santos, N; Carvalho, F; de Carvalho, M. Biomarcadores Respiratórios na Abordagem Clínica da Esclerose Lateral Amiotrófica. 34^o Congresso de Pneumologia, November 15-17, 2018. (Poster Presentation).

Silvério, TB; Monteiro, J; de Carvalho, M; Alonso, I; Pereira, P. Neuropatia Motora Hereditária Distal Tipo 5 Associada a Variante no Gene GARS: primeira descrição de uma família Portuguesa. Congresso de Neurologia 2018, Porto, Portugal, November 15-17, 2018. (Oral Presentation).

Miranda, B; Pinto, S; de Carvalho, M. Avaliação Neurofisiológica do Diafragma como Fator Preditor da Incapacidade Funcional na Esclerose Lateral Amiotrófica. Congresso de Neurologia 2018, Porto, Portugal, November 15-17 2018. (Oral Presentation).

Falcão de Campos, C; de Carvalho, M Miopatia Distal e Demência Rapidamente Progressiva: nova mutação no gene da valosina. Congresso de Neurologia 2018, Porto, Portugal, November 15-17, 2018. (Poster Presentation).

Martins J, Maré R, Oliveira Santos M, Conceição I, Lobato R, Ribeiro L, Morganho T, Lopes AC, Braz L, Gomes T, Lopes M, Moreira S, Pereira P, Barata T, Gago M, Milheiro M, Raposo J, Fernandes AC, Dias MS, Sousa L, Salgado P, Veiga A, Branco MC, Valverde A, Almeida V, Santos T, Ladeira F, Lacerda L. Detecção da doença de Pompe em doentes com suspeita de miopatia ou hiperCKémia assintomática – Estudo DeteCKt. Congresso de Neurologia 2018, Porto, Portugal, November 15-17 2018. (Oral Presentation).

Campo CF, Castro I, Conceição I. Preditores clínicos de resposta a Tafamidis em doentes com amiloidose hereditária relacionada coma transtirretina. Congresso de Neurologia 2018, Porto, Portugal, November 15-17 2018. (Oral Presentation).

Campo CF, Castro I, Conceição I. Caracterização neurofisiologica de doentes com amiloidose hereditária relacionada com a transtirretina sob Tafamidis. Congresso de Neurologia 2018, Porto, Portugal, November 15-17 2018. (Oral Presentation).

Sotero F, Campo CF, Conceição I.. Amiloidose hereditária relacionada com a transtirretina variabilidade intrafamiliar. Congresso de Neurologia 2018, Porto, Portugal, November 15-17 2018. (Poster Presentation). Sinapse Vol. 18 N.º 2 (Novembro 2018): 108.

José Rosa; Filipa Dourado Sotero, Isabel Conceição. Amiloidose Familiar de tipo filandes: um desafio no diagnóstico diferencial das mioquimias faciais Congresso de Neurologia 2018, Porto, Portugal, November 15-17 2018. (Poster Presentation). Sinapse Vol. 18 N.º 2 (Novembro 2018): 109.

Organisation of Conferences

De Carvalho M. Member do Local Organising Committee. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 2018.

De Carvalho M. Co-Organiser and Lecturer. Hands-On Course on Motor Unit Number Index (MUNIX) and phrenic nerve conduction studies. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 2018.

De Carvalho M. Co-Organiser. Reunião da Associação Portuguesa de EEG e Neurofisiologia Clínica: avanços na neurofisiologia Portuguesa, Lisbon, Portugal, July 2018.

Internationalisation

Internationalisation has been incremented by leading an international consortium (OnWebDuals project, JPND), the collaboration in consortiums aimed to investigate genetic abnormalities in amyotrophic lateral sclerosis-ALS (Project Mine), the participation in multicentre clinical trials (ALL and FAP), the association with other centres for specific projects in psychiatric disorders for computational and imaging modelling in ALS (respiratory markers of disease progression, and in FAP (new treatments). Our group play a pivotal international role in important research topics in our main areas: computational and imaging modelling in psychiatric disorders; phenotype-genotype interaction, disease spreading, assessment of respiratory function and neurophysiological changes in ALS; treatment impact, marker for early diagnosis and trials in FAP.

Prizes, Honours and Awards

De Carvalho M. Publons Peer Review Awards 2018, “for placing in the top 1% of reviewers in Neuroscience and Behavior”, 2018.

Maia TV. Grant reviewer for the Israel Science Foundation (Individual Research Grants), 2018. (Grant Reviewing for International Funding Agencies).

Industry Contract Research

Our Unit has participated in several trials promoted by the Pharma (ALNYLAM, IONIS, CYTOKINETICS, ABSCIENCE) in FAP and ALS. In addition, we received support from Pfizer and Cytokinetics for the development of specific projects, in particular regarding markers for early diagnosis and for monitoring disease progression in FAP, and studies on the impact of respiratory insufficiency on disease progression and functional outcome in ALS.

CLINICAL TRIALS

Conceição I. ISIS 420915-CS3. An Open-Label Extension Study to Assess the Long-Term Safety and Efficacy of ISIS 420915 in Patients with Familial Amyloid Polyneuropathy (FAP)s with Familial Amyloid Polyneuropathy. (IONIS Pharmaceuticals, Inc.) - Principal Investigator.

Conceição I. “A Multicenter, Open-Label, Extension Study to Evaluate the Long-term Safety and Efficacy of Patisiran in Patients with Familial Amyloidotic Polyneuropathy Who Have Completed a Prior Clinical Study with Patisiran”, Protocol No. ALN-TTR02-006- Principal Investigator.

Conceição I. Scientific Board member of Transthyretin-associated amyloidoses outcomes survey (THAOS) A Global, Multi-Center, Longitudinal, Observational Survey of Patients with Documented Transthyretin (TTR) Mutations or Wild-Type TTR Amyloidosis.

De Carvalho M. Combination with Riluzole in the Treatment of Patients Suffering From Amyotrophic Lateral Sclerosis (ALS) – Ab10015– 2016-2018.

De Carvalho M. Ventilatory Investigation of Tirasemtiv and Assessment of Longitudinal Indices after Treatment for a Year– Vitality– 2016-2018.

Marc Veldhoen Lab

Major Interests / Objectives

We are interested in how tissue resident T-cells are generated, maintained and activated at the epithelial barrier, especially in the small intestine. We aim to understand the cellular and molecular cues, which result in epithelial T-cell generation and activation. Furthermore, we assess how the biology of these cells effect tissue homeostasis and immune protection and pathology.

Epithelial Immunology; the maintenance, activation and differentiation of T-cells at epithelial sites.

Head of Laboratory

Marc Veldhoen, PhD

Team

Birte Blankenhaus	PhD	Senior Post-Doctoral Researcher
Catarina Pelicano da Cunha Branco da Costa	Master Student	Trainee (Started April Left April)
Cristina da Conceição Varandas Ferreira	PhD	Senior Post-Doctoral Researcher
Daniel Villalba Lopez	PhD Student	PhD Student (Left February)
Daniela Helena da Ascensão Loureiro Geraldo Vaqueirinho	Master	Trainee (Started February Left May)
David Gonçalves Paixão	Graduate	MSc Student (Started February Left December)
Jona You	Master Student	MSc Student (Started January Left September)
Leandro Joel Barros Fernandes	Master	PhD Student (Started September)
Marta Sofia Serra Baptista	Master	Lab Technician
Nicole Nussbaum	Graduate	MSc Student (Started July)
Patrícia Isabel Figueiredo Campos	Master	PhD Student (Started Janyary)
Roos Haczewski	Graduate	MSc Student (Started September)
Sara Daniela Botelho Rosa	Graduate	MSc Student (Started February Left December)
Silvia Ariotti	PhD	Senior Post-Doctoral Researcher (Started October)
Spela Konjar	PhD	Senior Post-Doctoral Researcher

Laboratory Keywords / Research Areas

Immune regulation, Mucosal Immunity, T-cell differentiation, Intra-epithelial lymphocytes, Tissue resident immunity.

Major Scientific Achievements

We published on the maintenance of intra-epithelial lymphocytes (IELs) (Konjar *et al.*, *Science Immunology*), our main project. We showed that the lipid make-up of mitochondrial membranes of IELs is altered compared to circulating T-cells, which reduces the metabolic capacity and activation potential. The infection model used in this study (*Eimeria vermiformis*) gained attention, and we published a detailed protocol (Figueiredo-Campos *et al.*, *Bio-Protocol*), partnered with eLife, JCB and bioRxiv to enhance openness and reproducibility.

Work from a long-standing collaboration looking at metabolic events in the intestine, resulted in the discovery of histone modifications enriched in the intestine and altered by the microbiota (Fellows *et al.*, *Nature Communications*).

Over 2018, we made good progress on a collaborative project based on our 2017 paper regarding environmental stresses driving Th17 cell differentiation (Brucklacher-Waldert *et al.*, *Cell Reports*). The aim was to validate our observations obtained in mice in with human T-cells. The manuscript has been written, submitted and is currently under revision at *Journal of Allergy and Clinical Immunology* (Stober *et al.*, *JACI*).

We obtained national funding (FCT) to investigate the events resulting in activation of IELs.

Selected Publications

Konjar S, Frising U, Ferreira C, Hinterleitner R, Mayassi T, Blankenhaus B, Guedes J, Zhang Q, Haberman N, Loo Y, Baptista M, Innocentin S, Stange J, Strathdee D, Jabri B, Veldhoen M (2018). Mitochondria maintain controlled state of activation in epithelia resident T lymphocytes. *Science Immunology*, 3: eaan2543. (IF:--, Citations: 4. Source: Google Scholar).

Brucklacher-Waldert V, Ferreira C, Stebegg M, Fesneau O, Innocentin S, Marie JC, Veldhoen M (2017). Cellular Stress in the Context of an Inflammatory Environment Supports TGF-beta-Independent T Helper-17 Differentiation. *Cell Reports*, 19: 2357-2370. (IF: 8.282, Citations: 18. Source: Google Scholar).

Withers DR, Hepworth MR, Wang X, Mackley EC, Halford EE, Dutton EE, Marriott CL, Brucklacher-Waldert V, Veldhoen M, Kelsen J, Baldassano RN, Sonnenberg GF (2016). Transient inhibition of RORyt therapeutically limits intestinal inflammation by reducing TH17 cells and preserving group 3 innate lymphoid cells. *Nature Medicine*, 22(3): 319-23. (IF: 30.357, Citations: 81. Source: Google Scholar).

Zaid A, Mackay LK, Rahimpour A, Braun A, Veldhoen M, Carbone FR, Manton JH, Heath WR, Mueller SN (2014). Persistence of skin-resident memory T cells within an epidermal niche. PNAS, 111(14): 5307-12. (IF: 9.423, Citations: 124. Source: Google Scholar).

Li Y, Innocentin S, Withers DR, Roberts NA, Gallagher AR, Grigorieva EF, Wilhelm C, Veldhoen M (2011). Exogenous stimuli maintain intraepithelial lymphocytes via aryl hydrocarbon receptor activation. Cell, 147(3): 629-40. (IF: 28.710, Citations: 459. Source: Google Scholar).

Ongoing Research Projects

2018/2021: Regulação da rede de resposta imunológica epitelial. Coordinator: Marc Veldhoen. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: 028003/2017. Amount: € 164 988,93. Total Amount: € 164 988,93.

2015/2020: EXCELLtoINNOV: Leverage research EXCELLENce and INNOVation potential of Instituto de Medicina Molecular (iMM) through translational biomedical research in Immunity and Infection. Coordinator: Marc Veldhoen. Funding Agency: European Commission. Reference: ERA Chair 667824. Amount: € 2 499 465,00. Total Amount: € 2 499 465,00.

Other Projects

2016/2018: TwinnToInfect: Unleash iMM's research excellence in immunity and infection through twinning to infect Lisbon and Portugal with its increase in competitiveness and innovation. Coordinator: Maria Manuel Mota. Funding Agency: European Commission. Reference: TWINNING 692022. Amount: € 893 500,00. Total Amount: € 999 996,25.

2015/2019: ENLIGHT-TEN: European Network linking informatics and genomics of helper T cells. Coordinator: Jochen Huhn, Marc Veldhoen. Funding Agency: European Commission. Reference: MSCA ITN 675395. Amount: € 433 512,72. Total Amount: € 3 354 685,20.

Publications in Peer Review Journals

Veldhoen M, Konjar S, Blankenhaus B, Ferreira C (2018). Metabolic wiring of T cell activation and maintenance. Journal of European Immunology (IF: 4.248, Citations: 0. Source: Google Scholar).

Konjar S, Frising U, Ferreira C, Hinterleitner R, Mayassi T, Blankenhaus B, Guedes J, Zhang Q, Haberman N, Loo Y, Baptista M, et al, Veldhoen M (2018). Mitochondria maintain controlled state of activation in epithelia resident T lymphocytes. *Science Immunology*, 3: eaan2543. (IF:-- , Citations: 7. Source: Google Scholar).

Fellows R, Denizot J, Stellato C, Cuomo A, Jain P, Stoyanova E, Balázsi S, Hajnádý Z, Liebert A, Kazakevych J, et al (2018). Microbiota derived short chain fatty acids promote histone crotonylation in the colon through histone deacetylases. *Nature Communications*, 9. (IF: 12.353, Citations: 30. Source: Google Scholar).

Figueiredo-Campos P, Ferreira C, Blankenhaus B, Veldhoen M (2018). *Eimeria vermiformis* Infection Model of Murine Small Intestine. *Bio-Protocol* 8.

Other International Publications

Konjar S, Blankenhaus B, Veldhoen M (2018). Oxygen starvation during T cell priming boosts cancer-killing potential. *Translational Cancer Research*, 7: S34-S37. (IF: 1.2, Citations: 0. Source: Google Scholar).

Invited Lectures and Seminars

Veldhoen M. CEDOC, Lisbon, Portugal, March 2018.

Veldhoen M. Mainz University, Mainz, Germany, November 2018.

Communications in International Conferences

Vedhoen M. EMBO Immunology Sectorial Meeting, Lisbon, Portugal, February 2018.

Vedhoen M. TwinnToInfect Spring School in Infection and Immunity, Sesimbra, Portugal, March 19-22, 2018.

Vedhoen M. TOLL Meeting, Porto, Portugal, June 2018.

Vedhoen M. ENLIGHT-TEN Annual Meeting and Symposium, Amsterdam, The Netherlands, August 2018.

Vedhoen M. European Congress for Immunology, Amsterdam, The Netherlands, September 2018.

Vedhoen M. TwinnToInfect Summerschool, Caparica, Portugal, September 2018.

Vedhoen M. European Society for ImmunoDeficiencies, Lisbon, Portugal, October 2018.

Communications in National Conferences

Vedhoen M. Portuguese Society of Immunology, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, June 2018.

Organisation of Conferences

Vedhoen M. Co-organiser. Portuguese Society for Immunology 2018, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal.

Vedhoen M. Co-organiser. Alm-meeting 2018, St Johann, Austria.

Vedhoen M. Co-organiser. EFIS focus group meeting 2018, Amsterdam, The Netherlands.

Vedhoen M. Co-organiser. EMBO Immunology Sectorial Meeting 2018, Cambridge, UK.

Internationalisation

We are part of several international collaborations, including France, UK, Germany and the US.

We participated in international meetings can be found under "conferences".

We have invited speakers as part of the ERA Chair project and the TwinnToInfect Twinning programme. We are part of an H2020 ITN, annual meeting and summer school and are currently writing a new ITN project (January 2019). We are part of a European T-cell focus group, funded by EMBO, which organises an annual meeting to exchange ideas and with additional funding from EFIS obtained in 2018.

Prizes, Honours and Awards

Best poster prize for Dr Špela Konjar at the 2018 TOLL meeting.

Advanced Teaching

Veldhoen M. Master Immunology course, Pasteur Institute and Paris Universities.

Veldhoen M. Host-pathogen Interactions PhD programme (iMM, ITQB, IGC).



Veldhoen M. Licenciatura Ciências da Saúde, Faculty of Medicine, University of Lisbon.

Veldhoen M. Mestrado Integrado em Medicina, Faculty of Medicine, University of Lisbon.

Veldhoen M. Co-coordinator. Lisbon BioMed PhD programme, Instituto de Medicina Molecular João Lobo Antunes.

Veldhoen M. Clinical Nutrition Master (FMUL/ESTESL).

Veldhoen M. Mestrado Microbiologia clínica e doenças infecciosas emergentes, Faculty of Medicine, University of Lisbon.

Science and Society

Media appearances related to our Science Immunology paper.

Maria Carmo-Fonseca Lab

Major Interests / Objectives

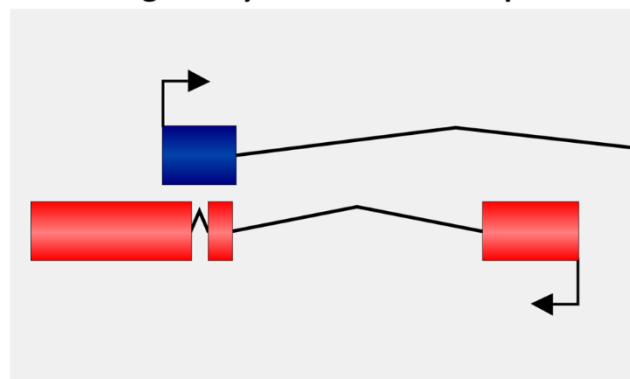
Gene regulation is central to all biology. RNA molecules, with their ability to both encode information and exert catalytic activities, play a key role in the regulation of gene expression. Our group aims to discover molecular pathways and mechanisms implicating RNA in human health and disease. More specifically, we study RNA splicing and its role in the regulation of gene expression in cancer and genetic diseases, and we are exploring new medical applications for RNA.

Head of Laboratory

Maria do Carmo Salazar Velez Roque da Fonseca, MD/PhD, Full Professor

Graphical Abstract

Regulatory antisense transcripts



Team

Ana Beatriz Domingues Silva	Master	Trainee (Left August)
Ana Cláudia Bernardino Raposo	Master	Lab Technician
Ana Cláudia Dourado Clemente	Master	(Left July)
Andreia Sofia Pinto Pereira	Master	Lab Technician (Left June)
Bruno Miguel Bernardes de Jesus	PhD	Staff Scientist (Left April)
Carina Sofia Barradas Maranga	Master	PhD Student (Started October)
Carla Marina Pereira Gomes	PhD	Junior Post-Doctoral Researcher (Left September)
Carolina Correia de Figueiredo Abreu Pereira	Master	Lab Technician (Started January)
Catarina Alves do Vale	Master	Trainee
Catarina Guerra Ferreira	Graduate	MSc Student (Started September)
Célia da Conceição Vicente Carvalho	PhD	Staff Scientist
Christian Gomes da Silva Ramos	PhD	Senior Post-Doctoral Researcher

Cláudia Raquel Estopa Gil	Graduate	MSc Student (Started September)
Cristiano Emanuel Ribeiro Esteves	Other	BSc Student
Dinora Levy	Graduate	Administrative Technician
Duarte Pólvora Brandão	Master	Lab Technician (Left January)
Evguenia Pavlovna Bekman	PhD	Senior Post-Doctoral Researcher
Inês Filipa Banha Godinho	Graduate	MSc Student
Kenny Patrick Figueira Rebelo	Master	Lab Technician
Marcia Triunfol	PhD	Senior Post-Doctoral Researcher (Started June)
Maria Joana Pinto Desterro	PhD	Staff Scientist
Maria João de Andrade Terras Arez	Master	Trainee
Maria Teresa Tenório Figueiredo Carvalho Gonçalves	PhD	Staff Scientist
Marta de Jesus Ribeiro	Master	PhD Student
Marta Isabel Brandão Furtado	Graduate	MSc Student (Started September)
Miguel Francisco Cruz Romano Guedes	Graduate	MSc Student (Started January)
Miguel Torres Santana	Graduate	MSc Student
Noélia Maria Fernandes Custódio	PhD	Staff Scientist
Patrícia Alexandra Veloso Napoleão	PhD	Senior Post-Doctoral Researcher (Started November)
Pedro António Pereira Prudêncio	Master	PhD Student
Pedro Ervilha Pereira	Master	Lab Technician (Started November)
Pedro Galhardo Bak-Gordon	Graduate	Master Student (Started November)
Pedro Santos Barbosa	Master	PhD Student
Raquel Filipa Rodrigues Ferreira	Graduate	Master Student (Started October)
Renata Inês Proença Casimiro	Master	Lab Technician
Rita Catarina Vaz Drago	PhD	Junior Post-Doctoral Researcher
Rita Mingot de Almeida Mendes de Almeida	Master	PhD Student (Left February)
Rodrigo Paiva Gonçalves	Graduate	MSc Student
Rui Gonçalo Viegas Russo da Conceição Martinho	PhD	Staff Scientist
Rui Sérgio de Sousa Luís	Graduate	MSc Student
Sandra Cristina Bento Peniça Martins	PhD	Senior Post-Doctoral Researcher
Sara Patricia Henriques Castro	Master	Lab Technician (Started November)
Sérgio Manuel Pires Marinho	Graduate	Lab Technician
Simão José Teixeira da Rocha	PhD	Staff Scientist
Tamara Alejandra Marín	Master	PhD Student (Started June Left September)
Teresa Maria Pereira da Silva	Master	PhD Student
Tomás Miguel Custódio dos Santos	Graduate	MSc Student (Started September)

Laboratory Keywords / Research Areas

Cell and molecular biology, Genomics and transcriptomics, RNA splicing, RNA in disease.

Major Scientific Achievements

Our lab is known for studies on RNA splicing using a combination of cutting-edge cell imaging and genome-wide approaches. Our previous work indicated that reciprocal interconnectivity between the different steps required for gene activation plays a critical role ensuring efficiency and fidelity of gene expression. Our recent study highlights the physiological importance of antisense transcription in fine-tuning the expression of a protein-coding gene. We identified the transcription factor Zeb2 as a novel age-associated barrier to reprogramming. We showed that forcing Zeb2 downregulation may help improve reprogramming efficiency, and we uncovered a long non-coding RNA that is overlapping and antisense to the Zeb2 locus as a target to achieve robust Zeb2 downregulation (Bernardes de Jesus, *et al.*, 2018). In collaboration with the Proudfoot Lab in Oxford, we have pioneered genome-wide analysis of nascent RNA complexes using NET-seq and more recently, we have unravelled additional unanticipated dynamic links between Pol II and the spliceosome (Nojima, Rebelo, *et al.*, 2018).

Selected Publications

Nojima T, Gomes T, Grosso AR, Kimura H, Dye MJ, Dhir S, Carmo-Fonseca M, Proudfoot N (2015). Mammalian NET-seq reveals genome-wide nascent transcription coupled to RNA processing. *Cell*. (IF: 30.41, Citations: 177).

Martin RM, Rino J, Carvalho C, Kirchhausen T, Carmo-Fonseca M (2013). Live-cell visualization of pre-mRNA splicing with single-molecule sensitivity. *Cell Reports*. (IF: 8.282, Citations: 85).

de Almeida SF, Grosso AR, Koch F, Fenouil R, Carvalho S, Andrade J, Levezinho H, Gut M, Eick D, Gut I, Andrau JC, Ferrier P, Carmo-Fonseca M (2011). Splicing enhances recruitment of methyltransferase HYPB/Setd2 and methylation of histone H3 Lys36. *Nature Structural & Molecular Biology*. (IF: 12.595, Citations: 188).

Martins SB, Rino J, Carvalho T, Carvalho C, Yoshida M, Klose JM, de Almeida SF, Carmo-Fonseca M (2011). Spliceosome assembly is coupled to RNA polymerase II dynamics at the 3' end of human genes. *Nature Structural & Molecular Biology*. (IF: 12.595, Citations: 67).

Grosso AR, Gomes AQ, Barbosa-Morais NL, Caldeira S, Thorne NP, Grech G, von Lindern M, Carmo-Fonseca M (2008). Tissue-specific splicing factor gene expression signatures. *Nucleic Acids Research*. (IF: 10.162, Citations: 135).

Ongoing Research Projects

2018/2021: CEREBREX: Desenvolvimento de organóides cerebelares para investigação de ataxias. Coordinator: Maria Carmo-Fonseca. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: CEREBREX - LISBOA-01-0145-FEDER-029298. Amount: € 83 750,00. Total Amount: € 239 773,28.

2018/2021: BRCA_RNA: Organóides com edição génica para estudar o impacto funcional de mutações BRCA1 e BRCA2. Coordinator: Maria Carmo-Fonseca. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: BRCA_RNA LISBOA-01-0145-FEDER-029469. Amount: € 237 261,63. Total Amount: € 237 261,63.

2018/2021: As barreiras epigenéticas do envelhecimento na reprogramação celular. Coordinator: Simão Rocha. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIA-MOL/29320/2017. Amount: € 239 555,22. Total Amount: € 239 555,21.

2018/2019: Identification of genes involved in DNA repair that may be used to develop novel targeted therapies for breast cancer. Coordinator: Rui Martinho. Funding Agency: Fundo IMM-Laço. Reference: Fundo IMM-Laço. Amount: € 25 000,00. Total Amount: € 25 000,00.

2017/2024: The Discoveries CTR: Implementation of the discoveries centre for regenerative and precision medicine, a new centre of excellence in Portugal. Coordinator: Maria Carmo-Fonseca. Funding Agency: European Commission. Reference: Teaming 739572. Amount: € 1 001 137,50 (Lisbon University). Total Amount: € 14 996 606,25.

2017/2021: LysoMod: Genetic and small molecule modifiers of Lysosomal Function. Coordinator: Maria Carmo-Fonseca. Funding Agency: European Commission. Reference: MSCA RISE 734825. Amount: € 279 000,00. Total Amount: € 1 102 500,00.

2017/2018: An RNA-based screen for BRCA deficiency. Coordinator: Maria Carmo-Fonseca. Funding Agency: Astazeneca. Reference: Astazeneca. Amount: € 27 500,00. Total Amount: € 27 500,00.

2016/2019: The non-coding transcriptome in stemness and aging. Coordinator: Bruno Jesus. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIM-MED/0032/2014. Amount: € 188 175,00. Total Amount: € 188 175,00.

2016/2019: Molecular constraints to pre-mRNA splicing in fast dividing cells. Coordinator: Rui Martinho. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BEX-BID/0395/2014. Amount: € 98 888,00. Total Amount: € 198 831,00.

2016/2019: Making sense of antisense transcription. Coordinator: Maria Carmo-Fonseca. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BEX-BCM/5899/2014. Amount: € 200 000,00. Total Amount: € 200 000,00.

2016/2019: Comprehensive study of the dynamics of epigenetic processes involving lncRNAs during iPSC reprogramming. Coordinator: Simão Rocha. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BEX-BCM/2612/2014. Amount: € 157 880,00. Total Amount: € 157 880,00.

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

2016/2018: Pesquisa de mutação nos genes IDH. Coordinator: Maria Carmo-Fonseca. Funding Agency: Celgene. Reference: Celgene - pesquisa de mutações nos genes IDH. Amount: € 189 000,00. Total Amount: € 189 000,00.

2015/2020: Exploring the role of lncRNAs and chromatin modifying complexes for the establishment of defined chromatin states. Coordinator: Simão Rocha. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/00242/2014/CP1236/CT0009. Amount: € 50 000,00. Total Amount: € 50 000,00.

2015/2020: The non-coding transcriptome in stemness and aging. Coordinator: Bruno Jesus. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/00166/2014/CP1236/CT0001. Amount: € 49 961,00. Total Amount: € 49 961,00.

Publications in Peer Review Journals

Żylicz JJ, Bousard A, Žumer K, Dossin F, Mohammad E., da Rocha ST, Schwalb B, Syx L, Dingli F, Loew D, Cramer P, Heard E (2018). The implication of early chromatin changes in X chromosome inactivation. Cell, [Epub ahead of print]. (IF: 31.398, Citations: 0. Sources: Web of Science and Scopus).

Nojima T, Rebelo K, Gomes T, Grosso AR, Proudfoot NJ, Carmo-Fonseca M (2018). RNA Polymerase II phosphorylated on CTD Serine 5 interacts with the spliceosome during co-transcriptional splicing. *Molecular Cell*, 72(2): 369-379. DOI: 10.1016/j.molcel.2018.09.004. (IF: 14.248, Citations: 1. Sources: Web of Science and Scopus).

Bernardes de Jesus B, Matinho SP, Barros S, Sousa-Franco A, Alves-Vale C, Carvalho T, Carmo-Fonseca M (2018). Silencing of the lncRNA Zeb2-NAT facilitates reprogramming of aged fibroblasts and safeguards stem cell pluripotency. *Nature Communications*, 9(1): 94. DOI: 10.1038/s41467-017-01921-6. (IF: 12.353, Citations: 4. Sources: Web of Sciences and Scopus).

Sousa-Franco A, Rebelo K, da Rocha ST, Bernardes de Jesus B (2018). LncRNAs regulating stemness in aging. *Aging Cell*, 20: e12870. DOI: 10.1111/acel.12870. [Epub ahead of print] Review. (IF: 7.627, Citations: 0. Sources: Web of Sciences and Scopus).

Pólvora-Brandão D, Joaquim M, Godinho I, Aprile D, Álvaro AR, Onofre I, Raposo AC, Pereira de Almeida L, Duarte ST, da Rocha ST (2018). Loss of hierarchical imprinting regulation at the Prader-Willi/Angelman syndrome locus in human iPSCs. *Human Molecular Genetics*, 27(23):3999-4011. DOI: 10.1093/hmg/ddy274. (IF: 4.902, Citations: 0. Sources: Web of Science and Scopus).

Bousard A, Raposo AC, Żylicz JJ, Picard C, Pires VB, Qi Y, Syx L, Chang HY, Heard E, da Rocha ST (2018). Exploring the role of Polycomb recruitment in Xist-mediated silencing of the X chromosome in ES cells. *bioRxiv* 495739; doi: <https://doi.org/10.1101/495739>.

Pólvora-Brandão D, da Rocha ST (2018). Genomic Imprinting at the Transcriptional Level. In: *eLS* 2018, John Wiley & Sons, Ltd: Chichester DOI: 10.1002/9780470015902.a0005686.pub3 Review.

Invited Lectures and Seminars

Carmo-Fonseca M. Making sense of antisense RNA. Invited speaker. Meeting “RNA: beyond its genetic code”, University of Cologne, Germany, March 7-9, 2018.

Carmo-Fonseca M. How is transcription coupled to RNA splicing? Invited talk. Institut Pasteur, Paris, France, March 29, 2018.

Carmo-Fonseca M. RNA-mediated transcriptional control in stemness, oncogenesis and aging: Tailored disease treatments. Invited speaker. Conference “Systems Epigenetics: towards precision cancer medicine”, Amsterdam, The Netherlands, November 27-30, 2018.

Communications in International Conferences

Carmo-Fonseca M. Targeting the antisense RNA Zeb2-NAT facilitates reprogramming of aged fibroblasts. CNIO Meeting “Molecular, Cellular and Organismal Hallmarks of Aging”, Madrid, Spain, May 7-9, 2018.

da Rocha ST, Bousard A, Zylicz JJ, Raposo A, Picard C, Pires V, Qi Y, Syx L, Chang HY, Heard E. Genetic dissection of Xist lncRNA reveals independent modules involved in transcriptional silencing and heterochromatin formation. EMBO meeting on “Transcription and Chromatin”, Heidelberg, Germany, August 2018. (Poster Presentation).

da Rocha ST, Bousard A, Zylicz JJ, Raposo A, Picard C, Pires V, Qi Y, Syx L, Chang HY, Heard E. Genetic dissection of Xist lncRNA reveals independent modules involved in transcriptional silencing and heterochromatin formation. EMBO/EMBL symposium “The Complex Life of RNA”, Heidelberg, Germany, October 3-6, 2018. (Poster Presentation).

Luís R, Carmo-Fonseca M. Promoter-proximal convergent antisense transcripts (PCATs): a novel class of regulatory non-coding RNAs. EMBO/EMBL symposium “The Complex Life of RNA”, Heidelberg, Germany, October 3-6, 2018. (Poster Presentation).

Prudêncio P, Rebelo K, Martinho RG, Carmo-Fonseca M. Genome-wide analysis of the nascent RNAPolIII transcriptome during *Drosophila* development. EMBO/EMBL symposium “The Complex Life of RNA”, Heidelberg, Germany, October 3-6, 2018. (Poster Presentation).

Communications in National Conferences

Carmo-Fonseca M. Moderator. Session “Investigação clínica em Portugal: que futuro? Na Conferência Mais Inovação Mais Saúde, Lisbon, Portugal, June 15, 2018.

Carmo-Fonseca M. Conference “A BRCA view of hereditary cancer”, Lisbon, Portugal, September 11, 2018.

Carmo-Fonseca M. 13º Congresso das Farmácias com apresentação da palestra intitulada “Farmacogenética”, Lisbon, Portugal, October 20, 2018.

Carmo-Fonseca M. “Compromisso com as pessoas. O impacto do medicamento em Portugal”, Congresso da APIFARMA, Lisbon, Portugal, October 30, 2018.

Carmo-Fonseca M. “What are ERNs and what is in there for me?”, Satellite meeting on European Reference Networks in Portugal, Reunião Anual da Sociedade Portuguesa de Genética Humana, Porto, Portugal, November 15, 2018.

Carmo-Fonseca M. Sessão Plenária “Investigação translacional em oncologia – colaborar para evoluir”, Congresso Nacional Oncologia, Coimbra, Portugal, November 23, 2018.

Organisation of Conferences

M. Carmo-Fonseca organised the Symposium “Genetic and small molecule modifiers of lysosomal function”, Lisbon, Portugal, May 2, 2018.

Internationalisation

Carmo-Fonseca M. Coordinates an EU H2020 Research and Innovation Staff Exchange (RISE) programme entitled “LysoMod: Genetic and small molecule modifiers of lysosomal function”.

Carmo-Fonseca M. Participates in a EUH2020 Teaming Grant with the University College London entitled “Implementation of the Discoveries Centre for Regenerative and Precision Medicine, a new Centre of Excellence in Portugal”.

Carmo-Fonseca M. Participates in COST action CardioRNA: Catalysing transcriptomics research in cardiovascular disease.

Carmo-Fonseca M. Collaborates with Prof. N. Proudfoot at the University of Oxford on bioinformatics analysis of transcription and co-transcriptional RNA processing.

da Rocha ST. Collaborates with Prof. Edith Heard at the Curie Institute on RNA-seq and ChIP-seq experiments on inducible Xist non-coding RNA mutants and their effects on X-linked gene inactivation.

Prizes, Honours and Awards

Carmo-Fonseca M. Invited as a member of the jury for the “BIAL Award in Biomedicine”.

Carmo-Fonseca M. Editor for the Journal of Cell Science and the RNA journal.

Carmo-Fonseca M. Invited to be a member of the FEBS Letters Award Committee in 2018.

Carmo-Fonseca M. Invited to promote the Portuguese participation in “European Reference Networks”, Comissão Nacional para os Centros de Referência do Ministério da Saúde de Portugal.

Carmo-Fonseca M. Invited for Comissão de Ética da Faculdade de Letras da Universidade de Lisboa.

da Rocha ST. Awarded with an Assistant Researcher Contract (FCT Stimulus of Scientific Employment – Individual Support 2017).

Garcia A. Awarded with Prémio GAPIC David-Ferreira for “Melhor dissertação de Mestrado Integrado em Medicina” for her work: “Variantes genéticas associadas à Miocardiopatia Hipertrófica – Interpretação do seu significado clínico”. Supervised by M. Carmo-Fonseca.

Advanced Teaching

da Rocha ST. “Epigenetic stability and long non-coding RNAs in stem cell biology”. Lecturer in the course “Frontiers in Biology Research”, Master in Molecular Biology and Genetics, Faculty of Sciences of University of Lisbon, Lisbon, Portugal, February 27, 2018.

Martins S. “Developing gene-edited models to study the impact of mis-splicing in hypertrophic cardiomyopathy”. Lecturer in the BioSys PhD Programme in Biology/Biochemistry: Biological Systems - Functional & Integrative Genomics, Faculty of Sciences of University of Lisbon, Lisbon, Portugal, June 7, 2018.

Custódio N. “Transcription-coupled RNA surveillance in human genetic diseases”. Seminar, Mestrado em Tecnologias Moleculares em Saúde, Escola Superior de Tecnologia da Saúde de Lisboa, Lisbon, Portugal, November 22, 2018.

- Supervision of GAPIC (“Educação pela Ciência” programme) research projects for medical students:

Esteves C. “Genetic dissection of conserved RNA modules of human XIST lncRNA implicated in X-inactivation using iPSCs”. Supervisor: Simão T. da Rocha.

Pinto I. “From mice to humans: a creation of a human model to assess the relation between UBE3A and mitochondrial activity in Angelman Syndrome patients”. Supervisor: Simão T. da Rocha.

Santos TC. “Targeting the glycolytic pathway to fight triple negative breast cancer: a promise towards personalized therapy”. Supervisor: Célia Carvalho.

Draiblate BL. “Correction of sickle cell anemia using CRISPR-Cas9 system in hematopoietic stem cells”. Supervisor: Sandra Martins.

Ribeiro MIF. “An RNA-based screen for BRCA deficiency”. Supervisor: Noélia Custódio.

Martins dos Santos JM. “Detection of actionable mutations in cfDNA from breast cancer liquid biopsies”. Supervisors: M. Carmo-Fonseca and Catarina Silveira.

- Supervision of International medical students - SCORE Research Programme from the International Federation of Medical Students Associations (IFMSA):

Kresimir Jemric (Serbia) and Nikolaž Winthe (Denmark), “In Vivo Cellular Models of cardiomyopathies”. Laboratory rotation, July 2-27, 2018. Supervisors: Sandra Martins and Teresa Carvalho.

- Summer training for US undergraduate students: Study in Portugal Network (SiPN) Programme from Luso-American Development Foundation:

Michelle Gamburg, “BRCA gene expression analysis in tumor samples”. Laboratory rotation, June 4-25, 2018. Supervisors: Maria Carmo-Fonseca and Noélia Custódio.

Science and Society

Carmo-Fonseca M. Participation in Tertúlias “Chiado a 4” at the invitation of Dr. Vitor Bento, Lisbon, Portugal, January 17, 2018.

Carmo-Fonseca M. Participation in First Gago Conference on European Science Policy “Policy Perspectives for Cancer Research in Europe”, Porto, Portugal, February 14, 2018.

Carmo-Fonseca M. Open session, Jornadas “O genoma humano, envelhecimento e imortalidade”, Lisbon, Portugal, February 20, 2018.

Carmo-Fonseca M. “Genes, ageing and immortality”. Participation in TEDxISTAlameda, Lisbon, Portugal, April 14, 2018.

Carmo-Fonseca M. Participation in “Conversa com jovens talentosos e motivados para a Ciência”, Instituto Superior Técnico da Universidade de Lisboa, Lisbon, Portugal, April 21, 2018.

Carmo-Fonseca M. TV show participation in “O Princípio da Incerteza”, RTP, Lisbon, Portugal, May 17, 2018.

Carmo-Fonseca M. Participation on a panel discussion integrated in the seminar “Inteligência Artificial: disrupção e oportunidade “, Morais Leitão Galvão Teles Soares da Silva and Instituto Miguel Galvão Teles, Lisbon, Portugal, June 22, 2018.

Carmo-Fonseca M. Masterclass, “Será possível ser jovem para sempre?”, Programa Cogito-ideias que transformam, Oeiras, Portugal, September 18, 2018.

Carmo-Fonseca M. Participation in “World Health Summit”, Berlin, Germany, October 14-16, 2018.

Carmo-Fonseca M. Lecture, “O futuro da Saúde”, 20 anos da Multicare/Fidelidade, Lisbon, Portugal, October 17, 2018.

Carvalho C. Participation in “Awareness raising sessions on Secondary Schools”, Fundo iMM-Laço, A Caminho Da Cura. Theme: Cancro da mama, conceitos fundamentais e investigação. Escola Secundária de Caneças, Caneças, Portugal, January 24, 2018.

Carvalho C. Participation in the public presentation of research grants awarded by Fundo iMM-Laço, A Caminho Da Cura. Project: Caracterização molecular retrospectiva de carcinomas invasivos da mama em estágio inicial para estratificação do risco de recidiva. Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, April 6, 2018.

MSc Thesis Completed

Ana Guerreiro, “A disease modelling approach for Angelman syndrome based on neuronal differentiation of human patient-derived iPSCs”, Master in Biological Engineering, Instituto Superior Técnico, University of Lisbon (18 Valores). Supervisor: Simão T da Rocha. Co-supervisor: Tiago Fernandes.

Maria Arez, “Comprehensive Evaluation of Genomic Imprinting Stability in Mouse iPSCs”, Master in Molecular Genetics and Biomedicine, Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa (19 valores). Supervisor: Simão T da Rocha. Co-supervisor: Bruno Bernardes de Jesus.

Inês Godinho, “The role of Meg3 lncRNA in imprinting and pluripotency”, Master in Molecular Biology and Genetics, Faculty of Sciences, University of Lisbon (18 valores). Supervisor: Simão T da Rocha.

Domenico Aprile, “Monitoring epigenetic stability in induced Pluripotent Stem Cells”, Master in Biological Sciences: Molecular diagnostics, Università degli Studi di Napoli Federico II, Italy (“110 e lode” - highest mark). Supervisor: Simão T da Rocha.

Ana Beatriz Nogueira Garcia, 23/07/2018, “Variantes genéticas associadas à Miocardiopatia Hipertrófica – Interpretação do seu significado clínico”, Mestrado Integrado em Medicina, Faculty of Medicine, University of Lisbon. Supervisor: M. Carmo-Fonseca.

Inês Domingues Oliveira, 13/09/2018, “Detection of BRAF V600E mutation in ctDNA by ddPCR: from laboratory to market”, Master in Biotecnologia, Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa (18 Valores). Supervisor: M. Carmo-Fonseca. Co-supervisor: Fernanda Llussá.

PhD Thesis Completed

Rita Mingot de Almeida Mendes de Almeida, 09/02/2018, “Exploring new biological frontiers in Hypertrophic Cardiomyopathy”, Dissertação de Doutoramento em Ciências Biomédicas – Biologia Celular e Molecular, Faculty of Medicine, University of Lisbon. Supervisor: Maria Carmo-Fonseca. Co-Supervisor: Teresa Tenório Carvalho.

Rita Catarina Vaz Drago, 25/06/2018, “Co-transcriptional quality control of mRNA biogenesis: impact for human genetic diseases”, Dissertação de Doutoramento em Ciências Biomédicas – Biologia Celular e Molecular, Faculty of Medicine, University of Lisbon. Supervisor: Maria Carmo-Fonseca. Co-Supervisor: Noélia Custódio.

Teresa Maria Pereira da Silva, 26/10/2018, “Novel bioengineering strategies for modelling cerebelar ataxias”, Dissertação de Doutoramento em Bioengenharia, Instituto Superior Técnico, University of Lisbon. Supervisor: Maria Carmo-Fonseca. Co-Supervisor: Joaquim Cabral.

Maria Mota Lab

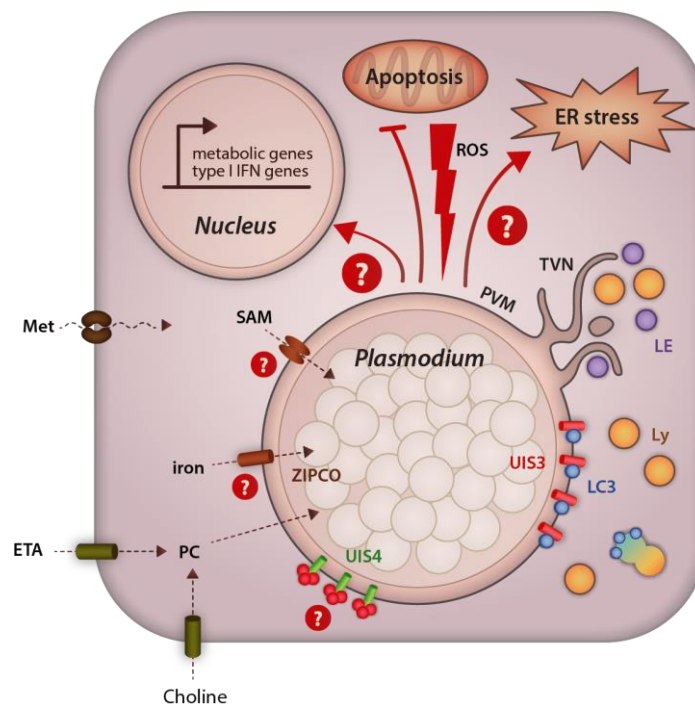
Major Interests / Objectives

Disease burden is disproportionally distributed around the globe. A direct contributor to such asymmetry is malaria – more than 200 million new infections and 400 thousand deaths still occur every year. Despite this unacceptably high health, economic and social burden, the factors that dictate the onset of severe disease and outcome of infection remain poorly understood, which significantly impairs the combat to this deadly disease. Our overall goal has been and will continue to be towards the elucidation of the most fundamental and conceptually innovative questions of host-*Plasmodium* interactions. Answers to these questions will pave the way to design the future rational strategies against malaria.

Head of Laboratory

Maria Manuel Mota, PhD

Graphical Abstract



Team

Ana Filipa Caetano Parreira	Graduate	Lab Technician
Ana Margarida Aires Alves Vigário	PhD	Senior Post-Doctoral Researcher
Ângelo António Ferreira Chaves do Rosário Chora	PhD	Senior Post-Doctoral Researcher
Aparajita Lahree	Master	PhD Student
Camila Fernandes Mariano	Graduate	MSc Student (Started September)
Catarina Alexandra Dinis de Andrade Pedro	Graduate	MSc Student (Started September)
Cristina Fernández Arias	PhD	Senior Post-Doctoral Researcher (Started September)
Debanjan Mukherjee	Master	PhD Student
Inês Fernandes Bento	PhD	Junior Post-Doctoral Researcher
Joana Lisboa da Silva Gonçalves	Master	PhD Student (Started June)
João Tiago Carvalho Jordão de Mello Vieira	Master	Trainee
Ksenija Slavic	PhD	Senior Post-Doctoral Researcher
Leonardo Filipe Lemos Rocha	Master	Trainee (Left April)
Maria Inês Moreira Oliveira Leite Marreiros	Master	PhD Student
Marta Sofia Martinez Barata	Other	BSc Student (Started June Left July)
Sara de Jesus Santos Baptista	Master	PhD Student
Sofia Pinto Guia Marques	PhD	Lab Manager
Sonali Setua	PhD	Senior Post-Doctoral Researcher
Sónia Maria Leite Pereira	Master	PhD Student (Started May)
Vanessa Alexandra Zuzarte Luís	PhD	Senior Post-Doctoral Researcher
Viriato M'Bana	Master	PhD Student

Laboratory Keywords / Research Areas

Host-*Plasmodium*-microbiota interactions, Parasite nutrient sensing and adaptation, Virulence, Liver and blood stages of infection cross-talking.

Major Scientific Achievements

While 2018 was a successful year in several lines of research, we highlight an interesting discovery we have made in the past couple of years that was published this year.

Plasmodium replicates inside the so-called parasitophorous vacuole membrane (PVM), which shields the parasite from the cytosol of the host cell. One common threat for intracellular pathogens is the homeostatic process of autophagy, through which cells capture unwanted intracellular material for degradation. We now showed that *Plasmodium* parasites infecting liver cells rely on a parasite molecule – named UIS3 – that resides at the PVM to avoid elimination by host-cell-mediated autophagy. Our work identifies UIS3 as a unique and potent mediator of

autophagy evasion in *Plasmodium* and implies that this molecule and its interaction with the host-cell autophagy machinery may represent a target for antimalarial drug development.

Selected Publications

Real E, Rodrigues L, Cabal GG, Enguita FJ, Mancio-Silva L, Mello-Vieira J, Beatty W, Vera IM, Zuzarte-Luís V, Figueira TN, Mair GR, Mota MM (2018). *Plasmodium* UIS3 sequesters host LC3 to avoid elimination by autophagy in hepatocytes. *Nat Microbiol.* 3(1): 17-25. (IF: 14.174, Citations: 5. Source: Web of Science).

Zuzarte-Luís V, Mello-Vieira J, Marreiros IM, Liehl P, Chora ÂF, Carret CK, Carvalho T, Mota MM (2017). Dietary alterations modulate susceptibility to *Plasmodium* infection. *Nat Microbiol.* 2: 1600-1607. (IF: 14.174, Citations: 7. Source: Web of Science).

Mancio-Silva L, Slavic K, Grilo Ruivo MT, Grosso AR, Modrzynska KK, Vera IM, Sales-Dias J, Gomes AR, MacPherson CR, Crozet P, Adamo M, Baena-Gonzalez E, Tewari R, Llinás M, Billker O, Mota MM (2017). Nutrient sensing modulates malaria parasite virulence. *Nature*, 13: 213-216. (IF: 40.137, Citations: 20. Source: Web of Science).

Slavic K, Krishna S, Lahree A, Bouyer G, Hanson KK, Vera I, Pittman JK, Staines HM, Mota MM (2016). A vacuolar iron-transporter homologue acts as a detoxifier in *Plasmodium*. *Nat Commun.* 7: 10403. (IF: 12.124, Citations: 16. Source: Web of Science).

Liehl P, Zuzarte-Luís V, Chan J, Zillinger T, Baptista F, Carapau D, Konert M, Hanson KK, Carret C, Lassnig C, Müller M, Kalinke U, Saeed M, Chora AF, Golenbock DT, Strobl B, Prudêncio M, Coelho LP, Kappe SH, Superti-Furga G, Pichlmair A, Vigário AM, Rice CM, Fitzgerald KA, Barchet W, Mota MM (2014). Host-cell sensors for *Plasmodium* activate innate immunity against liver-stage infection. *Nature Medicine* 20: 47-53. (IF: 29.886, Citations: 100. Source: Web of Science).

Ongoing Research Projects

2018/2021: DRIVER-Metabolismo hepático determina a replicação de *Plasmodium*. Coordinator: Maria Manuel Mota. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: LISBOA-01-0145-FEDER-030751. Amount: €239 886,62. Total Amount: € 239 886,62.

2018/2021: Vias Metabólicas do Ferro em Plasmodium: deteção, aquisição e desintoxicação. Coordinator: Ksenija Slavic. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIA-MOL/30112/2017. Amount: €239 761,60. Total Amount: € 239 761,60.

2018/2021: Modulação da malária pela interação entre as duas fases da infecção por Plasmodium. Coordinator: Ângelo Chora. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MED-IMU/28664/2017. Amount: €239 058,69. Total Amount: € 239 058,69.

2018/2021: Plasmodium Exploitation of Liver-specific Methionine Metabolism. Coordinator: Maria Manuel Mota. Funding Agency: Fundación Bancaria "La Caixa". Reference: PoEMM: La Caixa. Amount: €499 950,00. Total Amount: € 499 950,00.

2018/2019: Sanofi - Institut Pasteur Awards 2018. Coordinator: Maria Manuel Mota. Funding Agency: Institut Pasteur. Reference: Sanofi - Institut Pasteur Awards 2018. Amount: € 150 000,00. Total Amount: € 150 000,00.

2018/2019: Prémio Lóreal. Coordinator: Inês Bento. Funding Agency: L'oréal Paris. Reference: PRÉMIO LOREAL - INÊS BENTO. Amount: € 13 500,00. Total Amount: € 13 500,00.

2016/2019: Evasão da autofagia da célula hospedeira: mecanismos de sobrevivência do Plasmodium na fase hepática da infecção. Coordinator: Maria Manuel Mota. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIM-MEC/1342/2014. Amount: € 200 000,00. Total Amount: € 200 000,00.

2016/2018: Plasmodium autophagy evasion in the liver-stage: mechanisms and novel therapeutic opportunities. Coordinator: Maria Manuel Mota. Funding Agency: Institut Mérieux. Reference: MRG_20052016. Amount: € 100 000,00. Total Amount: € 100 000,00.

2016/2018: TwinnToInfect: Unleash iMM's research excellence in immunity and infection through twinning to infect Lisbon and Portugal with its increase in competitiveness and innovation. Coordinator: Maria Manuel Mota. Funding Agency: European Commission. Reference: TWINNING 692022. Amount: € 893 500,00. Total Amount: € 999 996,25.

2016/2018: REUSE4MALARIA: Drug Repurposing for malaria chemoprotection. Coordinator: Maria Manuel Mota. Funding Agency: European Commission. Reference: ERC PoC 713691. Amount: € 150 000,00. Total Amount: 150 000,00.

Publications in Peer Review Journals

Mendes AM, Machado M, Gonçalves-Rosa N, Reuling IJ, Foquet L, Marques C, Salman AM, Yang ASP, Moser KA, Dwivedi A, Hermsen CC, Jiménez-Díaz B, Viera S, Santos JM, Albuquerque I, Bhatia SN, Bial J, Angulo-Barturen I, Silva JC, Leroux-Roels G, Janse CJ, Khan SM, Mota MM, Sauerwein RW, Prudêncio M (2018). A *Plasmodium berghei* sporozoite-based vaccination platform against human malaria. *NPJ Vaccines*, 24: 3:33. (IF: 3.143, Citations: 1. Source: Web of Science and Scopus).

Zuzarte-Luís V, Mota MM (2018) Parasite Sensing of Host Nutrients and Environmental Cues. *Cell Host Microbe*, 13;23(6): 749-758. Review. (IF: 17.872, Citations: 1. Sources: Web of Science and Scopus).

Armistead JS, Jennison C, O'Neill MT, Lopaticki S, Liehl P, Hanson KK, Annoura T, Rajasekaran P, Erickson SM, Tonkin CJ, Khan SM, Mota MM, Boddey JA (2018). *Plasmodium falciparum* subtilisin-like ookinete protein SOPT plays an important and conserved role during ookinete infection of the *Anopheles stephensi* midgut. *Molecular Microbiology*, 109(4): 458-473. (IF: 3.816, Citations: 0. Sources: Web of Science and Scopus).

Zuzarte-Luis V, Mota MM (2018). Fighting for Resources: Who Started the Battle? Who Is Winning It? *Cell Metabolism*, 3;27(4): 708-709. Comment. (IF: 20.565, Citations: 0. Sources: Web of Science and Scopus).

Real E, Rodrigues L, Cabal GG, Enguita FJ, Mancio-Silva L, Mello-Vieira J, Beatty W, Vera IM, Zuzarte-Luís V, Figueira TN, Mair GR, Mota MM (2018). *Plasmodium* UIS3 sequesters host LC3 to avoid elimination by autophagy in hepatocytes. *Nature Microbiology*, 3(1): 17-25. (IF: 14.174, Citations: 8. Sources: Web of Science and Scopus).

Invited Lectures and Seminars

Mota MM. The complexity and the simplicity of host-*Plasmodium* interaction. Institute of Biology/Faculty of Life Sciences Humboldt University Berlin (Department of Molecular Parasitology), Berlin, Germany, March 16, 2018.

Mota MM. GABBA Symposium – Part II - The complexity and the simplicity of host-*Plasmodium* interactions, Porto, Portugal, July 25, 2018.

Mota MM. The complexity and the simplicity of host-Plasmodium interactions. The Francis Crick Institute, London, UK, September 21, 2018.

Mota MM. EMBO Young Investigator Programme Retreat -Mentoring Session, Lago di Como, Italy, September 23-29, 2018.

Mota MM. EMBO Workshop - Molecular advances and parasite strategies in host infection- Keynote lecture: The complexity and the simplicity of host-Plasmodium interactions, Les Embiez Island, France, September 30-October 3, 2018.

Mota MM. Malaria Research Program Symposium Division of Intramural Research, Keynote lecture: Nature or Nurture, NIAID, Rockville, USA, October 11, 2018.

Mota MM. Merieux Research Grant Meeting, Plasmodium autophagy evasion in the liver-stage: mechanisms and novel therapeutic opportunities, October 30-31, 2018.

Communications in International Conferences

Mota MM. Our infections are what we eat! Frontiers in Parasitology Symposium - Weizmann Institute of Science, March 5-8, 2018. (Oral Presentation).

Lahree A. Love for Recyclers: Host Recycling endosomes in liver stage Malaria. The Batsheva de Rothschild seminar on Frontiers in Parasitology, Weizmann Institute of Science, Israel, March 5-8, 2018. (Poster Presentation).

Mota MM. The complexity and the simplicity of host-Plasmodium interaction. DGP meeting, 28th Annual Meeting of the German Society for Parasitology, March 22, 2018. (Oral Presentation).

Mukherjee D. Lung microbiome dictates malaria associated Acute Lung Injury/Acute Respiratory Distress syndrome. Gordon Research Conference, Biology of Acute Respiratory Infection, Ventura, California, USA, March 18-23, 2018. (Poster Presentation).

Mello-Vieira J. The role of EXP2 during the invasion of the hepatocyte by Plasmodium sporozoites. TwinnToInfect SpringSchool 2018, Lisbon and Sesimbra, March 10-22, 2018. (Oral and Poster Presentation).

M'Bana V. Unveiling the role of UIS4 during Malaria liver stage infection. TwinnToInfect SpringSchool 2018, Lisbon and Sesimbra, March 10-22, 2018. (Poster Presentation).

Mota MM. The complexity and the simplicity of host-Plasmodium interaction. EMBL BioMalPar XIV: Biology and Pathology of the Malaria parasite, Heidelberg, Germany, May 23-25, 2018. (Keynote Lecture).

Zuzarte-Luís V. Diet-Induced Oxidative Stress Impair Plasmodium Liver Infection. Biology of Host-Parasite Interactions Conference RI, USA, June 10-15, 2018. (Oral Presentation).

Mukherjee D. Plasmodium and Host Microbiota: Friend or Foe? Annual Molecular Parasitology Meeting, Marine Biological Laboratory, Woods Hole, Massachusetts, USA, September 9-13, 2018. (Oral Presentation).

Mello-Vieira J. A novel role for EXP2 in invasion of Plasmodium sporozoites. Annual Molecular Parasitology Meeting, Marine Biological Laboratory, Woods Hole, Massachusetts, USA, September 9-13, 2018. (Oral and Poster Presentation).

Mota MM. The complexity and the simplicity of host-Plasmodium interaction. EMBO Labex ParaFrap, Marseille, France, September 30-October 3, 2018. (Keynote Lecture).

Mukherjee D. Plasmodium and Host Microbiota: Friend or Foe? Annual Meeting, American Society for Tropical Medicine and Hygiene, New Orleans, Louisiana, USA, October 28-November 1, 2018. (Oral Presentation).

Communications in National Conferences

Lahree A. Eve (EEF) and Apple (APPL1): Plucking a fruit of host endosomal signaling. XII CAML PhD Students Meeting, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Mukherjee D. Plasmodium and Host Microbiota: Friend or Foe? XII CAML PhD Students Meeting, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, May 23-25, 2018. (Oral Presentation).

Baptista S. The role of E3 Cullin-RING Ligases in Circumsporozoite protein processing and antigen presentation. XII CAML PhD Students Meeting, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Mota MM. Plasmodium ability to control host autophagy. TOLL 2018, Porto, Portugal, June 6-9, 2018. (Plenary Speaker).

Lahree A. Eve (EEF) and Apple (APPL1): Plucking a forbidden fruit of host endosomal signaling. MIT-Portugal Annual Conference, Lisbon, Portugal, October 2018. (Poster Presentation).

M'Bana V. Discovering the role of UIS4 during malaria liver stage infection. III PGCD Meeting: November 14-16, 2018. (Graphical Abstract Presentation).

Marreiros MI. Establishing a Blood-Stage Infection: The Role of SAM in Plasmodium Development. GABBA Meeting, December 2018. (Poster Presentation).

Organisation of Conferences

Bento I. iMM Postdoc Retreat Organising Committee. January 29-30, 2018.

Mota MM. Scientific Organiser. EMBO|EMBL symposia. Innate Immunity in Host-Pathogen Interactions, June 24-27, 2018.

Baptista S. Youth and STEM in Cabo Verde: Challenges and Opportunities, Universidade Jean Piaget, Praia, Cabo Verde, October 25-26, 2018.

Internationalisation

The Mota Lab has developed over the years and strengthen during 2018 a network of international collaborations with multiple laboratories around the world. This strategy is allowing us to develop more interdisciplinary projects by bringing together our own interest and expertise on host-*Plasmodium* with that of others in different areas. Examples are liver metabolism (J. Mato, CIC, Biogune, Spain), metabolism of microbial pathogens (M. Barrett, Glasgow University, UK), *P. falciparum* epigenetics (A. Scherf, Institut Pasteur, France), *Plasmodium* transporters (S. Krishna and H. Staines, St. George's, University of London, UK), *Plasmodium* genetic technologies (O. Billker, Sanger Institute, UK) and human micro livers (S. Bhatia, MIT, USA). Overall, these collaborations ensure the excellence of the science performed in our attempt to answer the most fundamental questions in the field.

Fostered by iMM's TwinnToInfect project and aiming at innovative and technical collaborations, two of our researchers had short-term research missions in the partner institutions namely: Vanessa Zuzarte-Luís visited the Dr. Moritz Treeck Lab at The Francis Crick Institute and Dr.

Sanjeev Krishna Lab at St. Georges University, UK; and Maria Inês Marreiros visited the Prof. Artur Scherf Lab at Institut Pasteur, France.

Also, Aparajita Lahree travelled to the lab of Prof. Marino Zerial at the Max Planck Institute of Molecular Cell Biology and Genetics, Dresden, Germany to perform experiments essential for the success of the research line.

Additionally, Maria M. Mota was invited to speak in several international institutions and participated in scientific meetings, either to communicate the data produced by the team or to meet potential collaborators from cross-disciplines (see Invited Lectures).

Prizes, Honours and Awards

Mota MM. Sanofi – Institut Pasteur International Mid-Career Award in microbiology & infection. Sanofi’s Innovation Awards (iAwards) - Europe.

Baptista S. Honor - Ambassador Next Einstein Forum for Cabo Verde (2017-2019).

Mukherjee D. Honor of scientific excellence in the field of Cellular, Molecular and Immunoparasitology. 67th Annual Meeting American Society for Tropical Medicine and Hygiene New Orleans, Louisiana, USA.

Mukherjee D. Best Oral Communication Award. XII CAML PhD Students Meeting, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, May 23-25, 2018.

Mukherjee D. Best Oral Communication Award. Annual Molecular Parasitology Meeting, MBL, Woods Hole, Massachusetts, USA.

Lahree A. Best Poster Communication Award, Bioengineering Systems. MIT-Portugal Annual Conference, Lisbon, Portugal.

Patents / Prototypes

Maria M Mota and Liliana Mancio-Silva. METHODS FOR ATTENUATING PARASITE VIRULENCE. European National Phase Application No. 16805491.4 - Based on PCT International Application No. PCT/IB2016/001523.

Maria M Mota and Liliana Mancio-Silva. METHODS FOR ATTENUATING PARASITE VIRULENCE. U.S. National Phase Patent Application No. 15/764,524 - Based on PCT International Application No. PCT/IB2016/001523.

Maria M Mota and Liliana Mancio-Silva. METHODS FOR ATTENUATING PARASITE VIRULENCE. National Phase Application in China - Based on PCT International Application No. PCT/IB2016/001523.

Advanced Teaching

Mota MM. The Berlin-Canberra alliance International Research Training Programme, Humboldt-Universität zu Berlin, Berlin, March 2018.

Mota MM. Masters in Microbiology, FM/IST/FC/FMV, University of Lisbon, March 2018.

Zuzarte-Luís V. Lecture. Masters in Microbiology, FM/IST/FC/FMV, University of Lisbon, March 2018.

Mota MM. Graduate Programme INTERFACE: Biology at the Host Microbe Interface. ITQB/IGC/iMM, May 2018.

Chora AF. Lecture. Graduate Programme INTERFACE: Biology at the Host Microbe Interface. ITQB/IGC/iMM, May 2018.

Zuzarte-Luís V. Lecture. Graduate Programme INTERFACE: Biology at the Host Microbe Interface. ITQB/IGC/iMM, May 2018.

Science and Society

Mota MM. Revista Sábado - Indicação Médicos/Investigadores Portugal, January 2018.

Bento I. Rádio Renascença e Rádio Antena 1 – Temática: Medalhas de Honra L'Oréal Portugal para as Mulheres na Ciência de 2018, March 21, 2018.

Bento I. Presença no programa 'Senso Divergente', do projecto Qualia, March 25, 2018.

Bento I. Revista Nova gente - Temática: Medalhas de Honra L'Oréal Portugal para as Mulheres na Ciência de 2018, March 29, 2018.

Mota MM. Revista Sábado - Temática: 50 Mulheres Influentes, May 3, 2018.

Bento I. Presença na Escola Secundária da Lourinhã, May 18, 2018.

Mota MM. Rádio TSF - Temática: Embaixadores da Start up Portugal, July 18, 2018.

Mota MM. Jornal Público, País Positivo, Business.IT e Correio do Ribatejo – Temática: Projetos La Caixa, July 25-August 3, 2018.

Mota MM. Jornal Expresso, Jornal Público e Diário As Beiras – Temática: Contratos FCT, September 22, 2018.

Baptista S. Organization of "Next Einstein Forum Africa Science Week (ASW) Cabo Verde 2018", Cabo Verde, October 22-26, 2018:

"Playing Science" - October 22-26 (Praia) and November 26-30 (Mindelo);

"Mini-course in model organisms for research in life science" - October 22-23;

Radio show "Let's talk about science" - national radio station October 22-26;

"Robotics for kids" - October 23-24;

"Open talk in Start-ups & Innovation in Cabo Verde" - October 23;

"Mini-tech fair" - October 25-26;

"Mini-course in coding and 3d printing" - October 25-26.

Mota MM. Revista Visão e Diário de Leiria – Temática: Prémio Sanofi-Instituto Pasteur 2018, November 21, 2018.

Mota MM. Jornal de Negócios, Edição Especial: XXI Aniversário da Edição Online – Entrevista, November 23, 2018.

Mota MM. RTP3 - 2018 em Revista, December 31, 2018.

Mário Ramirez Lab

Major Interests / Objectives

We aim to understand the dynamics of populations of bacterial pathogens and how they respond to selective forces. We focus on the effect of antimicrobial use, human vaccination and host diversity on bacterial populations. By exploring the relationships between commensal and disease-causing populations of the same bacterial pathogen, we hope to identify particularly virulent clones as well as successful colonisers for further characterisation. A strong bioinformatics effort in bacterial genomics, microbial typing data sharing, data analysis and visualisation tools is ongoing. The development of novel laboratory methodologies for the diagnosis of infectious diseases is also an active area of research.

Head of Laboratory

Mário Nuno Ramos d'Almeida Ramirez, PhD

Team

Ana Carolina Santos Rodrigues de Castro	Graduate	MSc Student (Started October)
Ana Catarina da Silva e Costa	PhD	Senior Post-Doctoral Researcher
Ana Catarina Fogaça da Mata Baptista Fernandes	Other	Trainee (Left January)
Ana Isabel de Aquino Friães	PhD	Senior Post-Doctoral Researcher
Ana Teresa Fernandes Alegre Branco	Graduate	MSc Student
Andreia das Neves Horácio	Master	PhD Student
Beatriz Gonçalves Esteves	Graduate	MSc Student (Started October)
Bruna Alexandra Martinho Magalhães de Meireles	Other	Trainee (Left January)
Bruno Filipe Ribeiro Gonçalves	Master	PhD Student
Catarina Ferreira Duarte	Other	BSc Student (Started February)
Catarina Inês Marques de Sousa Mendes	Master	PhD Student
Catarina Teresa Condinho Pato	Master	PhD Student
Cezar Vinícius Wurdig Riche	Master	PhD Student (Started September)
Diogo Nuno Proença Rico Silva	Master	Lab Technician (Left September)
Elisabete Raquel Ferreira Martins	PhD	Senior Post-Doctoral Researcher
Elísia Graciela da Silva Lopes	Master	Lab Technician
Inês Maria Marques Teodoro	Graduate	MSc Student (Started October)
Jéssica Fonseca Lisboa	Master Student	MSc Student (Left February)
Joana Filipa Gomes da Silva	Master	Lab Technician
Joana Rita Sebastião Ferreira da Costa	Graduate	MSc Student
João André Nogueira Custódio Carriço	PhD	Staff Scientist
José Augusto Gamito Melo Cristino	PhD	Clinical Staff Scientist
Lúcia Marques Prados	Graduate	MSc Student

Marcos Daniel Caetano Borges de Pinho	PhD	Senior Post-Doctoral Researcher
Margarida Xavier Fonseca e Costa	Master Student	MSc Student (Started July Left October)
Maria Antónia Couto Viana Lomba	Other	Administrative Technician
Mariana Isabel Pinto Ferreira	Graduate	MSc Student
Mickael Santos da Silva	Master	Lab Technician
Miguel Paulo Machado	Master	Lab Technician
Pedro Miguel Festas Marinho	Graduate	MSc Student (Started July)
Rui David Ferro Pedrosa	Graduate	MSc Student (Started October)
Sara Mateus Mahomed	Other	Trainee (Started February)
Soraia Isabel da Silva Guerreiro	Master	Lab Technician
Thomas Hanscheid	PhD	Staff Scientist
Tiago Filipe Salgueiro de Jesus	PhD	Junior Post-Doctoral Researcher (Left November)

Laboratory Keywords / Research Areas

Population biology and genomics, Bioinformatics, Detection of antimalarial drug resistance, Molecular epidemiology, Diagnostic tools, Antibiotic resistance.

Major Scientific Achievements

Released a novel plasmid exploration tool: pATLAS.

Found that *covRS* mutations are not key determinants of virulence in *S. pyogenes* skin and soft tissue infections.

Identified serotype 3 vaccine failures among complicated pneumonia cases suggesting lower-vaccine efficacy against this serotype.

Found that rises in antimicrobial resistance can be driven by the expansion of a single clone, independent of antimicrobial consumption.

Established a novel *P. falciparum in vitro* culture protocol.

Selected Publications

Martins ER, Pedroso-Roussado C, Melo-Cristino J, Ramirez M, Portuguese Group for the Study of Streptococcal Infections 2017. *Streptococcus agalactiae* causing neonatal infections in Portugal (2005-2015): diversification and emergence of a CC17/PI-2b multidrug resistant sublineage. *Frontiers of Microbiology* 8: 499. (IF: 4.019, Citations: 5. Source: Web of Science).

Pinho MD, Erol E, Ribeiro-Gonçalves B, Mendes CI, Carriço JA, Matos SC, Preziuso S, Luebke-Becker A, Wieler LH, Melo-Cristino J, Ramirez M 2016. Beta-hemolytic *Streptococcus dysgalactiae* strains isolated from horses are a genetically distinct population within the *Streptococcus dysgalactiae* taxon. *Sci Rep*, 6: 31736.

<http://www.ncbi.nlm.nih.gov/pubmed/27530432>. (IF: 4.122, Citations: 2. Source: Web of Science).

Horácio AN, Silva-Costa C, Lopes JP, Ramirez M, Melo-Cristino J, Portuguese Group for the Study of Streptococcal Infections (2016). Serotype 3 remains the leading cause of invasive pneumococcal disease in adults in Portugal (2012-2014) despite continued reductions in other 13-valent conjugate vaccine serotypes. *Front Microbiol*, 7: 1616.

<http://www.ncbi.nlm.nih.gov/pubmed/27790208>. (IF: 4.076, Citations: 11. Source: Web of Science).

Ribeiro-Gonçalves B, Francisco AP, Vaz C, Ramirez M, Carriço JA (2016). PHYLOViZ Online: web-based tool for visualization, phylogenetic inference, analysis and sharing of minimum spanning trees. *Nucleic Acids Res*, 44: W246-251. <http://www.ncbi.nlm.nih.gov/pubmed/27131357>. (IF: 10.162, Citations: 15. Source: Web of Science).

Björnsdóttir ES, Martins ER, Erlendsdóttir H, Haraldsson G, Melo-Cristino J, Kristinsson KG, Ramirez M. 2016. Changing epidemiology of group B streptococcal infections among adults in Iceland: 1975-2014. *Clin Microbiol Infect*. 22: 379.e9-379.e16.

<http://www.ncbi.nlm.nih.gov/pubmed/26691681>. (IF: 5.293, Citations: 7. Source: Web of Science).

Ongoing Research Projects

2018/2021: Ferramentas para análise filogenética em larga escala. Coordinator: João Carriço. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/CCI-BIO/29676/2017. Amount: € 33,324,50. Total Amount: € 237,827,12.

2017/2019: ONEIDA: Plataforma Ómica para prevenção e controlo de infeções e de resistência aos antimicrobianos. Coordinator: Mário Ramirez. Funding Agency: Portugal 2020. Reference: LISBOA-01-0145-FEDER-016417. Amount: € 696 698,00. Total Amount: € 2 459 635,55.

2016/2019: The changing pneumococci: adapting to vaccination and transitioning between colonization and disease. Coordinator: José Melo Cristino. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/DTP-EPI/1555/2014. Amount: € 179 000,00. Total Amount: €179 000,00.

2016/2019: An integrated system for bacterial genome tracking using high throughput sequencing technology: from identification to visualization. Coordinator: João Carriço. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: TUBITAK/0004/2014. Amount: € 61 572,00. Total Amount: € 98 721,22.

Publications in Peer Review Journals

Caneiras C, Lito L, Mayoralas-Alises S, Díaz-Lobato S, Melo-Cristino J, Duarte A (2018). Virulence and resistance determinants of *Klebsiella pneumoniae* isolated from a Portuguese tertiary university hospital centre over a 31-year period. *Enferm Infecc Microbiol Clin*. pii: S0213-005X(18)30369-0. doi: 10.1016/j.eimc.2018.11.001. [Epub ahead of print]. (IF: 1.707, Citations: 0. Source: Web of Science).

Caneiras C, Calisto F, Jorge da Silva G, Lito L, Melo-Cristino J, Duarte A (2018). First description of colistin and tigecycline-resistant *Acinetobacter baumannii* producing KPC-3 carbapenemase in Portugal. *Antibiotics*, 7. doi:10.3390/antibiotics7040096 (PMID: 30404152). (IF:--, Citations: 0. Source: Web of Science).

Jesus TF, Ribeiro-Gonçalves B, Silva DN, Bortolaia V, Ramirez M, Carriço JA (2018). Plasmid ATLAS: plasmid visual analytics and identification in high-throughput sequencing data. *Nucleic Acids Res*. [Epub ahead of print] doi:10.1093/nar/gky1073. (IF: 11.561, Citations: 0. Source: Web of Science).

Horácio AN, Silva-Costa C, Lopes E, Ramirez M, Melo-Cristino J, Portuguese Group for the Study of Streptococcal Infections (2018). Conjugate vaccine serotypes persist as major causes of non-invasive pneumococcal pneumonia in Portugal despite declines in serotypes 3 and 19A (2012-2015). *PLoS ONE*, 13: e0206912. doi:10.1371/journal.pone.0206912 (IF: 2.766, Citations: 0. Source: Web of Science).

Hänscheid T, Hardisty DW, Henriques SO (2018). The crisis in scientific publishing: a holistic perspective about background issues associated with predatory publishing. *Acta Med Port*, 31: 524–526. (IF: 0.581, Citations: 0. Source: Web of Science).

Pato C, Melo-Cristino J, Ramirez M, Friães A, Portuguese Group for the Study of Streptococcal Infections (2018). *Streptococcus pyogenes* causing skin and soft tissue infections are enriched in the recently emerged emm89 clade 3 and are not associated with abrogation of CovRS. *Front Microbiol*, 9: 2372. (IF: 4.019, Citations: 0. Source: Web of Science).

Björnsdóttir ES, Martins ER, Erlendsdóttir H, Haraldsson G, Melo-Cristino J, Ramirez M, Kristinsson KG (2018). Group B streptococcal neonatal and early infancy infections in Iceland 1976 - 2015. *Pediatr Infect Dis J*. DOI:10.1097/INF.0000000000002214. [Epub ahead of print]. (IF: 2.305, Citations: 0. Source: Web of Science).

Huizenga E, van der Ende J, Zwinkels N, Jimissa A, van der Ende-Bouwman C, van Rooijen R, Kargbo B, Agnandji ST, Hänscheid T, Goorhuis A, Grobusch MP (2018). A modified case definition to facilitate essential hospital care during Ebola outbreaks. *Clin Infect Dis*. doi: 10.1093/cid/ciy798. [Epub ahead of print]. (IF: 9.117, Citations: 0. Source: Web of Science).

Branco A, Melo-Cristino J (2018). Extreme parasitemia in *P. falciparum* malaria. *Blood*, 132: 868. (IF: 15.132, Citations: 0. Source: Web of Science).

Barreto JN, de Lourdes Monteiro M, da Luz Lima M, Valadas E, Hänscheid T (2018). Under-reporting of tuberculosis in Praia, Cape Verde: study reports doubtful results. *Int J Tuberc Lung Dis*, 22: 1106. (IF: 2.392, Citations: 0. Source: Web of Science).

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Silva-Costa C, Brito MJ, Pinho MD, Friães A, Aguiar SI, Ramirez M, Melo-Cristino J, Portuguese Group for the Study of Streptococcal Infections, Portuguese Study Group of Invasive Pneumococcal Disease of the Pediatric Infectious Disease Society (2018). Pediatric complicated pneumonia caused by *Streptococcus pneumoniae* serotype 3 in 13-valent pneumococcal conjugate vaccinees, Portugal, 2010-2015. *Emerging Infect Dis*, 24: 1307–1314. (IF: 7.422, Citations: 2. Source: Web of Science).

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Lopes E, Fernandes T, Machado MP, Carriço JA, Melo-Cristino J, Ramirez M, Martins ER (2018). The Portuguese Group For The Study Of Streptococcal Infections. Increasing macrolide resistance among *Streptococcus agalactiae* causing invasive disease in non-pregnant adults was driven by a single capsular-transformed lineage, Portugal, 2009 to 2015. *Euro Surveill*, 23. doi:10.2807/1560-7917.ES.2018.23.21.1700473. (IF: 7.127, Citations: 0. Source: Web of Science).

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Motro Y, Carriço JA, Friedrich AW, Rossen JW, Moran-Gilad J (2018). ESCMID Postgraduate Education Course Regional Capacity Building for Integration of Next-Generation Sequencing in the Clinical Microlab. *Microbes Infect*, 20: 275–280. (IF: 2.924, Citations: 0. Source: Web of Science).

Silva M, Machado MP, Silva DN, Rossi M, Moran-Gilad J, Santos S, Ramirez M, Carriço JA (2018). chewBBACA: A complete suite for gene-by-gene schema creation and strain identification. *Microb Genom.*, doi: 10.1099/mgen.0.000166. (IF:--, Citations: 0. Source: Web of Science).

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Culebro A, Machado MP, Carriço JA, Rossi M (2018). Origin, evolution, and distribution of the molecular machinery for biosynthesis of sialylated lipooligosaccharide structures in *Campylobacter coli*. *Sci Rep.*, 8(1):3028. doi: 10.1038/s41598-018-21438-2. (IF: 4.122, Citations: 0. Source: Web of Science).

Carriço JA, Rossi M, Moran-Gilad J, Van Domselaar G, Ramirez M (2018). A primer on microbial bioinformatics for non-bioinformaticians. *Clin Microbiol Infect.*, 24: 342–349. (IF: 5.394, Citations: 3. Source: Web of Science).

Invited Lectures and Seminars

Melo-Cristino J. Antibióticos e Resistências. 1º Curso de Infeciologia Pediátrica do CHLC, CHLC, 9 February, 2018.

Ramirez M. The war against infections (invited lecture). IV Semana de Bioengenharia, Instituto Superior Técnico, Lisbon, Portugal, March 5-9, 2018.

Melo-Cristino J. Are we neglecting MRSA? 23rd Infection and Sepsis Symposium, Porto, Portugal, March 7-9, 2018.

Carriço JA. The importance of transparent boxes: need for reproducible and certifiable solutions for high-throughput sequencing analysis in routine epidemiology. European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), Madrid, Spain, April 21-24, 2018.

Melo-Cristino J. Panorama Atual da multirresistência. Conferências Infecção e Doenças Infeciosas, Auditório do Centro de Ciência do Café, Campo Maior, Portugal, May 19, 2018.

Mendes CI. Taxonomic Profiling, Typing and Antimicrobial Resistance Gene Finding of Shotgun Metagenomics Data - Linux & FlowCraft. ESCMID Postgraduate Capacity-Building Workshop: Metagenomics in the Diagnostic Laboratory, Groningen, Netherlands, October 21-24, 2018.

Carricho JA. Bioinformatic Tools for Metagenomics. ESCMID Postgraduate Capacity-Building Workshop: Metagenomics in the Diagnostic Laboratory, Groningen, Netherlands, October 21-24, 2018.

Communications in International Conferences

Lopes E, Fernandes T, Machado MP, Carricho JA, Melo-Cristino J, Ramirez M, Martins ER. Increasing macrolide resistance among *Streptococcus agalactiae* causing invasive disease in nonpregnant adults in Portugal (2009-2015) was driven by a capsular variant of a single clone. 1st International Symposium on *Streptococcus agalactiae* Disease (ISSAD), Cape Town, South Africa, February 20-23, 2018. (Oral Presentation).

Silva-Costa C, Horácio A, Aguiar SI, Lopes JP, Brito MJ, Ramirez M, Melo-Cristino J, Portuguese Group for the Study of Streptococcal Infections, Portuguese Study Group of Invasive Pneumococcal Disease of the Pediatric Infectious Disease Society. Persistence of PCV7 and PCV13 serotypes in pediatric invasive pneumococcal disease in Portugal after more than a decade of vaccine use (P278). 11th International Symposium on Pneumococci and Pneumococcal Diseases (ISPPD-11), Melbourne, Australia, April 15-19, 2018. (Poster Presentation).

Silva-Costa C, Brito MJ, Pinho MD, Friães A, Aguiar SI, Ramirez M, Melo-Cristino J, Portuguese Group for the Study of Streptococcal Infections, Portuguese Study Group of Invasive Pneumococcal Disease of the Pediatric Infectious Disease Society. Serotype 3 is the leading cause of complicated pediatric pneumococcal pneumonia in Portugal even among PCV13 vaccinated children (2010-2015) (P279). 11th International Symposium on Pneumococci and Pneumococcal Diseases (ISPPD-11), Melbourne, Australia, April 15-19, 2018. (Oral Presentation).

Mendes CI, Machado M, Melo-Cristino J, Carricho JA, Ramirez M. Associations of serotype with characteristics of the *spnD39III* locus implicated in phase switching of pneumococci (P334). 11th International Symposium on Pneumococci and Pneumococcal Diseases (ISPPD-11), Melbourne, Australia, April 15-19, 2018. (Poster Presentation).

Horácio A, Silva-Costa C, Lopes JP, Ramirez M, Melo-Cristino J, Portuguese Group for the Study of Streptococcal Infections. Emerging non-vaccine serotypes but also conjugate vaccine serotypes remain the major causes of non-invasive pneumococcal pneumonia in adults in Portugal (2012-2015) (P406). 11th International Symposium on Pneumococci and Pneumococcal Diseases (ISPPD-11), Melbourne, Australia, April 15-19, 2018. (Poster Presentation).

Ribeiro-Gonçalves B, Silva D, Machado MP, Silva M, Halkilahti J, Jaakkonen A, Ramirez M, Rossi M, Carriço JA. The INNUENDO platform: a user-friendly platform for the integration of high-throughput sequencing in bacterial food-borne pathogen surveillance (O0760). European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), Madrid, Spain, April 21-24, 2018. (Oral Presentation).

Jesus TF, Gonçalves BR, Silva DN, Bortolaia V, Ramirez M, Carriço JA. Plasmid Atlas: plasmid visual analytics and identification in high-throughput sequencing data (O0138). European Congress of Clinical Microbiology and Infectious Diseases (ECCMID), Madrid, Spain, April 21-24, 2018. (Oral Presentation).

Silva-Costa C, Lopes JP, Ramirez M, Melo-Cristino J, The Portuguese Group for the Study of Streptococcal Infections. Non-invasive pneumococcal pneumonia in adults in Portugal: continued decline of PCV13 serotypes (2015-2017) (P1452). IDWeek 2018, San Francisco, California, USA, October 3-7, 2018. (Poster Presentation).

Silva-Costa C, Lopes JP, Ramirez M, Melo-Cristino J, The Portuguese Group for the Study of Streptococcal Infections. Serotypes 8 and 3 are the leading cause of invasive pneumococcal disease in adults in Portugal (2015-2017) (P1443). IDWeek 2018, San Francisco, California, USA, October 3-7, 2018. (Poster Presentation).

Pignatelli D, Janeiro M, Castaneda C, Morais B, Friães A, Melo-Cristino J, Sancho L, Barroso R. Neonate with empyema and rash - a typical presentation of a rare infection? (ABS 12, Session "Neonatal respiratory disorders and management"). 8th International Congress of UENPS, Bucharest, Romania, October 3-5, 2018. (Poster Presentation).

Silva-Costa C, Brito MJ, Aguiar SI, Lopes JP, Ramirez M, Melo-Cristino J, the Portuguese Group for the Study of Streptococcal Infections and the Portuguese Study Group of Invasive Pneumococcal Disease of the Pediatric Infectious Disease Society. The increasing importance of non-culture methods in diagnosis and serotyping of invasive pediatric pneumococcal infections revealed the continuous dominance of vaccine serotypes in the era of PCV13 vaccination (P21.123). International Meeting on Emerging Diseases and Surveillance, Vienna, Austria, November 9-12, 2018. (Poster Presentation).

Communications in National Conferences

Ribeiro-Gonçalves B, Silva D, Machado MP, Silva M, Halkilahti J, Jaakkonen A, Ramirez M, Rossi M, Carriço JA. Implementing High-Throughput Sequencing in bacterial foodborne pathogen surveillance: The INNUENDO Platform. Bioinformatics Open Days, Universidade do Minho, Braga, Portugal, March 15-16, 2018. (Poster Presentation).

Jesus TF, Ribeiro-Gonçalves B, Silva DN, Valeria B, Ramirez M, Carriço JA. pATLAS: the hitchhiker's guide to the plasmid galaxy. Bioinformatics Open Days, Universidade do Minho, Braga, Portugal, March 15-16, 2018. (Oral Presentation).

Mickael Silva, António Paulo, Ramirez M, Carriço JA. A Proposal for a Allele Nomenclature Server for gene-by-gene methods. Bioinformatics Open Days, Universidade do Minho, Braga, Portugal, March 15-16, 2018. (Poster Presentation).

Mendes CI, Machado MP, Melo-Cristino J, Ramirez M, Carriço JA. A mapping methodology for the characterization of modular genes (OP S2). Bioinformatics Open Days, Universidade do Minho, Braga, Portugal, March 15-16, 2018. (Oral Presentation).

Lito L, Fonseca A, Pereira F, Monteiro C, Rodrigues A, Melo Cristino J. 2018. Actividade de Ceftolozano-tazobactam contra estirpes multi-resistentes de *Pseudomonas aeruginosa* isoladas no Centro Hospitalar Lisboa Norte (CHLN). 23rd Infection and Sepsis Symposium, Porto, Portugal, March 7-9, 2018.

Internationalisation

Collaboration in shotgun metagenomics for clinical diagnostics with Dr. John Rossen, Head of the Molecular Unit and Principal Investigator Genomics for Infection Prevention, Department of Medical Microbiology, University of Groningen, University Medical Center Groningen.

Participation as experts in the ECDC-EFSA ad hoc working group “Technical support to collect and analyse whole genome sequencing (WGS) data in the joint ECDC-EFSA molecular typing database”.

Advanced Teaching

Carricho JA, Friães A, Hänscheid T, Melo Cristino J, Pinho M, Ramirez M, Silva-Costa C. Organisers and lecturers of the second cycle course of Clinical Microbiology and Emerging Infectious Diseases, Faculty of Medicine, University of Lisbon, Lisbon, Portugal.

Friães A, Hänscheid T, Melo Cristino J, Pinho M, Ramirez M, Silva-Costa C. Participation on the second cycle course of Microbiology (responsible for the course on Medical Microbiology) of Instituto Superior Técnico, University of Lisbon in collaboration with Faculty of Medicine, Faculty of Sciences and Faculty of Veterinary Medicine, University of Lisbon, Lisbon, Portugal.

Carricho JA. Participation on the second cycle course of Computational Biology/Bioinformatics for Master and PhD programmes (responsible for the module on Molecular Phylogenetics) of Instituto Superior Técnico, University of Lisbon in collaboration with the Faculty of Medicine, University of Lisbon, Lisbon, Portugal.

MSc Thesis Completed

Mariana Isabel Pinto Ferreira, 26/10/2018, “Genomic characterization and quantification of virulence factor activities in *Streptococcus pyogenes* isolated from human infections”, Mestrado em Microbiologia, Instituto Superior Técnico, Universidade de Lisboa. Supervisor: Ana Friães. Co-supervisor: Isabel Sá-Correia.

Joana Rita Sebastião Ferreira da Costa, 08/11/2018, “Molecular Epidemiology of Skin and Soft Tissue Infections by *Streptococcus agalactiae* in Portugal (2005-2016)”, Mestrado em Microbiologia, Instituto Superior Técnico, Universidade de Lisboa. Supervisor: Elisabete Martins. Co-supervisor: Isabel Sá-Correia.

Lúcia Marques Prados, 15/11/2018, “Characterization of *Streptococcus pneumoniae* associated with invasive disease in children in Portugal (2015-2017)”. Mestrado em Microbiologia, Instituto Superior Técnico, Universidade de Lisboa. Supervisor: Catarina Silva Costa. Co-supervisor: Jorge Leitão.

Ana Teresa Fernandes Alegre Branco, 12/11/2018, “Effect of underlying metabolic diseases, diet and metabolites on the growth of blood stage parasites: *Plasmodium falciparum*”, Mestrado em Microbiologia, Instituto Superior Técnico, Universidade de Lisboa. Supervisor: Thomas Hänscheid. Co-supervisor: Arsénio Fialho.

PhD Thesis Completed

Catarina Teresa Condinho Pato, 14/12/2018, “Naturally occurring mutations in regulatory proteins among *Streptococcus pyogenes* isolates from distinct human infections”, Doutoramento em Ciências e Tecnologias da Saúde, especialidade em Microbiologia, Faculty of Medicine, University of Lisbon. Supervisor: M. Ramirez.

Miguel Castanho Lab

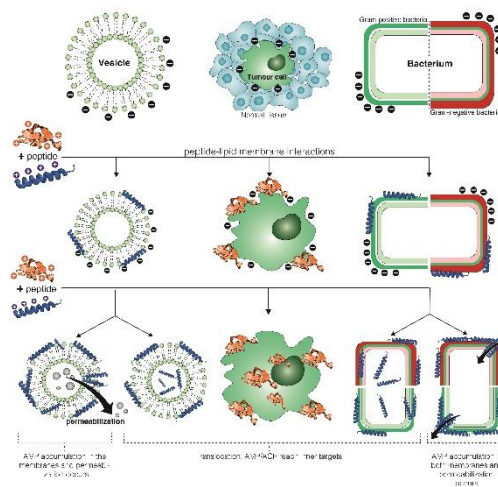
Major Interests / Objectives

There are many biological processes that depend on the interaction between peptides/proteins and membrane lipids, such as viral fusion, molecular translocation across epithelia or innate immune defence. Some of these may be inspiring to develop innovative therapeutic tools. The goal of the Miguel Castanho Lab is to unravel the physical principles that govern lipid-peptide interactions, with implications in viral fusion (HIV, Zika and Dengue viruses are of particular interest), analgesia and translocation of the blood-brain barrier, as well as in the development of antimicrobial and anticancer drugs. We are interested not only in drug targets and drug discovery itself, but also in the molecular-level mechanism of action of efficient and safe drugs.

Head of Laboratory

Miguel A. R. B. Castanho, PhD, Full Professor

Graphical Abstract



Team

Abeda Hanif Haji Ahmad	Graduate	MSc Student (Started September)
Ana Filipa Daniel da Cruz	Master	PhD Student (Started March)
Ana Rosa Miranda dos Santos Silva Herdade	PhD	Senior Post-Doctoral Researcher
Ana Salomé Rocha Nascimento Veiga	PhD	Staff Scientist
Carla Íris Cadima Couto	PhD	Senior Post-Doctoral Researcher
Catalina Sierra Ramos	PhD	Visiting Researcher (Started April Left May)
Diana Maria Diez Gaspar	PhD	Senior Post-Doctoral Researcher

Diogo Alexandre de Mendonça	Master	PhD Student (Started March)
Filipa Dias de Oliveira	Master	PhD Student
Gregoire Jean-Baptiste Philippe	PhD Student	PhD Student (Started May Left July)
Iara Sofia Mota Lima da Silva	Graduate	MSc Student (Started September)
Julia Michalina Skalska	Master	PhD Student
Liliana Faia Carvalho	Master	Administrative Technician
Mafalda Ferreira Manso	Other	BSc Student (Started January Left July)
Marco Calvinho Cavaco	Master	PhD Student
Sandra Isabel Rodrigues de Aguiar	PhD	Senior Post-Doctoral Researcher (Left November)
Sara Raquel Neves Coelho	Master	Lab Technician
Susana Filipa Almeida Dias	Master	PhD Student
Tiago Nascimento Figueira	Master	PhD Student
Vera Luísa Santos Neves	PhD	Senior Post-Doctoral Researcher

Laboratory Keywords / Research Areas

Drug discovery, Peptide, Antimicrobials/anticancer drugs, HIV, Dengue, Blood-brain barrier.

Major Scientific Achievements

In 2018, we have:

- Found the molecular determinants of self-assembly stability that determine *in vivo* efficacy of anti-measles peptide drugs. This work bridges biophysics studies at molecular scale to *in vivo* pharmacodynamics in a thorough interdisciplinary approach.
- Proven the concept that tandem cell-penetrating/drug peptides are valuable antiviral tools.
- Unravalled potent membrane-targeting antibacterial peptides from rattlesnake venom.

Selected Publications

Figueira TN, Mendonça DA, Gaspar D, Melo MN, Moscona A, Porotto M, Castanho MARB, Veiga AS (2018). Structure-Stability-Function Mechanistic Links in the Anti-Measles Virus Action of Tocopherol-Derivatized Peptide Nanoparticles. *ACS Nano*, 12(10): 9855-9865. (IF: 13.709, Citations: 0. Source: Web of Science).

Pérez-Peinado C, Dias SA, Domingues MM, Benfield AH, Freire JM, Radis-Bapsta G, Gaspar D, Castanho MARB, Craik DJ, Henriques ST, Veiga AS, Andreu D (2018). Mechanism of bacterial membrane permeabilization of crotalidicin (Ctn) and its fragment Ctn[15-34], antimicrobial peptides from rattlesnake venom. *J. Biol. Chem.*, 293: 1536-1549. (IF: 4.010, Citations: 4. Source: Web of Science).

Figueira TN, Augusto MT, Rybkina K, Stelitano D, Noval MG, Harder OE, Veiga AS, Huey D, Alabi CA, Biswas S, Niewiesk S, Moscona A, Santos NC, Castanho MARB, Porotto M (2018). Effective in Vivo Targeting of Influenza Virus through a Cell-Penetrating/Fusion Inhibitor Tandem Peptide Anchored to the Plasma Membrane. *Bioconjugate Chemistry*, 29 (10): 3362-3376. (IF: 4.485, Citations: 1. Sources: Web of Science and Scopus).

Ongoing Research Projects

2018/2021: Seleção de fármacos líder anti-virus zika capazes de translocar as barreiras hemato-placentária e hemato-encefálica. Combinando péptidos translocadores inovadores e eficazes com novos antivirais para alcançar o vírus Zika através de barreiras. Coordinator: Carla Couto. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIA-VIR/29495/2017. Amount: € 239 302,82. Total Amount: € 239 302,82.

2016/2019: Peptides for blood-brain barrier transmigration and drug delivery - novel therapies for the central nervous system. Coordinator: Vera Neves. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BBB-NAN/1578/2014. Amount: € 140 090,00. Total Amount: € 190 090,00.

2016/2019: Towards the development of innovative highly effective dual action anti-HIV peptides. Coordinator: Ana Salomé Veiga. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/QEQ-MED/4412/2014. Amount: € 143 133,00. Total Amount: € 193 123,00.

2016/2019: Cell-cell communication in metastatic breast cancer: a control point that can lead to breast cancer treatment. Coordinator: Diana Gaspar. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BBB-BQB/1693/2014. Amount: € 187 151,00. Total Amount: € 187 151,00.

2015/2019: INPACT: Innovative peptides against cancer and pathogenic bacteria, with advances in science, biopharmaceutical drug development, product market targeting, training, and communication. Coordinator: Miguel Castanho. Funding Agency: European Commission. Reference: MSCA RISE 644167. Amount: € 463 500,00. Total Amount: € 1 390 500,00.

Other Projects

2018/2021: ADC1.1: Desenvolvimento de uma nova classe de moléculas de conjugados de anticorpos para o tratamento do cancro. Coordinator: Frederico Aires-Silva. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: ADC1.1 - LISBOA-01-0145-FEDER-032085. Amount: € 12 500,00. Total Amount: € 239 638,46.

2018/2021: Validação polifásica de péptidos antimicrobianos como tratamento alternativo para infeções do pé diabético. Coordinator: Manuela Oliveira. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/SAU-INF/28466/2017. Amount: € 5 765,20. Total Amount: € 239 655,75.

2018/2021: Dadores de gasotransmissores NO e H₂S terapêuticos baseados em materiais nanoporosos. Coordinator: Moisés Pinto. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MED-QUI/28721/2017. Amount: € 6 000,00. Total Amount: € 227 943,25.

2018/2021: Fighting Zika virus with antiviral peptides and conjugates translocating blood-placental and blood-brain barriers. Coordinator: David Andreu Martinez. Funding Agency: Fundación Bancaria "la Caixa". Reference: NOZIKA project. Amount: € 254 650,00. Total Amount: € 777 250,00.

2018/2021: Combinando métodos computacionais e experimentais para obter uma caracterização genérica dos péptidos de fusão de vírus. Coordinator: Diana Lousa. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/CCI-BIO/28200/2017. Amount: € 54 975,00. Total Amount: € 239 648,06.

2016/2019: Alzheimer3D: Trifunctional Conjugates for the Selective Drug Delivery in Alzheimer's Disease. Coordinator: Rudi Oliveira. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/QEQ-MED/5512/2014. Amount: € 12 000,00. Total Amount: € 198 364,00.

2016/2019: Overcoming the Brain Drug Delivery Bottleneck: Development of single domain antibodies for brain targeting and drug delivery across the Blood-Brain Barrier. Coordinator: Frederico Aires-Silva. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BBB-BIO/0508/2014. Amount: € 19 800,00. Total Amount: € 192 320,00.

2015/2020: Engineering protease-resistant alpha-beta for broad-spectrum antivirals. Coordinator: Nuno Santos. Funding Agency: National Institute of Health. Reference: 5R01AI114736. Amount: € 300 000,00. Total Amount: € 1 225 000,00.

Publications in Peer Review Journals

Avram S, Milac A, Borcan L., Mihailescu D, Borcan F, Castanho M (2018) Designing of Artificial Peptides for an Improved Antiviral Activity. *Current Proteomics* 15, 258-266. (IF: 0.606, Citations: 0. Sources: Web of Science and Scopus).

Cavaco M, Castanho MARB, Neves V (2018). Peptibodies: An elegant solution for a long-standing problem. *Peptide Science*, 110: e23095. DOI: 10.1002/bip.23095. (Publication has been chosen to be highlighted in the cover of the journal). (IF:--, Citations: 2. Source: Web of Science and Scopus).

Figueira TN, Augusto MT, Rybkina K, Stelitano D, Noval MG, Harder OE, Veiga AS, Huey D, Alabi CA, Biswas S, Niewiesk S, Moscona A, Santos NC, Castanho MARB, Porotto M (2018). Effective in Vivo Targeting of Influenza Virus through a Cell-Penetrating/Fusion Inhibitor Tandem Peptide Anchored to the Plasma Membrane. *Bioconjugate Chemistry*, 29 (10): 3362-3376. (IF: 4.485, Citations: 1. Sources: Web of Science and Scopus).

Figueira TN, Mendonça DA, Gaspar D, Melo MN, Moscona A, Porotto M, Castanho MARB, Veiga AS (2018). Structure-Stability-Function Mechanistic Links in the Anti-Measles Virus Action of Tocopherol-Derivatized Peptide Nanoparticles. *ACS Nano*, 12(10): 9855-9865. (IF: 13.709, Citations: 0. Sources: Web of Science and Scopus).

Mathieu C, Porotto M, Figueira TN, Horvat B, Moscona A (2018). Fusion Inhibitory Lipopeptides Engineered for Prophylaxis of Nipah Virus in Primates. *The Journal of Infectious Diseases*, 218 (2): 218-227. (IF: 5.186, Citations: 2. Sources: Web of Science and Scopus).

Real E, Rodrigues L, Cabal GG, Enguita FJ, Mancio-Silva L, Mello-Vieira J, Beatty W, Vera IM, Zuzarte-Luís V, Figueira TN, Mair GR, Mota MM (2018). Plasmodium UIS3 sequesters host LC3 to avoid elimination by autophagy in hepatocytes. *Nature Microbiology*, 3 (1): 17-25. (IF: 14.174, Citations: 8. Sources: Web of Science and Scopus).

Pérez-Peinado C, Dias SA, Domingues MM, Benfield AH, Freire JM, Radis-Bapsta G, Gaspar D, Castanho MARB, Craik DJ, Henriques ST, Veiga AS, Andreu D (2018). Mechanism of bacterial membrane permeabilization of crotalictidin (Ctn) and its fragment Ctn[15-34], antimicrobial peptides from rattlesnake venom. *Journal of Biological Chemistry*, 293: 1536-1549. (IF: 4.011, Citations: 4. Sources: Web of Science and Scopus).

Other International Publications

Alves P, Carvalho S.B., Freire J.M., Silva R., Moleirinho M.G., Cunha B., Moreira A.S., Monteiro F., Gaspar D., Castanho M.A.R.B., Bernardes G.J.L., Wheatley D., Welsh J., Gantier R., Xenopoulos A., Alves P.M., Peixoto C., and Carrondo M.J.T, "Novel downstream process and analytical tools developed for Influenza VLP vaccine" in "Cell Culture Engineering XVI", A. Robinson, PhD, Tulane University R. Venkat, PhD, MedImmune E. Schaefer, ScD, J&J Janssen Eds, ECI Symposium Series, (2018). <http://dc.engconfintl.org/ccexvi/91>

Oliveira FD, Castanho MARB, Gaspar D (2018). Bacteriocins as Anticancer Peptides: A Biophysical Approach. *Microbial Infections and Cancer Therapy*, Pan Stanford Publishing, 387-409.

Invited Lectures and Seminars

Veiga AS, Pinto SN, Dias SA, Mil-Homens D, Fernandes F, Valle J, Andreu D, Prieto M, Castanho MARB, Coutinho A. Unravelling the antibiofilm activity and mechanism of action of pepR. 16th Iberian Peptide Meeting, Barcelona, Spain, February 5-7, 2018.

Veiga AS, Pinto SN, Dias SA, Mil-Homens D, Fernandes F, Valle J, Andreu D, Prieto M, Castanho MARB, Coutinho A. Unravelling the activity and mechanism of action of pepR, a viral-derived membrane-active peptide, against *Staphylococcus aureus* biofilms. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018.

Castanho MARB. Hidden functions in the capsid protein of Dengue Virus: Biological relevance and drug development opportunities. CIISA Congress 2018 – Exploring the boundaries of animal, veterinary and biomedical sciences, School of Veterinary Medicina, University of Lisbon, Lisbon, Portugal, November 16, 2018.

Castanho MARB. Bioquímica física de fármacos. Let's talk about science. School of Pharmacy, University of Lisbon, Lisbon, Portugal, December 11, 2018.

Communications in International Conferences

Aguiar SI, Gaspar MM, André A, Carvalheiro M, Neves V, Coelho S, Dias J, Carrapiço B, Gano L, Galamba J, Nobre R, Almeida L, Tavares L, Gonçalves J, Castanho MARB, Aires-da-Silva F. "Immunoliposomes for brain targeting and drug delivery". 2018. XII Spanish-Portuguese Conference on Controlled Drug Delivery, Coimbra, Portugal, January 14-16, 2018. (Poster Presentation).

Belo R, Gomes J, Vaz SH, Perez-Peinado C, Valle J, Andreu D, Sebastião A, Neves V, Castanho M, Diógenes MJ. Deciphering the effects of Kyotorphin on the brain. SynaNet H2020 - Second Annual Scientific Meeting, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, January 17-18, 2018. (Poster Presentation).

Cavaco M, Neves-Coelho S, Pérez-Peinado C, Gaspar D, Andreu D, Castanho MARB, Neves V. The Effect of Fluorophores on Peptide Properties. 16th Iberian Peptide Meeting & 4th ChemBio Group Meeting, Barcelona, Spain, February 5-7, 2018. (Poster Presentation).

Neves, V. Novel Peptide delivery systems for Blood brain barrier translocation with a focus on Alzheimer's disease. 16th Iberian Peptide Meeting & 4th ChemBio Group Meeting, Barcelona, Spain, February 5-7, 2018. (Oral Presentation).

Oliveira FD, Figueira TN, Napoleão P, Freire JM, Veiga AS, Andreu S, Gaspar D, Castanho MARB. Exosomes as drug delivery systems in metastatic breast cancer. 16th Iberian Peptide Meeting & 4th ChemBio Group Meeting, Barcelona, Spain, February 5-7, 2018. (Oral and Poster Presentation).

Skalska J, Oliveira FD, Mello EO, López MR, Jimenez R, McNaughton-Smith G, Gomes VM, Gaspar D, Castanho MARB. Understanding the effects of plant defensin PvD1 on the exosome-mediated communication between breast cancer cells. 16th Iberian Peptide Meeting & 4th ChemBio Group Meeting, Barcelona, Spain, February 5-7, 2018. (Oral and Poster Presentation).

Cadima-Couto I, Freire JM, Cunha-Santos C, Gonçalves J, Andreu D, Castanho MARB, Veiga AS. A New Highly Effective Anti-HIV-Peptide. 16th Peptide Meeting, Barcelona, Spain, February 5-7, 2018. (Poster Presentation).

Cruz AF, Pinto SN, Freire JM, Coutinho A, Andreu D, Castanho MARB, Veiga AS. Searching for short and effective antimicrobial peptides against *Staphylococcus aureus* biofilms. 16th Peptide Meeting, Barcelona, Spain, February 5-7, 2018. (Poster Presentation).

Dias SA, Freire JM, Pérez-Peinado C, Domingues MM, Gaspar D, Vale N, Gomes P, Andreu D, Henriques ST, Castanho MARB, Veiga AS. Novel membrane-targeting antibacterial peptides derived from viral capsid proteins. 16th Peptide Meeting, Barcelona, Spain, February 5-7, 2018. (Oral Presentation).

Oliveira FD, Figueira TN, Napoleão P, Freire JM, Veiga AS, Andreu S, Castanho MARB, Gaspar D. Developing exosome-based drug delivery systems for targeting breast cancer brain metastases. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018. (Poster Presentation).

Pinto SN, Dias SA, Mil-Homens D, Fernandes F, Andreu D, Castanho MARB, Prieto M, Coutinho A, Veiga AS. Studying the antibiofilm properties of the peptide pepR using a biophysical approach. Biofilms 8, Aarhus, Denmark, May 27-29, 2018. (Poster Presentation).

Belo R, Fonseca-Gomes J, Miranda HV, Outeiro TF, Sebastião A, Neves V, Castanho M, Diógenes MJ. Amidated-Kyotorphin as a neuroprotective drug for Alzheimer's Disease. Alzheimer Symposium, Technopolis, University of Eastern Finland, Kuopio, Finland, June 2018. (Poster Presentation).

Skalska J, Oliveira FD, Figueira TN, Mello EO, Gomes VM, McNaughton-Smith G, Castanho MARB, Gaspar D. Targeting the exosome-mediated communication between breast cancer cells by plant defensin PvD1. Peptides and conjugates for tumor targeting, therapy and diagnosis - RiminiPeptides2018, Rimini, Italy, June 16-18, 2018. (Poster Presentation).

Neves V, Aires da Silva F, Morais M, Gano L, Aguiar S, Miranda HV, Gaspar D, Corte-Real S, Correia JDG, Castanho MARB. Novel Peptide delivery systems for Blood brain barrier translocation with a focus on Alzheimer's disease. Barriers of the CNS - Gordon Research Conference, Colby-Sawyer College, New London, USA, June 17-22, 2018. (Poster Presentation).

Belo R, Fonseca-Gomes J, Vaz SH, Sebastião A, Neves V, Castanho M, Diógenes MJ. Effects of Kyotorphin and Amidated-kyotorphin in the Brain. 11th FENS Forum of Neuroscience, Berlin, Germany, July 7-11, 2018. (Poster Presentation).

Neves V, Aires da Silva F, Morais M, Gano L, Miranda HV, Corte-Real S, Correia JDG, Castanho MARB. Trans-Blood brain barrier peptides to enhance delivery of therapeutic molecules to treat Alzheimer's disease. (P153). 35th European Peptide Symposium, Dublin City University, Dublin, Ireland, August 26-31, 2018. (Poster Presentation).

Pinto SN, Dias SA, Cruz AF, Mil-Homens D, Fernandes F, Valle J, Andreu D, Prieto M, Castanho M, Coutinho A, Veiga AS. Activity of the viral-derived peptide pepR against *Staphylococcus aureus* biofilms and insights into the mechanism of action. 35th European Peptide Symposium, Dublin City University, Dublin, Ireland, August 26-31, 2018. (Oral Presentation).

Pinto SN, Dias SA, Cruz AF, Mil-Homens D, Fernandes F, Valle J, Andreu D, Prieto M, Castanho MARB, Coutinho A, Veiga AS. Unravelling the antibiofilm mechanism of action of the viral-derived membrane-active peptide pepR. ESCMID/ASM Conference on Drug Development to Meet the Challenge of Antimicrobial Resistance, Lisbon, Portugal, September 4-7, 2018. (Poster Presentation).

Belo R, Fonseca-Gomes J, Miranda HV, Outeiro TF, Sebastião A, Neves V, Castanho M, Diógenes MJ. The neuroprotective role of Amidated-Kyotorphin on Alzheimer's Disease pathophysiology. Neuroscience 2018 - Society for Neuroscience Meeting, San Diego, USA, November 3-7, 2018. (Poster Presentation).

Figueira T, Mendonça DA, Gaspar D, Melo M, Porotto M, Castanho MARB, Veiga AS. Structure-Stability-Function mechanistic links in anti-measles virus action of tocoferol-derivatized peptide nanoparticles. 8th Peptide Engineering Meeting, Berlin, Germany, November 8-10, 2018. (Poster Presentation).

Gaspar D, Figueira TN, Oliveira FD, Almeida I, Mello EO, Gomes VM, Castanho MARB. Challenging breast cancer brain metastases formation with the plant defensin PvD1. NanoBio&Med 2018 Conference, Barcelona, Spain, November 20-22, 2018. (Poster Presentation).

Fuzeta MA, Pinto D, Oliveira FD, Rodrigues ACV, Fernandes-Platzgummer A, Jung SH, Lee B, Bernardes N, Gaspar D, da Silva CL, Cabral JMS. Manufacturing Human Mesenchymal Stem/stromal Cells and Derived Extracellular Vesicles in Single-Use Vertical-Wheel Bioreactors. 1st International Symposium Secretome With]Out[Borders, Braga, Portugal, December 6-7, 2018. (Poster Presentation).

Neves V. Peptide-conjugates to overcome the Blood-Brain Barrier (BBB). RISE-INPACT Workshop – Innovative approaches in targeted therapies: Brain, Infections and Cancer, Lisbon, Portugal, December 13-14, 2018. (Oral Presentation).

Oliveira FD. Fighting breast cancer with the natural defensin PvD1: targeting cancer cells and preventing brain metastases formation. RISE-INPACT Workshop – Innovative approaches in targeted therapies: Brain, Infections and Cancer, Lisbon, Portugal, December 13-14, 2018. (Oral Presentation).

Skalska J. Towards unravelling the mechanism of anti-cancer activity of PvD1 – Are we able to mimic the nature by chemical synthesis? RISE-INPACT Workshop – Innovative approaches in targeted therapies: Brain, Infections and Cancer, Lisbon, Portugal, December 13-14, 2018. (Oral Presentation).

Communications in National Conferences

Belo R, Fonseca-Gomes J, Vaz SH, Perez-Peinado C, Valle J, Andreu D, Sebastião A, Neves V, Castanho M, Diógenes MJ. Elucidating the effects of kyotorphin on the brain. XLVIII Reunião Anual da Sociedade Portuguesa de Farmacologia, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, February 4-6, 2018. (Oral Presentation).

Belo R, Fonseca-Gomes J, Sebastião A, Neves V, Castanho M, Diógenes MJ. Neuroprotective effect of amidated-Kyotorphin. XII CAML PhD Student Meeting, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Oliveira FD, Figueira TN, Napoleão P, Freire JM, Veiga AS, Andreu S, Castanho MARB, Gaspar D. The interaction between exosomes and a cell-penetrating peptide as a potential drug delivery system for metastatic breast cancer. XII CAML PhD Student Meeting, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Skalska J, Oliveira FD, Figueira TN, Mello EO, Gomes VM, McNaughton-Smith G, Castanho MARB, Gaspar D. Targeting the exosome-mediated communication between breast cancer cells by plant defensin PvD1. XII CAML PhD Student Meeting, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Cavaco M, Gaspar D, Andreu D, Castanho MARB, Neves V. Peptide-conjugate to target brain metastases. (L&H. P13). 3rd Meeting of the Colégio de Química da Universidade de Lisboa (CQUL), Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Oliveira FD, Figueira TN, Napoleão P, Freire JM, Veiga AS, Andreu S, Castanho MARB, Gaspar D. The interaction between exosomes and a cell-penetrating peptide as a potential drug delivery system for metastatic breast cancer. Lisbon Biophysics Networking Meeting: From Protein Dynamics to Membrane Biophysics, Lisbon, Portugal, October 12, 2018. (Poster Presentation).

Belo R, Fonseca-Gomes J, Miranda HV, Outeiro TF, Sebastião AM, Neves V, Castanho M, Diógenes MJ. The neuroprotective action of Amidated-kyotorphin on Alzheimer's Disease. 32^a Reunião do Grupo de Estudos de Envelhecimento Cerebral e Demência, Fundação Cidade de Lisboa, Lisbon, Portugal, October 12-13, 2018. (Oral Presentation).

Belo R, Fonseca-Gomes J, Miranda HV, Outeiro TF, Sebastião AM, Neves V, Castanho M, Diógenes MJ. A new insight about Amidated-Kyotorphin on Alzheimer's Disease therapy. 4th PhD Students Meeting of the Mind-Brain College. Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Oral Presentation).

Organisation of Conferences

Castanho MARB. Scientific Committee Member and Session Chair. 16th Iberian Peptide Meeting/4th ChemBio Group Meeting, Barcelona, Spain, February 5-7, 2018.

RISE-INPACT Workshop – Innovative approaches in targeted therapies: Brain, Infections and Cancer, Lisbon, Portugal, December 13-14, 2018.

Internationalisation

Our expertise is the development and application of tailored biophysical techniques to dissect the molecular mechanisms of action of membrane-active peptides directly in viruses, bacteria or cells so that innovative drugs and therapeutic tools can be devised. Peptides are from three sources: i) Organic synthesis, for which we have long standing collaborations with leading reference labs in Spain, ii) Natural products, for which we have collaborations in Brazil, the country with the most diverse biome on Earth, and iii) Pharma products during development phase. Molecular virology studies are carried out in collaboration with two international renowned researchers in the field in Brazil and USA.

Using a judicious network of complementary collaborations, we streamline our activity from innovative molecules to effective applications.

It is worth highlighting that the Miguel Castanho Lab coordinates a H2020 project involving ten teams from five countries in three continents aimed at developing drug leads to fight bacteria and brain-targeted metastatic breast cancer.

Prizes, Honours and Awards

Castanho MARB. Invited to join the College of Expert Reviewers of ESF – European Science Foundation, December, 2018.

Oliveira FD. Prize for best Poster Presentation at the Lisbon Biophysics Networking Meeting: From Protein Dynamics to Membrane Biophysics, October 12, 2018.

Neves V. Dr. Bert L. Schram Award for best young investigator poster presentation (2nd place) at 35th European Peptide Symposium, Dublin City University, Dublin, Ireland, August 26-31, 2018. The prize was recognised by the European peptide society and the ESCOM Science Foundation.

Advanced Teaching

Silva-Herdade AS. Intravital microscopy – a tool to study inflammation. LisbonBioMed PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 29-30, 2018.

Gaspar D. Seminar. Anticancer Peptides. LisbonBioMed PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 30, 2018.

Cadima-Couto I. Lecturer. Antiviral Peptides. LisbonBioMed PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 31, 2018.

Neves V. Overcoming the blood-brain barrier to treat brain diseases. LisbonBioMed PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 2018.

Gaspar D. Cell-to-Cell Communication as a Control Point in Metastatic Breast Cancer. Seminar in Integrated Master in Biological Engineering (MIEB), Instituto Superior Técnico, Lisbon, Portugal, June 9, 2018.

Gaspar D. Participation at the TwinnToInfect Scientific Ethics Summer School, Caparica, Portugal, September 17-20, 2018.

Neves V. Blood Brain barrier: Challenges to develop new therapeutic tools to act in the brain. Masters in Neurosciences, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, September 2018.

Gaspar D. Cell-to-Cell Communication as a Control Point in Metastatic Breast Cancer. Seminar in Master Course in Biopharmaceutical Sciences, Faculdade de Farmácia, Lisbon, Portugal, November 7, 2018.

Science and Society

Castanho MARB. Invited speaker in the public debate “The future of research in Portugal”, ANBIOQ – National Association of Biochemists, IV National Meeting of Biochemists, Lisbon, Portugal, February 24, 2018.

Castanho MARB. “Science and University teaching: the unavoidable convergence” (in Portuguese), Opinion article in the newspaper Diário de Notícias, June 26, 2018.

Castanho MARB. “Science in Portugal” (in Portuguese), Opinion article in the magazine Visão, August 2, 2018.

Castanho MARB. “Communicating Science: the change of times and wills” (in Portuguese), Opinion article in the magazine Visão, September 26, 2018.

Castanho MARB. Invited speaker for the panel discussion “Science in the City: How does it transform our lives?”, Promotion of Scientific Activities at Noite Europeia dos Investigadores - Cidades do Futuro e Património Cultural, Lisbon, Portugal, September 28, 2018.

Oliveira FD, Cavaco M, Gaspar D. Uma cidade chamada “Célula”. Promotion of Scientific Activities at Noite Europeia dos Investigadores - Cidades do Futuro e Património Cultural, Lisbon, Portugal, September 28, 2018.

Castanho MARB. “Will flu kill again like it did 100 years ago?” (in Portuguese), Outreaching article in the magazine Visão Saúde, Page 105, October 2018.

Castanho MARB. Invited speaker for the panel discussion “Challenges in developing new antibiotics”, School of Pharmacy, University of Lisbon, Drug Discovery and Development meeting, November 20, 2018.

MSc Thesis Completed

Carolina Brites Ramos, 27/12/2018, Numerical Simulations of Atherosclerotic Plaque Growth Using Experimental Data, University of Lisbon. Supervisor: Jorge Tiago (IST, UL). Co-Supervisor: Ana S. Silva-Herdade.

PhD Thesis Completed

Juliana Perazzo, 23/01/2018, Kyotorphin and its derivatives: Unveiling routes and targets, University of Lisbon. Supervisor: Vera Neves.

Miguel Prudêncio Lab

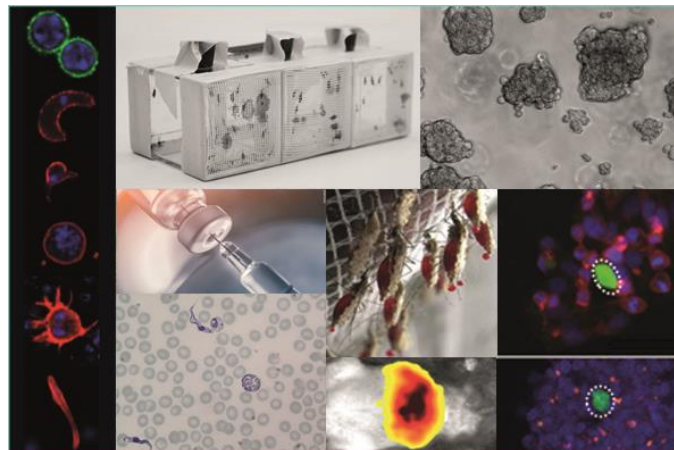
Major Interests / Objectives

The combat against malaria, an infectious disease caused by *Plasmodium* parasites that exerts a particularly heavy burden in the poorest regions of the globe, constitutes not only a major scientific challenge but also a moral and social imperative. The Prudêncio Lab's Mission is to contribute to the combat against this deadly disease. To this end, the Lab aims to harness the hepatic stage of *Plasmodium* infection to develop new anti-plasmodial intervention strategies. We are interested in elucidating novel aspects of the biology of *Plasmodium* infection of liver cells, unveiling novel host-parasite interactions, understanding co-infections between *Plasmodium* and other parasites, and developing new drug- and vaccine-based anti-malarial strategies.

Head of Laboratory

Miguel Prudêncio, PhD

Graphical Abstract



Team

Adriana Beatriz Oliveira Temporão	Master	PhD Student (Started July)
Amanda Fabra Garcia	PhD	Trainee (Started June Left June)
Américo José dos Santos Alves	Master	PhD Student
Ana Filipa Gonçalves Teixeira	Master	Lab Technician
Ana Margarida Roque Sanches Vaz	Master	PhD Student
Andreia Cunha Barreto	Graduate	MSc Student (Started September)
António Manuel Barbeiro Mendes	PhD	Senior Post-Doctoral Researcher

Carolina dos Santos Vinagreiro	Master	PhD Student
Daniela Cristina de Henriques Brás	Graduate	MSc Student (Left October)
Denise Rodrigues Francisco	Master	Lab Technician
Diana Alves Moita	Graduate	MSc Student
Diana Marisa Pinto Freire Fontinha	PhD	Junior Post-Doctoral Researcher
Francisca Margarida Van-Dunem dos Reis	Master	PhD Student (Left June)
Francisca Maria de Andrade Terras Arez	Master	PhD Student
Helena Isabel Marques Nunes Cabaço	PhD	Senior Post-Doctoral Researcher
Joana Filipa Pereira Romão	Graduate	MSc Student (Started July Left July)
Jorge Henrique Ferreira Grilo	Master	PhD Student
Katerina Breiterová	Master	PhD Student (Started January Left June)
Leyre Pernaute Lau	Master	PhD Student (Started October Left December)
Patrícia dos Santos Meireles	PhD	Junior Post-Doctoral Researcher
Pedro Gil Gameiro Eloy Sena Rego	Master	PhD Student
Rafael Alexandre Carvalho Luis	Graduate	MSc Student (Left September)
Rafael Costa de Sousa	Graduate	MSc Student
Raquel Alves de Azevedo	Master	PhD Student
Teresa Gonçalves Carreira Maia	Graduate	MSc Student (Started July)

Laboratory Keywords / Research Areas

Malaria, *Plasmodium*, Vaccines, Host-pathogen interactions, Hepatic infection, Co-infections, Anti-plasmodial drugs.

Major Scientific Achievements

Among other scientific findings, we have established the pre-clinical proof-of-concept of a new vaccination strategy against malaria based on the use of rodent *Plasmodium berghei* sporozoites genetically modified to express antigens of the human-infective *P. falciparum*. We subsequently validated the safety of *PbVac*, the first malaria vaccine candidate of this type, for human use. We have further carried out the first-in-human evaluation of *PbVac* in Phase I/IIa clinical trials, establishing the vaccine's potent biological effect against a challenge with *P. falciparum*.

Additionally:

- International patent application (IPA) on our novel vaccination strategy against malaria was granted in Europe and Hong-Kong;
- Two new IPAs were filed, one on a new 3D cell platform for drug screening assays, and another on a new class of compounds with anti-plasmodial activity;
- We engaged in science outreach activities, dedicated to youngsters and to the general public;

- We had several media appearances in relation to our scientific activities.

Kumar M, Okombo J, Mambwe D, Taylor D, Lawrence N, Reader J, Watt MV, Fontinha D, Sanches-Vaz M, Bezuidenhout B, Lauterbach S, Liebenberg D, Birkholtz LM, Coetzer TL, Prudêncio M, Egan TJ, Wittlin S, Chibale K (2018). Multistage Antiplasmodium Activity of Astemizole Analogues and Inhibition of Hemozoin Formation as a Contributor to Their Mode of Action. *ACS Infect Dis.* 2019 Feb 8;5(2):303-315. doi: 10.1021/acsinfecdis.8b00272. Epub 2019 Jan 7. (IF: 4.325, Citations: 0. Sources: Web of Science and Scopus).

Selected Publications

Machado M, Sanches/Vaz M, Cruz JP, Mendes AM, Prudêncio M (2017). Inhibition of Plasmodium hepatic infection by antiretroviral compounds. *Front. Cell. Infect. Microbiol.* DOI: 10.3389/fcimb.2017.00329. (IF: 4.3, Citations: 3. Source: Web of Science and Scope).

Azevedo R, Markovic M, Machado M, Franke/Fayard B, Mendes AM, Prudêncio M (2017). A bioluminescence method for in vitro screening of Plasmodium transmission-blocking compounds. *Antimicrob. Agents Chemother.* 61: 202699. (IF: 4.302, Citations: 4. Source: Web of Science and Scope).

Cunha CS, Nyboer B, Heiss K, Sanches-Vaz M, Fontinha D, Wiedtke E, Grimm D, Przyborski JM, Mota MM, Prudêncio M, Mueller AK (2017). P. berghei EXP-1 Interacts with Host Apolipoprotein H during Plasmodium Liver Stage Development. *Proc. Natl. Acad. Sci. USA* 114: E1138. (IF: 9.661, Citations: 5. Source: Web of Science and Scope).

Mendes AM, Albuquerque IS, Machado M, Pissarra J, Meireles P, Prudêncio M (2017). Inhibition of Plasmodium liver infection by ivermectin. *Antimicrob. Agents Chemother.* 61: e02005-16. (IF: 4.302, Citations: 9. Source: Web of Science and Scope).

Meireles P, Sales-Dias J, Andrade CM, Mello-Vieira J, Mancio-Silva L, Simas JP, Staines HM, Prudêncio M (2017) "GLUT1-mediated glucose uptake plays a crucial role during Plasmodium hepatic infection", *Cell. Microbiol.*, 19(2): e12646 (IF: 4.41, Citations: 11. Source: Web of Science and Scope).

Liehl P, Meireles P, Albuquerque IS, Pinkevchy M, Baptista F, Mota MM, Davenport MP, Prudêncio M (2015). "Innate immunity induced by Plasmodium liver infection inhibits malaria reinfections", *Infection and Immunity*, 83: 1172-1180 (IF: 3.256, Citations: 16. Source: Web of Science and Scope).

Ongoing Research Projects

2018/2021: Estratégias para o desenvolvimento e melhoramento de vacinas de organismos inteiros contra a malária. Coordinator: Miguel Prudêncio. Funding Agency: Fundação para a Ciência e Tecnologia. Reference: SporoMalVac LISBOA-01-0145-FEDER- 029550. Amount: € 215 464,63. Total Amount: € 234 214,63.

2018/2021: Uma estratégia multialvo para atuar em todas as fases do ciclo de vida do *Plasmodium*. Coordinator: Miguel Prudêncio. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MED-QUI/30021/2017. Amount: € 25 000,00. Total Amount: € 239 873,31.

2017/2018: Production and maintenance of Plasmodium-infected mosquitoes. Coordinator: Miguel Prudêncio. Funding Agency: Merck. Amount: € 112 000,00. Total Amount: € 112 000,00.

2017/2018: A P. berghei-based malaria vaccine. Coordinator: Miguel Prudêncio. Funding Agency: Malaria Vaccine Initiative. Reference: MVI II. Amount: € 49 457,00. Total Amount: € 49 457,00.

2016/2019: Improving whole-organism vaccines against malaria by genetic modification. Coordinator: António Mendes. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BBB-BMD/2695/2014. Amount: € 197 648,00. Total Amount: € 197 648,00.

Other Projects

2016/2018: TwinnToInfect: Unleash iMM's research excellence in immunity and infection through twinning to infect Lisbon and Portugal with its increase in competitiveness and innovation. Coordinator: Maria Manuel Mota. Funding Agency: European Commission. Reference: TWINNING 692022. Amount: € 893 500,00. Total Amount: € 999 996,25.

Publications in Peer Review Journals

Aguiar L, Machado M, Sanches-Vaz M, Prudêncio M, Vale N, Gomes P (2018). Coupling the cell-penetrating peptides Transportan and Transportan 10 to primaquine enhances its activity against liver-stage malaria parasites. *MedChemComm*, [Epub ahead of print]. (IF: 2.342, Citations:--. Source: Web of Science).

Mayoka G, Njoroge M, Okombo J, Gibhard L, Sanches-Vaz M, Fontinha D, Birkholtz LM, Reader J, van der Watt M, Coetzer TL, Lauterbach S, Churchyard A, Bezuidenhout B, Egan TJ, Yeates CL, Wittliln S, Prudêncio M, Chibale K (2018). Structure-activity relationship studies and Plasmodium life cycle profiling identifies pan-active N-aryl-3-trifluoromethyl pyrido[1,2-a]benzimidazoles which are efficacious in an in vivo mouse model of malaria. *Journal of Medicinal Chemistry*, [Epub ahead of print]. (IF: 6.253, Citations: 0. Sources: Web of Science and Scopus).

Mendes AM, Reulin IJ, Andrade CM, Otto TD, Machado M, Teixeira F, Pissara J, Gonçalves-Rosa N, Bonaparte D, Sinfrônio J, Sanders M, Janse CJ, Khan SM, Newbold CI, Berriman M, Lee C, Wu Y, Ockenhouse CF, Sauerwein RW, Prudêncio M (2018). Pre-Clinical Evaluation of a *P. berghei*-Based Whole-Sporozoite Malaria Vaccine Candidate. *NPJ Vaccines*, 3: 54. (IF: 3.143, Citations: 0. Sources: Web of Science and Scopus).

Beus M, Džolić ZR, Maysinger D, Mlinarić Z, Antunović M, Marijanović I, Fontinha D, Prudêncio M, Held J, Olgen S, Zorc B (2018). SAHAquines, novel hybrids based on SAHA and primaquine motifs, as potential cytostatic and antiplasmodial agents. *ChemistryOpen*, 7: 624-638. (IF: 2.801, Citations: 0. Sources: Web of Science and Scopus).

Mendes AM, Machado M, Gonçalves-Rosa N, Reuling IJ, Foquet L, Marques C, Salman AM, Yang ASP, Moser KA, Dwivedi A, Hermsen CC, Jiménez-Díaz B, Viera S, Santos JM, Albuquerque I, Bhatia SN, Bial J, Angulo-Barturen I, Silva JC, Leroux-Roels G, Janse CJ, Khan SM, Mota MM, Sauerwein RW, Prudêncio M (2018). A Plasmodium berghei Sporozoite-Based Vaccination Platform against Human Malaria. *NPJ Vaccines*, 3: 33. (IF: 3.143, Citations: 1. Sources: Web of Science and Scopus).

Capela R, Malgalhães J, Miranda D, Machado M, Sanches-Vaz M, Albuquerque IS, Sharma M, Gut J, Rosenthal PJ, Frade R, Perry MJ, Moreira R, Prudêncio M*, Lopes F* (2018). Endoperoxide-8-aminoquinoline hybrids as dual-stage antimalarial agents with enhanced metabolic stability. *European Journal of Medicinal Chemistry*, 149: 69-78. (IF: 4.816, Citations: 1. Sources: Web of Science and Scopus).

Invited Lectures and Seminars

Prudêncio M. Pre-Clinical and Early Clinical Evaluation of a *Plasmodium berghei* Sporozoite-Based Malaria Vaccine. British Society for Parasitology Meeting 2018, Aberystwyth, United Kingdom, April 8-11, 2018.

Prudêncio M. Pre-Clinical and Early Clinical Evaluation of a *Plasmodium berghei* Sporozoite-Based Malaria Vaccine. DZIF Seminar Series on Malaria Cross Talk Between Field and Bench Research, Heidelberg University, Heidelberg, Germany, May 9, 2018.

Prudêncio M. Clinical Evaluation of a New Vaccine against Malaria. Gordon Research Conference on Biology of Host-Parasite Interactions 2018, Salve Regina University, Newport, USA, June 10-15, 2018.

Prudêncio M. Desenvolvimento e Avaliação Clínica de uma Nova Vacina Contra a Malária. Encontro Internacional de Inovação em Saúde do Distrito Federal, Brasília, Brazil, October 18-20, 2018.

Communications in International Conferences

Prudêncio M. Towards Clinical Evaluation of a New Malaria Vaccine. XII Spanish-Portuguese Conference on Controlled Drug Delivery, Coimbra, Portugal, January 14-16, 2018. (Oral Presentation).

Azevedo R, Markovic M, Machado M, Franke-Fayard B, Mendes AM, Prudêncio M. A bioluminescence method for in vitro screening of *Plasmodium* transmission-blocking compounds. TwinnToInfect Spring School on Infection and Immunity, Sesimbra, Portugal, March 20-22, 2018. (Poster Presentation).

Meireles P, Brás D, Mendes AM, Fontinha D, Andrade C, Prudêncio M. Mechanisms of inhibition of *Plasmodium* infection by targeted nutritional supplementation. TwinnToInfect Spring School on Infection and Immunity, Sesimbra, Portugal, March 20-22, 2018. (Poster Presentation).

Sanches-Vaz M, Mendes AM, Prudêncio M, Figueiredo LM. *Trypanosoma brucei* confers protection against *Plasmodium* liver infection. TwinnToInfect Spring School on Infection and Immunity, Sesimbra, Portugal, March 20-22, 2018. (Poster Presentation).

Fontinha D, Arez F, Rebelo S, Simão D, Martins T, Machado M, Carrondo M, Spangenberg T, Brito C, Greco B, Prudêncio M, Alvez PM. 3D hepatic models – an innovative platform for the screening of anti-plasmodial drugs. TwinnToInfect Spring School on Infection and Immunity, Sesimbra, Portugal, March 20-22, 2018. (Poster Presentation).

Rebelo S, Simão D, Arez F, Fontinha D, Machado M, Martins T, Carrondo M, Spangenberg T, Brito C, Greco B, Prudêncio M, Alves PM. A human 3D cell-based platform for drug screening of liver-stage *Plasmodium* infection. 7th MIM Pan African Malaria Conference, Dakar, Senegal, April 15-20, 2018. (Poster Presentation).

Rebelo S, Simão D, Arez F, Fontinha D, Machado M, Martins T, Carrondo M, Spangenberg T, Brito C, Greco B, Prudêncio M, Alves PM. A human 3D cell-based platform for drug screening of liver-stage *Plasmodium* infection. BioMalPar XIV 2018, EMBL, Heidelberg, Germany, May 23-25, 2018. (Poster Presentation).

Sanches-Vaz M, Mendes AM, Figueiredo LM, Prudêncio M. African *Trypanosomes* inhibit *Plasmodium* liver infection. BioMalPar XIV 2018, EMBL, Heidelberg, Germany, May 23-25, 2018. (Poster Presentation).

Meireles P, Mendes AM, Fontinha D, Brás D, Andrade C, Prudêncio M. Innate immune response against *Plasmodium* liver stage parasites is enhanced by targeted nutritional supplementation. 2nd Innate Immunity in Host-Pathogen Interactions, EMBL Advanced Training Centre, Heidelberg, Germany, June 24-27, 2018. (Poster Presentation).

Meireles P, Mendes AM, Fontinha D, Brás D, Andrade C, Prudêncio M. Innate immune response against *Plasmodium* liver stage parasites is enhanced by targeted nutritional supplementation. 29th Annual Molecular Parasitology (MPM) Meeting, Woods Hole, USA, September 9-13, 2018. (Poster Presentation).

Meireles P, Brás D, Mendes AM, Fontinha D, Andrade C, Prudêncio M. Innate immune response against *Plasmodium* liver stage parasites is enhanced by targeted nutritional supplementation. YES (Young European Scientist) Meeting 2018, Porto, Portugal, September 13-16, 2018. (Poster Presentation).

Reuling IJ, Mendes AM, de Jong GM, Fabra-García A, Nunes-Cabaço H, Lee C, Wu Y, King CR, Ockenhouse C, Birkett AJ, Koelewijn R, Yang A, van Hellemond JJ, Perry J.J. van Genderen, Sauerwein RW, Prudêncio M. Clinical safety and protective efficacy after immunization with genetically modified *Plasmodium berghei* sporozoites expressing *P. falciparum* – circumsporozoite protein in a Phase 1/2a trial. ASTMH 67th Annual Meeting, New Orleans, LA, USA, October 28-November 1, 2018. (Poster Presentation).

Communications in National Conferences

Prudêncio M. Clinical Evaluation of a New Vaccine against Malaria. IV Encontro Nacional de Estudantes de Biotecnologia, Covilhã, Portugal, March 23-26, 2018. (Oral Presentation).

Prudêncio M. *Plasmodium* Infection and Antimalarial Strategies. iMM Summit, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, November 16-17, 2018. (Oral Presentation).

Organisation of Conferences

Prudêncio M. Organiser. TwinnToInfect Summer School – A TwinnToInfect Event, Costa da Caparica, Portugal.

Internationalisation

The lab has an extensive network of collaborations with leading national and international researchers, including:

Kelly Chibale – University of Cape Town;

Peter Eaton - Faculty of Chemistry, Porto;

Thomas Hanscheid - Instituto de Medicina Molecular João Lobo Antunes;

Chris Janse and Shahid Khan - Leiden University;

Clemens Kocken - Biomedical Primate Research Centre, Rijswijk;

Rui Moreira, Francisca Lopes and Ana Ressurreição – Faculty of Pharmacy, Lisbon;

Ann-Kristin Mueller - University of Heidelberg;

Robert Sauerwein - University of Nijmegen;

Bogdan Solaja - Faculty of Chemistry, Belgrade;

Henry Staines and Sanjeev Krishna - St. George's University London;

Branka Zorc – University of Zagreb.

Prizes, Honours and Awards

Alves Moita D: Best Master Thesis Award. Instituto de Medicina Molecular João Lobo Antunes, November 2018.

Vaz M: Winner of Best Poster Award. BioMalPar XIV 2018, EMBL, Heidelberg, Germany, May 23-25, 2018.

Patents / Prototypes

"Genetically modified rodent Plasmodium parasites as platforms for a whole-organism malaria vaccine" (WO 2013156949 A1, also published as CN104302313A, EP2838554A1, US20150071966). Patent applications filed in Angola, Australia, Brazil, China, India, Japan, Mozambique, South Africa, United States, and European Patent (Euro-PCT), November 2014. Patent granted in India (07.08.2015), Mozambique (17.08.2015), South Africa (23.12.2015), Japan (2015), Australia (03.02.2017), USA (15.02.2017), China (20.11.2017), Europe (11.05.2018) and Hong-Kong (20.07.2018)

"Infected cell cultures", European Patent Office application EP 17 160 277.4, filed on 10.03.2017. PCT application number PCT/EP2018/055717 (8 March 2018).

"Novel spiro-lactam compounds, process and uses thereof", Pub. No.: WO/2018/207165, International Application No.: PCT/IB2018/053357, International Filing Date: 14.05.2018, Publication Date: 15.11.2018.

Advanced Teaching

Prudêncio M. Concepts, approaches and alternatives in whole-sporozoite malaria vaccination. Lisbon Biomedical and Clinical Research Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 15, 2018.

Prudêncio M. Whole-sporozoite malaria vaccination. Masters in Clinical Microbiology and Emerging Infectious Diseases, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, April 6, 2018.

Prudêncio M. The roadmap to a malaria vaccine. Biology at the Host Microbe Interface PhD Programme, Instituto de Gulbenkian de Ciência, Oeiras, Portugal, April 19, 2018.

Prudêncio M. Biomolecular methods for malaria research & Development of a new vaccine against malaria. Masters in Clinical Biochemistry, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Lisbon, Portugal, May 30, 2018.

Prudêncio M. Basic principles of writing a scientific article. Masters in Molecular Biology and Genetics, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal, October 1-3, 2018.

Prudêncio M. Animal models in malaria research. Masters in Evolution and Developmental Biology, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal, November 22, 2018.

Science and Society

"Science and scientific research. Malaria in the laboratory" - 10th and 11th grades (16-17 years old) - Escola Secundária Fernando Lopes Graça, Parede, Portugal, January 23 and 25, 2018.

"Pensar Fora da Caixa em Busca de uma Vacina Contra a Malária", TEDx Youth @ Estoril School, Estoril, Portugal, May 30, 2018.

"Em Busca de uma Vacina Contra a Malária", Mais Ciência Melhor Sociedade, Porto, Portugal, November 13, 2018.

MSc Thesis Completed

Rafael Luís, *Plasmodium berghei* liver infection inhibition by host immune response to *Trypanosoma brucei*, Faculdade de Ciências da Universidade de Lisboa. Supervisor: Miguel Prudêncio.

Daniela Brás, Mechanisms of inhibition of *Plasmodium* liver infection by amino acid supplementation, Instituto de Higiene e Medicina Tropical. Supervisor: Patrícia Meireles.

Diana Alves Moita, New insights into interferon-mediated immune responses elicited by *Plasmodium* liver stage infection - Unravelling the role of Viperin induction, Faculdade de Ciências e Tecnologia, Universidade de Lisboa. Supervisor: António Mendes.

Miguel Remondes Lab

Major Interests / Objectives

Cognitive deficits present in Alzheimer's Disease, Anhedonia, Depression, and Schizophrenia, have been mapped to neuropathological changes in midline cortical structures, such as the anterior cingulate cortex, necessary for appropriate decision-making, the retrosplenial cortex, critically involved in visual-spatial processing, and the hippocampal formation, critical for episodic memory and any mental function therein dependent. To understand such disorders, it is imperative that we identify the structures and mechanisms underlying the behaviours they affect. We model this in rodents as goal-directed behaviours of variable complexity, during which we monitor and manipulate the relevant neural circuits, to assess their functions.

Head of Laboratory

Armando Miguel Caseiro Pires Remondes, PhD

Team

Ana Raquel Rosa Pereira	Graduate	MSc Student (Started September)
Ana Sofia Carvalho Cruz	Master	PhD Student
Bárbara Pinto Correia	Master	PhD Student (Started March)
Emanuel Ferreira Fernandes	Master	PhD Student (Left December)
Gonçalo Aires de Oliveira	PhD	Junior Post-Doctoral Researcher (Started February)
Gonçalo Correia de Oliveira Ferreira	Graduate	MSc Student
Jorge Miguel Claro Cardoso	Master	Visiting Researcher
Marcelo Francisco Vieira Dias	Master	PhD Student
Thabelo Mmamatseliso Khoboko	Master	PhD Student

Laboratory Keywords / Research Areas

Cortex-hippocampus, Optogenetics-pharmacogenetics, Electrophysiology during behaviour, Spatial maps, Decision, Sensory stimulus.

Major Scientific Achievements

Goal directed behaviours (GDB) require that a cognitive map is made available to medial mesocortical (MMC) regions, anterior cingulate cortex (ACC) through retrosplenial cortex (RSC), responsible for decision-making, and dysfunctional in Autism spectrum disorder, and

Schizophrenia. Besides reporting state-dependent communication between hippocampal formation (HIPPF) and ACC, we have recently identified the synapses connecting the two structures, which we are currently manipulating, to assess their role in HIPPF-MMC communication during GDB. Part of the data corresponding to this project is currently being revised for publication. We are currently preparing a second manuscript and acquiring more data within the same project.

To study time processing by HIPPF neurons we recently developed a behavioural task in which success depends on time judgement, and have developed a novel device to record simultaneously from the HIPPF divisions while rats perform this task. We are currently analysing the results of such neural/behavioural recording while rats process time lapses. Within this project, we are manipulating neural activity in the entorhinal cortex (EC), the main input region to the HIPPF, and assess the necessity of information processed in the HIPPF-EC axis for time processing and time-lapse-dependent GDB.

We have also engaged in public outreach activities, and collaborated with the media multiple times.

Selected Publications

Ferreira-Fernandes E, Quintino C, Remondes M (2019). A Gradient of Hippocampal Inputs to the Medial Mesocortex, *bioRxiv.org*, doi: <https://doi.org/10.1101/535047>.

Liang L, Kirk JC, Schmitt LI, Komorowski RW, Remondes M, Halassa MM, Oline SN (2017). Scalable, Lightweight, Integrated and Quick-to-assemble (SLIQ) hyperdrives for functional circuit dissection. *Front Neural Circuits*. (IF: 3.005, Citations: 7. Source: Web of Science).

<http://journal.frontiersin.org/article/10.3389/fncir.2017.00008>. 20 article views in 5 days, while in provisional form.

Remondes M*, Wilson M (2015). Slow-gamma rhythms coordinate cingulate cortical responses to hippocampal sharp-wave ripples during choice behavior. *Cell Reports* <http://dx.doi.org/10.1016/j.celrep.2015.10.005>. (IF: 8.282, Citations: 16 Source: Web of Science).

Wilson M*, Varela C, Remondes M (2015). Phase organization of network computations. *Curr Opin Neurobiology* 31C, 250-253. doi: [10.1016/j.conb.2014.12.011](https://doi.org/10.1016/j.conb.2014.12.011). (IF: 6.133, Citations: 12. Source: Web of Science).

Remondes M*, Wilson M (2013). Cingulate-hippocampus Coherence and Trajectory Coding in a Sequential Choice Task. *Neuron* 5, 1277-89. (IF: 14.024, Citations: 33. Source: Web of Science).

Ongoing Research Projects

2018/2021: Coordenação hipocampo-cortical e mecanismos cognitivos: a formação e recuperação de memórias episódicas durante o comportamento decisional. Coordinator: Miguel Remondes. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/MED-NEU/29325/2017. Amount: € 239 421,20. Total Amount: € 239 421,20.

2014/2019: Cingulate-hippocampal interactions during decision-making. Coordinator: Miguel Remondes. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/00201/2013/CP1170/CT0002. Amount: € 50 000,00. Total Amount: € 50 000,00.

Other Projects

2016/2018: SynaNet: Neurologic and Psychiatric disorders: from synapses to networks. Coordinator: Ana Sebastião. Funding Agency: European Commission. Reference: TWINNING 692340. Amount: € 525 437,50. Total Amount: € 999 996,25.

Invited Lectures and Seminars

Remondes M. Invited seminar. Leibniz Institute for Neurobiology, Magdeburg, Germany, January 15, 2018.

Remondes M. Lecture: Sensory integration in memory-dependent choice behaviors. Center for Mathematical Research (CRM), Autonomous University of Barcelona, Catalonia, Spain, January 2018.

Remondes M. Seminar: Cortico-hippocampal neural circuits in Memory-driven Choice Behaviors. IMM 2018 CAML PhD Programme, Lisbon, Portugal, February 2018.

Remondes M. Seminar: Neural Recordings and Manipulations to Investigate Brain Function. NOVA Medical School 2018 Graduate Programme, Course on Mechanisms of Neuronal Differentiation, Development and Function, Lisbon, Portugal, April 2018.

Remondes M. Seminar: Sensory integration in memory-driven choice behaviors. iMM Scientific Retreat, Cine-Teatro da Nazaré, Nazaré, Portugal, April 2018.

Remondes M. Jornadas Científicas do Departamento de Ciências do Instituto Universitário de Ciências da Saúde, Centro de Congressos da Alfândega do Porto, Porto, Portugal, May 24-25, 2018.

Remondes M. Electrophysiology in animal models. Meeting of the Associação de EEG e Neurofisiologia Clínica, SANA Metropolitan Hotel, July 14, 2018.

Remondes M. Seminar: Sensory integration in memory-driven choice behaviors. 2018 Neuroscience at FMUL/iMM Symposium, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, September 2018.

Remondes M. Masterclass: Hippocampal circuits. University of Coimbra Graduate Programme in Neuroscience, University of Coimbra Medical School, Coimbra, Portugal.

Remondes M. Masterclass: Optogenetics in Neuroscience. IST Course in Bioengineering, University of Lisbon, Lisbon, Portugal.

Remondes M. Seminar: Sensory integration in memory-driven choice behaviors. FMUL PhD Programme in Neuroscience, Faculty of Medicine, University of Lisbon, Lisbon, Portugal.

Remondes M. Seminar: Sensory integration in memory-driven choice behaviors. 2nd NMS Symposium on Chronic Diseases and Translational Science, Nova Medical School, Lisbon, Portugal.

Remondes M. Seminar: Cortico-hippocampal neural circuits in Memory-driven Choice Behaviors. MIT-Portugal PhD Programme in Bioengineering Neuroscience Course 2018, Center for Neuroscience and Cell Biology, University of Coimbra, Coimbra, Portugal.

Communications in National Conferences

Pinto Correia, B, Remondes M. How our Brain Solves Dilemmas. Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal.

Ferreira G, Remondes M. Oc2M as a multisensory integrator in the service of spatial mapping. Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal.

Internationalisation

Presentations at FENS 2018:

Fernandes E, Remondes M. Why rats turn the way they do? 11th FENS Forum of Neuroscience, Berlin, Germany.

Dias M, Remondes M. Time to probe hippocampal function. 11th FENS Forum of Neuroscience, Berlin, Germany.

Cardoso J, Remondes M. The internal representation of external world recorded in a multisensory convergence region named Oc2M. 11th FENS Forum of Neuroscience, Berlin, Germany.

Ferreira G, Remondes M. Oc2M as a multi-sensory integrator in the service of spatial mapping. 11th FENS Forum of Neuroscience, Berlin, Germany.

Marques-Morgado I, Coelho JE, Dias M, Remondes M, Dawson N, Lopes LV. Impact of circadian modulation and ageing on Suprachiasmatic Nucleus functional connectivity. 11th FENS Forum of Neuroscience, Berlin, Germany.

Supervised international medical students:

During July 2018 supervised medical student Ananda Oktafiani Tri from Andalas University (Padang, Indonesia).

During July 2018 supervised medical student Karmen Krejan from University of Ljubljana (Slovenia).

During June and July 2018 supervised Rebecca Zelikson a BSc student from University of Pittsburgh, as part of FLAD University of Pittsburgh's Portugal Internship Programme.

Lab members have engaged in Summer schools abroad, and graduate students seek international scientists as thesis committee members.

The lab is part of the network "Neurologic and Psychiatric Disorders: from synapses to networks (SynaNet)", which includes labs from the UK, Finland, Italy, and France.

Our students presented their results in five posters submitted to the 11th FENS Forum of Neuroscience, in Berlin.

Prizes, Honours and Awards

BIAL Award 2019, as co-investigator with Luísa V. Lopes, The Physiological Role of Circadian Rhythms in Memory – € 50.000.

Advanced Teaching

Remondes M. Member. Doctoral Programme in Experimental Biology and Biomedicine, CNC - Center for Neuroscience and Cell Biology, University of Coimbra, Coimbra, Portugal.

Remondes M. Member and Lecturer. MSc Programme Neurasmus ERASMUS Mundus Programme and MIT-Portugal PhD Programme in Bioengineering.

Remondes M. Member and Lecturer. IMM/FMUL PhD programme in Biomedicine – LisbonBioMed. Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal.

Remondes M. Member and Lecturer. FMUL PhD Programme in Neuroscience – lecture on Neuronal Circuits, Faculty of Medicine, University of Lisbon, Lisbon, Portugal.

Remondes M. Co-organiser. Neuroscience course for the IMM/FMUL PhD programme LisbonBioMed. Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal.

Remondes M. Lecturer. MSc programme "Microbiologia Clínica e Doenças Infeciosas Emergentes". Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal.

Science and Society

Collaborations with news media (several).



MSc Thesis Completed

Cardoso JMC, Multisensory determinants Oc2M activity, Master Thesis, Faculty of Medicine, University of Lisbon. Supervisor: Armando Miguel Caseiro Pires Remondes.

Nuno Morais Lab

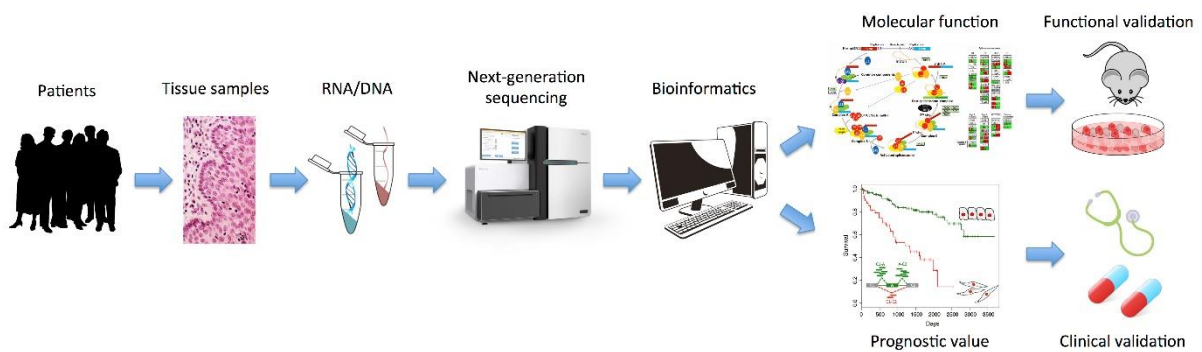
Major Interests / Objectives

We have a long-term interest in the systems-level transcriptional regulation underlying mammalian cell specification, often perturbed in disease. We employ computational biology approaches for the analysis of next-generation sequencing data to find disease-specific transcriptomic signatures, aiming to understand how the regulation of transcription and splicing is affected in pathologies associated with ageing, like cancer and neurodegenerative disorders, and thereby to identify molecular targets for functional exploration *in vitro* and *in vivo*. We also combine molecular and clinical information for the unveiling of novel diagnostic and prognostic factors, as well as of innovative therapeutic strategies.

Head of Laboratory

Nuno Luís Barbosa Morais, PhD

Graphical Abstract



Team

Ana Marta Fernandes Bica	Graduate	MSc Student (Started July)
Arthur Louis François Schneider	Graduate	MSc Student (Started September)
Bernardo Lucas Carvalho Pereira de Almeida	Master	Trainee (Left August)
Javier Tapial Rodriguez	PhD Student	PhD Student (Started April Left June)
Joel Amaque da Silva Indi	Master	PhD Student
Lina Marcela Gallego Paéz	PhD	Junior Post-Doctoral Researcher (Left March)
Mariana Ascensão Ferreira	Master	PhD Student
Marie Catherine Bordone	Master	PhD Student
Nora Chantal Fresmann	Master Student	MSc Student (Left October)
Nuno Daniel Saraiva Agostinho	Master	PhD Student
Sara Rodrigues Mendes	Graduate	MSc Student (Started July)

Laboratory Keywords / Research Areas

Alternative splicing, Transcriptional regulation, Ageing, Neurodegenerative disease, Cancer, Transcriptomics, Computational biology.

Major Scientific Achievements

We published in *Nucleic Acids Research* an article about *psichomics*, our R/Bioconductor package for the integrated analysis of alternative splicing from large transcriptomic datasets that interactively performs graphically assisted exploratory and statistical analyses.

Our collaborative projects with the laboratory of Mónica Bettencourt-Dias (Instituto Gulbenkian de Ciência), on the roles of centrosome abnormalities in cancer yielded a publication in *Nature Communications*, a manuscript under revision in *PLoS Computational Biology* (with Bernardo de Almeida and Nuno Morais as first and senior authors, respectively) and Nora Fresmann's Master thesis work.

Four other international collaborations yielded publications in *Cancer Cell*, *Nature Communications*, *Journal of Cell Science* and *F1000 Research*.

We developed an R package, named *cTRAP*, for the identification of candidate causal perturbations from differential gene expression data. *cTRAP* was part of the October release of *Bioconductor*.

Selected Publications

Saraiva-Agostinho N, Barbosa-Morais NL (2018). *psichomics*: graphical application for alternative splicing quantification and analysis. *Nucleic Acids Research*, [Epub ahead of print], doi: 10.1093/nar/gky888. (IF: 11.561, Citations: 1. Source: Scopus).

Georgilis A, Klotz S, Hanley CJ, Herranz N, Weirich B, Morancho B, Leote AC, D'Artista L, Gallage S, Seehawer M, Carroll T, Dharmalingam G, Wee KB, Mellone M, Pombo J, Heide D, Guccione E, Arribas J, Barbosa-Morais NL, Heikenwalder M, Thomas GJ, Zender L, Gil J (2018). PTBP1-Mediated Alternative Splicing Regulates the Inflammatory Secretome and the Pro-tumorigenic Effects of Senescent Cells. *Cancer Cell*, 34: 85-102 e9. (IF: 22.844, Citations: 5. Source: Scopus).

Marteil G, Guerrero A, Vieira AF, de Almeida BP, Machado P, Mendonça S, Mesquita M, Villarreal B, Fonseca I, Francia ME, Dores K, Martins NP, Jana SC, Tranfield EM, Barbosa-Morais NL, Paredes J, Pellman D, Godinho SA, Bettencourt-Dias M (2018). Over-elongation of centrioles in cancer promotes centriole amplification and chromosome missegregation. *Nature Communications*, 9: 1258. (IF: 12.353, Citations: 5. Source: Scopus).

Gallego-Paez LM, Bordone MC, Leote AC, Saraiva-Agostinho N, Ascensão-Ferreira M, Barbosa-Morais NL (2017). Alternative splicing: the pledge, the turn, and the prestige: The key role of alternative splicing in human biological systems. *Human Genetics*, 136: 1015. (IF: 4.633, Citations: 13. Source: Scopus).

Barbosa-Morais NL, Irimia M, Pan Q, Xiong HY, Gueroussov S, Lee LJ, Slobodeniuc V, Kutter C, Watt S, Colak R, Kim T, Misquitta-Ali CM, Wilson MD, Kim PM, Odom DT, Frey BJ, Blencowe BJ (2012). The evolutionary landscape of alternative splicing in vertebrate species. *Science*, 338: 1587. (IF: 37.205, Citations: 385. Source: Scopus).

Ongoing Research Projects

2017/2020: GENOME Portugal. Coordinator: Nuno Morais. Funding Agency: Portugal 2020. Reference: PINFRA/22134/2016. Amount: € 123 711,00. Total Amount: € 826 226, 00.

2016/2019: PERSEIDS: Personalização de Terapêuticas Oncológicas através de modelação integrada e decisão. Nuno Morais. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/EMS-SIS/0642/2014. Amount: € 70 408,00. Total Amount: € 199 997,00.

2015/2019: Transcriptomic landscapes of cancer: studying the transcriptional etiology of metastization and its implications on personalized therapeutics. Coordinator: Nuno Morais. Funding Agency: European Molecular Biology Organisation. Reference: EMBO IG NMorais. Amount: € 250 000,00. Total Amount: € 250 000,00.

2015/2019: RNA regulation in cancer: defining the transcriptional etiology of metastasis its implications on personalized therapeutics. Coordinator: Nuno Morais. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/00595/2014/CP1236/CT0002. Amount: € 50 000,00. Total Amount: € 50 000,00.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

2015/2018: Angiocrine factors as modulators of spinal cord regeneration. Coordinator: Maria Leonor Saúde. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIM-MED/3295/2014. Amount: € 186 229,00. Total Amount: € 186 229,00.

Publications in Peer Review Journals

Saraiva-Agostinho N, Barbosa-Morais NL (2018). Psychomics: graphical application for alternative splicing quantification and analysis. *Nucleic Acids Res*, doi: 10.1093/nar/gky888. (IF: 11.561, Citations: 1. Source: Scopus).

Braun S, Enculescu M, Setty ST, Cortés-López M, de Almeida BP, Sutandy FXR, Schulz L, Busch A, Seiler M, Ebersberger S, Barbosa-Morais NL, Legewie S, König J, Zarnack K (2018). Decoding a cancer-relevant splicing decision in the RON proto-oncogene using high-throughput mutagenesis. *Nature Communications*, 9: 3315. (IF: 12.353, Citations: 1. Sources: Web of Science and Scopus).

Munkley J, Maia TM, Ibarluzea N, Livermore KE, Vodak D, Ehrmann I, James K, Rajan P, Barbosa-Morais NL, Elliott DJ (2018). Androgen-dependent alternative mRNA isoform expression in prostate cancer cells. *F1000Res*, 7: 1189. (IF: --, Citations: 0. Source: Scopus).

Georgilis A, Klotz S, Hanley CJ, Herranz N, Weirich B, Morancho B, Leote AC, D'Artista L, Gallage S, Seehawer M, Carroll T, Dharmalingam G, Wee KB, Mellone M, Pombo J, Heide D, Guccione E, Arribas J, Barbosa-Morais NL, Heikenwalder M, Thomas GJ, Zender L, Gil J (2018). PTBP1-Mediated Alternative Splicing Regulates the Inflammatory Secretome and the Pro-tumorigenic Effects of Senescent Cells. *Cancer Cell*, 34: 85-102.e9. (IF: 22.844, Citations: 5. Sources: Web of Science and Scopus).

Leznicki P, Natarajan J, Bader G, Spevak W, Schlattl A, Abdul Rehman SA, Pathak D, Weidlich S, Zoephel A, Bordone MC, Barbosa-Morais NL, Boehmelt G, Kulathu Y (2018). Expansion of DUB functionality generated by alternative isoforms - USP35, a case study. *Journal of Cell Science*, 131, pii: jcs212753. (IF: 4.401, Citations: 1. Sources: Web of Science and Scopus).

Marteil G, Guerrero A, Vieira AF, de Almeida BP, Machado P, Mendonça S, Mesquita M, Villarreal B, Fonseca I, Francia ME, Dores K, Martins NP, Jana SC, Tranfield EM, Barbosa-Morais NL, Paredes J, Pellman D, Godinho SA, Bettencourt-Dias M (2018). Over-elongation of centrioles in cancer promotes centriole amplification and chromosome missegregation. *Nature Communications*, 9: 1258. (IF: 12.353, Citations: 5. Sources: Web of Science and Scopus).

Invited Lectures and Seminars

Barbosa-Morais NL. What transcriptomes tell us about disease. ITQB, Oeiras, Portugal, February 6, 2018.

Barbosa-Morais NL. Computational biology and what transcriptomes tell us about disease. Prossyga 2018, Porto, Portugal, May 12, 2018.

Barbosa-Morais NL. What transcriptomes tell us about disease. Department of Bioengineering, Instituto Superior Técnico, Lisbon, Portugal, May 22, 2018.

Barbosa-Morais NL. What transcriptomes tell us about disease. MRC London Institute of Medical Sciences, London, UK, July 25, 2018.

Fresmann NC. Discovery of novel mechanisms of centrosome clustering and their therapeutic value in cancer. Instituto Gulbenkian de Ciência, Oeiras, Portugal, October 11, 2018.

Communications in International Conferences

de Almeida BP, Barbosa-Morais NL. Pan-cancer analysis of Centrosome Amplification uncovers its association with copy number alterations and poor clinical outcome. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018. (Poster Presentation).

Xavier JM, Magno R, de Almeida BP, Dunning M, Jacinta-Fernandes A, Russell R, Samarajiwa S, O'Reilly M, Rosli N, Nobrega C, Barbosa-Morais NL, Caldas C, Ponder BA, Maia AT. Integrative genomic approach elucidates the risk mechanism for breast cancer associated 5q14.1 locus. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018. (Poster Presentation).

Gallego-Paez LM, Martins M, Barbosa-Morais NL. CELF2 at the core of a prognostic alternative splicing signature in colorectal cancer. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018. (Poster Presentation).

Ferreira MA, Barbosa-Morais NL. Profiling the alternative splicing landscape of senescent cells. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018. (Poster Presentation).

Barbosa-Morais NL. What transcriptomes tell us about disease. EMBO Young Investigator Meeting, Vienna, Austria, May 16, 2018. (Oral Presentation).

Gallego-Paez LM, Martins M, Barbosa-Morais NL. CELF2 at the core of a prognostic alternative splicing signature in colorectal cancer. EMBO Practical Course – iCLIP: Genomic views of protein-RNA interactions, Barcelona, Spain, June 3-9, 2018. (Poster Presentation).

Gallego-Paez LM, Martins M, Barbosa-Morais NL. CELF2 at the core of a prognostic alternative splicing signature in colorectal cancer. 25th Biennial Congress of the European Association for Cancer Research (EACR25), Amsterdam, the Netherlands, June 30-July 3, 2018. (Poster Presentation).

Ferreira MA, Barbosa-Morais NL. Profiling the alternative splicing landscape of senescent cells. 25th Biennial Congress of the European Association for Cancer Research (EACR25), Amsterdam, the Netherlands, June 30-July 3, 2018. (Poster Presentation).

Barbosa-Morais NL. CELF2 at the core of a prognostic alternative splicing signature in colorectal cancer. 2nd International Caparica Conference in Splicing, Lisbon, Portugal, July 16-19, 2018. (Oral Presentation).

Bordone MC. The alternative splicing landscape of neurodegenerative disorders: decoupling disease-specific effects from loss of neurons. 2nd International Caparica Conference in Splicing, Lisbon, Portugal, July 16-19, 2018. (Oral Presentation).

Ferreira MA, Barbosa-Morais NL. Profiling the alternative splicing landscape of senescent cells. 2nd International Caparica Conference in Splicing, Lisbon, Portugal, July 16-19, 2018. (Oral and Poster Presentation).

Saraiva-Agostinho N, Barbosa-Morais NL. psichomics: a bioinformatics application for the quantification, analysis and visualisation of alternative splicing from large transcriptomic datasets. 2nd International Caparica Conference in Splicing, Lisbon, Portugal, July 16-19, 2018. (Poster Presentation).

Bordone MC, Barbosa-Morais NL. Decoupling cellular composition and molecular alterations in Alzheimer's and Parkinson's brains. Gordon Conference/Seminar: The Role of Innate Immunity, Glia, Neurons and the Blood-Brain Barrier in the Pathogenesis of Neurodegeneration, Castelldefels, Spain, August 5-10, 2018. (Poster Presentation).

Barbosa-Morais NL. What transcriptomes tell us about disease. RiboClub, Sherbrooke QC, Canada, September 24, 2018. (Oral Presentation).

Ferreira MA, Barbosa-Morais NL. Profiling the alternative splicing landscape of senescent cells. EMBO/EMBL Symposium: The Complex Life of RNA, Heidelberg, Germany, October 3-6, 2018. (Poster Presentation).

Saraiva-Agostinho N, Barbosa-Morais NL. psichomics: a bioinformatics application for the quantification, analysis and visualisation of alternative splicing from large transcriptomic datasets. EMBO/EMBL Symposium: The Complex Life of RNA, Heidelberg, Germany, October 3-6, 2018. (Poster Presentation).

Gallego-Paez LM, Martins M, Barbosa-Morais NL. CELF2 at the core of a prognostic alternative splicing signature in colorectal cancer. EMBO Workshop – RNA and genome maintenance: Cooperation and conflict management, Mainz, Germany, October 10-13, 2018. (Poster Presentation).

Barbosa-Morais NL. Biologist-intelligible alternative splicing analysis of RNA-seq data. BIRS/CMO workshop on Statistical and Computational Challenges in High-Throughput Genomics with Application to Precision Medicine, Oaxaca, Mexico, November 6, 2018. (Oral Presentation).

Communications in National Conferences

Saraiva-Agostinho N. Revolving around circular RNAs: computational exploration of their biogenesis and functions. XII CAML PhD Students' Meeting, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, May 23-25, 2018. (Oral Presentation).

Ferreira MA, Barbosa-Morais NL. Profiling the alternative splicing landscape of senescent cells. XII CAML PhD Students' Meeting, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Bordone MC. Decoupling cellular composition and molecular alterations in Alzheimer's and Parkinson's brains. Workshop on Integrative Approaches in Neurodegeneration, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal, June 21, 2018. (Oral Presentation).

Fresmann NC, de Almeida BP, Marteil G, Bettencourt-Dias M, Barbosa-Morais NL. Discovery of novel mechanisms of centrosome clustering and their therapeutic value in cancer. iMed 10.0 Conference, Lisbon, Lisbon, Portugal, October 3-7, 2018. (Poster Presentation)

Internationalisation

Nora Fresmann, an Erasmus+ from Humboldt University of Berlin (Germany), developed her Master thesis work in our lab.

We hosted, from April to June, Javier Tapial, a PhD student from the Irimia Lab at the Center for Genomic Regulation (Barcelona, Spain).

We hosted, for a day in June, Manuel Irimia from the Center for Genomic Regulation (Barcelona, Spain) for Mariana Ferreira's thesis committee meeting and a special seminar at the iMM.

We hosted, for a week in July, Ângela Gonçalves from the DKFZ (Heidelberg, Germany), who gave a ReTuBi Monday Lecture at the iMM.

Our collaborations with Jesus Gil (Imperial College London, England) on the role of alternative splicing in cell senescence, with Julian Koenig (IMB Mainz, Germany) and Kathi Zarnack (BMLS Frankfurt, Germany) on the impact of cancer-associated DNA variants on oncogenic splicing deregulation, with Yogesh Kulathu (University of Dundee, Scotland) on alternative splicing of deubiquitylating enzymes, and with David Elliott (Newcastle University) on alternative splicing in prostate cancer, yielded peer-reviewed publications.

We carried on the collaborations with George Garinis (FORTH Crete, Greece), on the impact of TC-NER perturbations on splicing, and with Professor Sir Bruce Ponder, on the interaction between genetic background and smoking in lung cancer.

Nuno Morais was the main examiner of PhD thesis defences at the University of Oxford (UK) and the Pompeu Fabra University in Barcelona (Spain).

Nuno Morais was invited by Jesus Gil to give a lecture at the MRC London Institute of Medical Sciences (UK) in July.

Several lab members presented work in scientific meetings in Austria, Canada, Germany, Mexico, Spain, and The Netherlands.

Prizes, Honours and Awards

Saraiva-Agostinho N. Excellent Poster Presentation Award (sponsored by the PROTEOMASS Scientific Society), 2nd International Caparica Conference in Splicing, Lisbon, Portugal, July 16-19, 2018.

Ascensão-Ferreira M. ReTuBi scholarship conference award.

de Almeida B. Best MSc student of the University of Algarve 2017.

Patents / Prototypes

“Methods of cancer treatment”. Intellectual Patent Office UK, Provisional Patent Application GB 1820975.9. Authors: Nuno Barbosa-Morais, Bernardo de Almeida, Mónica Bettencourt-Dias, Joana Paredes, André Vieira (2018).

Advanced Teaching

Barbosa-Morais NL. Lecturer. Masters in Biomedical Research, NOVA Medical School, Lisbon, Portugal, January 5, 2018.

Barbosa-Morais NL. Lecturer. LisbonBioMed PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 9, 2018.

Barbosa-Morais NL. Lecturer. Masters in Biopharmaceutical Sciences and Integrated Masters in Pharmaceutical Sciences, Faculty of Pharmacy, University of Lisbon, Lisbon, Portugal, April 5, 2018.

Barbosa-Morais NL. Lecturer. Masters in Biomedical Research, NOVA Medical School, Lisbon, Portugal, October 8, 2018.

Barbosa-Morais NL. Lecturer and Coordinator. Bioinformatics course of the Masters in Oncobiology, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, November-December, 2018.

MSc Thesis Completed

Nora Fresmann, November 2018, Discovery of novel mechanisms of centrosome clustering and their therapeutic value in cancer, University of Humboldt of Berlin. Supervisors: Nuno Barbosa Morais and Christian Schmitz-Linneweber.

Nuno Santos Lab

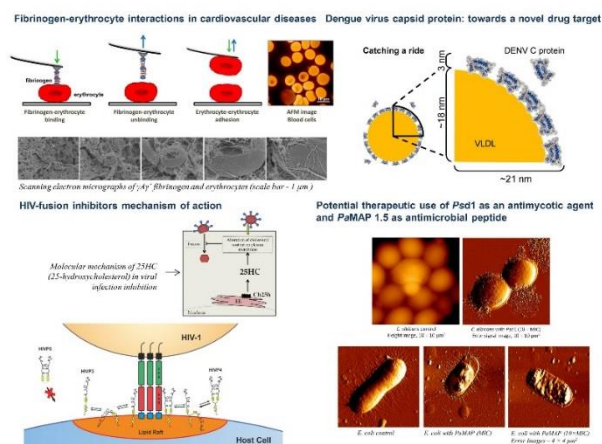
Major Interests / Objectives

Biochemical and biophysical processes occurring in membranes of human cells, as well as of their viral and bacterial pathogens. Study of the two steps of the life cycle of enveloped viruses (HIV-1, dengue, West Nile, Zika and pediatric respiratory viruses) that involve biomembranes – the entrance of the virus or its content into the target cell (including its inhibition) and the assembly of new virions. Study of the binding of fibrinogen to erythrocytes as a determinant for cardiovascular risk. Pre-clinical evaluation of the membrane activity and mechanism of action of antimicrobial (AMP) and anticancer (ACP) peptides. Also on the Nanomedicine area, we are interested in the development of biosensor systems using innovative protein-ligand interactions (nanoparticles and amyloid-based biosensors).

Head of Laboratory

Nuno Fernando Duarte Cordeiro Correia dos Santos, PhD and Habilitation, Associate Professor

Graphical Abstract



Team

Ana de Souto Martins	MSc	PhD Student
Ana Filipa Barata Duarte Guedes	MSc	PhD Student (Left September)
André Rodrigues Nascimento	BSc	MSc Student (Left May)
Catarina Isabel de Sousa Lopes	MSc	PhD Student
Filomena Maria Dias Almeida Carvalho Arede	PhD	Staff Scientist
Ítala Cristine Silva	MSc	PhD Student (Started March)

Ivo Cristiano da Rocha Martins	PhD	Staff Scientist
Jonathan Brito Souza de Oliveira	BSc	MSc Student (Left March)
Marcelo Alexandre da Costa Tavares Augusto	MSc	PhD Student (Started March, Left December)
Marcin Makowski	MSc	PhD Student
Marco André Manso Domingues	PhD	Senior Post-Doctoral Researcher
Maria Constança Gomes Redinha Pais do Amaral	MSc	PhD Student (Started March)
Maria Teresa Damásia Freitas Santos	Undergraduate	Lab Technician
Mário Nuno Romão Felício	MSc	PhD Student
Miriam Raquel Figueiredo Arrulo	BSc	MSc Student (Started September)
Nina Elisabeth Karguth	BSc	MSc Student (Started October)
Patrícia Isabel Duarte Montês Carvalho	MSc	PhD Student
Patrícia Morgado da Silva	MSc	PhD Student
Peter Jonathan Eaton	PhD	Senior Post-Doctoral Researcher (Left October)
Sofia Antunes Angélico Pinto Nabais	BSc	MSc Student (Started September)
Sónia Gonçalves Abreu	PhD	Staff Scientist

Laboratory Keywords / Research Areas

Nanomedicine; HIV, Dengue, West Nile, Zika and respiratory viruses; Peptide-based therapies (AMPs, ACPs, pep14-23); Atomic force microscopy (AFM); Biomarkers of cardiovascular diseases.

Major Scientific Achievements

The capsid proteins of virus such as Zika and West Nile interact specifically with host lipid systems. These interactions are essential for viral replication, and could lead to the identification of new drug targets, as previously done in our Lab for the dengue virus.

We have described that the interaction and activity of fusion inhibitor peptides against HIV or paramyxoviruses depends of their biophysical properties and showed that with lipid conjugation or PEG linker inclusion are possible strategies to improve viral inhibition. Synthetic small therapeutic peptides, designed from natural precursors, improve their activity by considering different biophysical properties. PaMAP2/PaMAP 1.9 showed to be active against multi-resistant bacteria and cancer cells. EcAMP1R2, a bioinformatics-designed peptide, could also be a promising drug against bacterial infections. Erythrocyte aggregation has a higher probability to occur in arterial hypertension, stroke and carotid artery disease patients, being directly related with the presence of fibrinogen, especially its gamma' variant.

Selected Publications

Guedes AF, Carvalho FA, Malho I, Lousada N, Sargento L, Santos NC (2016). Atomic force microscopy as a tool to evaluate the risk of cardiovascular diseases in patients. *Nature Nanotechnology*, 11: 687-692. (IF: 37.490, Citations: 22. Source: Web of Science).

Vigant F, Santos NC, Lee B (2015). Broad-spectrum antivirals against viral fusion. *Nature Rev. Microbiol.*, 13: 426-437. (IF: 31.851, Citations: 59. Source: Web of Science).

Faustino AF, Carvalho FA, Martins IC, Castanho MARB, Mohana-Borges R, Almeida FC, Da Poian AT, Santos NC (2014). Dengue virus capsid protein interacts specifically with very low-density lipoproteins. *Nanomedicine (NBM)*, 10: 247-255. (IF: 6.500, Citations: 34. Source: Web of Science).

Hauser CA, Maurer-Stroh S, Martins IC (2014). Amyloid-based nanosensors and nanodevices. *Chem Soc Rev.*, 43: 5326-5345. (IF: 40.182, Citations: 85. Source: Web of Science).

Carvalho FA, Connell S, Miltenberger-Miltenyi G, Pereira SV, Tavares A, Ariëns RAS, Santos NC (2010). Atomic force microscopy-based molecular recognition of a fibrinogen receptor on human erythrocytes. *ACS Nano*, 4: 4609-4620. (IF: 13.709, Citations: 108. Source: Web of Science).

Ongoing Research Projects

2018/2021: When the host cell is not so cosy anymore? A drop off in energy or an increase in toxicity?. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIA-CEL/28456/2017. Amount: € 47 064,00.

2018/2021: iDNArT - Intelligent DNA nanostructures aimed at brain therapeutics. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/NAN-MAT/30898/2017. Amount: € 7 812,00.

2018/2019: DART Diagnostics – Saving Time, Money and Lives Through Rapid Plug & Play Salmonella Diagnostics. SME Phase 1 Instrument H2020. Coordinator: Ivo Santos Award grant agreement No 827023 Total Amount: € 50 000,00.

2017/2020: VIH_TRANFERSOME: Inibidor de fusão veiculado em Transfersomas para libertação transdérmica. Funding Agency: Gilead Génese Project. Reference: PGG/006/2016. Amount: € 23 000,00.

2016/2020: Between Atom and Cell: Integrating Molecular Biophysics Approaches for Biology and Healthcare. National Responsible: Nuno Santos Funding Agency: COST Project. Acronym: MOBIEU. Reference: OC-2015-1-19651. Total Amount: € 520 000,00.

2016/2019: Broad-spectrum antiviral peptides against respiratory viruses. Coordinator: Nuno Santos. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BBB-BQB/3494/2014. Amount: € 197 839,00. Total Amount: € 197 839,00.

2016/2019: Molecular interactions of circulating fibrinogen as a risk factor for cardiovascular and cerebrovascular pathologies. Coordinator: Filomena Arede. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BBB-BMD/6307/2014. Amount: € 184 965,00. Total Amount: € 184 965,00.

Other Projects

2015/2019: INPACT: Innovative peptides against cancer and pathogenic bacteria, with advances in science, biopharmaceutical drug development, product market targeting, training, and communication. Coordinator: Miguel Castanho. Funding Agency: European Commission. Reference: MSCA RISE 644167. Amount: € 463 500,00. Total Amount: €1 390 500,00.

Publications in Peer Review Journals

Bravo-Ferrada BM, Gonçalves S, Semorile L, Santos NC, Brizuela N, Tymczyszyn EE, Hollmann A (2018). Cell surface damage and morphological changes in *Oenococcus oeni* after freeze-drying and incubation in synthetic wine. *Cryobiology*, 82: 15-21. (IF: 2.050, Citations: 1. Source: Web of Science).

Bessa LJ, Eaton P, Dematei A, Plácido A, Vale N, Gomes P, Delerue-Matos C, Leite JRSA, Gameiro P (2018). Synergistic and antibiofilm properties of ocellatin peptides against multidrug-resistant. *Pseudomonas aeruginosa*. *Future Microbiology*, 13 (2): 151-163. (IF: 3.190, Citations: 4. Source: Web of Science).

Carvalho FA, Guedes AF, Duval C, Macrae FL, Swithenbank L, Farrell DH, Ariëns RAS, Santos NC (2018). The 95RGD97 sequence on the A α chain of fibrinogen is essential for binding to its erythrocyte receptor. *Int. J. Nanomed.*, 13: 1985-1992. (IF: 4.300, Citations:--. Source: Web of Science).

Carvalho PM, Felício MR, Santos NC, Gonçalves S, Domingues MM (2018). Application of light scattering techniques to nanoparticle characterization and development. *Front. Chem.*, 6: 237. (IF: 4.155, Citations: 4. Source: Web of Science).

Figueira TN, Augusto MT, Rybkina K, Stelitano D, Noval MG, Harder OE, Veiga AS, Huey D, Alabi CA, Biswas S, Niewiesk S, Moscona A, Santos NC, Castanho MARB, Porotto M (2018). Effective in vivo targeting of influenza virus through a cell-penetrating/fusion inhibitor tandem peptide anchored to the plasma membrane. *Bioconjugate Chem.*, 29: 3362-3376. (IF: 4.818, Citations: 1. Source: Web of Science).

Gomes B, Augusto MT, Felício MR, Hollmann A, Franco OL, Gonçalves S, Santos NC (2018). Designing improved active peptides for therapeutic approaches against infectious diseases. *Biotechnol. Adv.*, 36: 415-429. (IF: 10.597, Citations: 20. Source: Web of Science).

Gomes B, Gonçalves S, Disalvo A, Hollmann A, Santos NC (2018). Effect of 25-hydroxycholesterol in viral membrane fusion: Insights on HIV inhibition. *Biochim. Biophys. Acta*, 1860: 1171-1178. (IF: 3.687, Citations: 1. Source: Web of Science).

Guedes AF, Carvalho FA, Domingues MM, Macrae FL, McPherson HR, Santos NC, Ariëns RAS (2018). Sensing adhesion forces between erythrocytes and γ' fibrinogen, modulating fibrin clot architecture and function. *Nanomedicine (NBM)*, 14: 909-918. (IF: 5.720, Citations: 4. Source: Web of Science).

Guedes AF, Carvalho FA, Domingues MM, Macrae FL, McPherson HR, Sabban A, Martins IC, Duval C, Santos NC, Ariëns RAS (2018). Impact of $\gamma'\gamma'$ fibrinogen interaction with red blood cells on fibrin clots. *Nanomedicine (UK)*, 13: 2491-2505. (IF: 5.005, Citations:--. Source: Web of Science).

Hollmann A, Delfederico L, Santos N, Disalvo EA, Semorile L (2018). Interaction of S-layer proteins of *Lactobacillus kefir* with model membranes and cells. *J. Liposome Res.*, 28: 117-125. (IF: 1.822, Citations: 2. Source: Web of Science).

Jeremias HF, Lousa D, Hollmann A, Coelho AC, Baltazar CS, Seixas JD, Marques AR, Santos NC, Romão CC, Soares CM (2018). Study of the interactions of bovine serum albumin with a molybdenum(II) carbonyl complex by spectroscopic and molecular simulation methods. *PLoS ONE*, 13: e0204624. (IF: 2.806, Citations:--. Source: Web of Science).

Martins AS, Martins IC, Santos NC (2018). Methods for lipid droplet biophysical characterization in Flaviviridae infections. *Front. Microbiol.*, 9: 1951. (IF: 4.019, Citations:--. Source: Web of Science).

Pérez-Peinado C, Dias SA, Domingues MM, Benfield AH, Freire JM, Rádis-Baptista G, Gaspar D, Castanho MARB, Craik DJ, Henriques ST, Veiga AS, Andreu D (2018). Mechanism of bacterial membrane permeabilization of crotalicidin (Ctn) and its fragment Ctn[15-34], antimicrobial peptides from rattlesnake venom. *J. Biol. Chem.*, 293: 1536-1549. (IF: 4.010, Citations: 4. Source: Web of Science).

Ribeiro AS, Nobre AR, Mendes N, Almeida J, Vieira AF, Sousa B, Carvalho FA, Monteiro J, Polónia A, Fonseca M, Sanches JM, Santos NC, Seruca R, Paredes J (2018). SRC inhibition prevents P-cadherin mediated signaling and function in basal-like breast cancer cells. *Cell Commun. Signal.* 16: 75. (IF: 5.324, Citations:--. Source: Web of Science).

Irazazabal LN, Porto WF, Fensterseifer ICM, Alves ESF, Matos CO, Menezes ACS, Felício MR, Gonçalves S, Santos NC, Ribeiro SM, Humblot V, Lião LM, Ladram A, Franco OL (2018). Fast and potent bactericidal membrane lytic activity of PaDBS1R1, a novel cationic antimicrobial peptide, *Biochim. Biophys. Acta*, [Epub ahead of print]. (IF: 3.498, Citations: 0. Sources: Web of Science and Scopus).

Meneguetti BT, Cardoso MH, Ribeiro CFA, Felício MR, Pinto IB, Santos NC, Carvalho CME, Franco OL (2018). Neuropeptide receptors as potential pharmacological targets for obesity. *Pharmacol Ther.* pii: S0163-7258(18)30199-2. doi: 10.1016/j.pharmthera.2018.11.002. (IF: 10.376, Citations: 0. Sources: Web of Science and Scopus).

Other International Publications

Carvalho FA, Santos NC (2018). AFM imaging-force spectroscopy combination for molecular recognition at the single-cell level. In *Atomic Force Microscopy in Molecular and Cell Biology*, Jiye Cai (ed.), Springer, Singapore, pp. 55-76.

Domingues MM, Felício MR, Gonçalves S (2018). Antimicrobial Peptides: Effect on Bacterial Cells. In Atomic Force Microscopy. Methods in Molecular Biology, Santos NC and Carvalho FA (eds.), vol. 1886, Humana Press, New York, USA.

Santos NC, Carvalho FA (2018). Atomic Force Microscopy, Springer / Humana Press, New York. (ISBN: 978-1-4939-8893-8).

Invited Lectures and Seminars

Santos NC. Measuring forces at the nanoscale for cardiovascular risk evaluation. Instituto de Medicina Molecular João Lobo Antunes, University of Lisbon, Lisbon, Portugal, March 7, 2018.

Santos NC. Broad-spectrum viral fusion inhibitors. Luso-Brazilian Workshop on SAXS and fluorescence methodologies on biological systems, Lisbon, Portugal, March 23, 2018.

Martins IC. Emerging Magnetic Resonance Techniques to Study Dynamic Molecular Machines, COST Action, Portinho da Arrábida, Portugal, April 14-16, 2018.

Santos NC. AFM imaging and force spectroscopy applications in membrane biophysics. Summer School on Membrane Biophysics: Impact of Lipids on Health, Disease and Therapy, Porto, Portugal, June 25-29, 2018.

Santos NC. Metabolic control of body mass and obesity. Instituto de Medicina Molecular João Lobo Antunes, University of Lisbon, Lisbon, Portugal, June 28, 2018.

Santos NC. DLS, zeta potential and AFM on the study of Flavivirus replication. Biosciences Analysis Tools Iberian Meeting, Oeiras, Portugal, July 12-13, 2018.

Santos NC. Biophysical assessment of the mechanism of action of broad-spectrum antivirals against viral fusion. Instituto de Física, Universidade de São Paulo, São Paulo, Brazil, September 26, 2018.

Santos NC. Arterial hypertension and stroke patients present higher erythrocyte adhesion forces, contributing to cardiovascular risk. XLIII Congresso da Sociedade Brasileira de Biofísica, Santos, Brazil, September 27-30, 2018.

Martins IC. DART Diagnostics, the ongoing journey of a startup. 2nd NMS Symposium, CEDOC, Nova Medical School, Lisbon, Portugal, October 18-19, 2018.

Santos NC. Nanomedicina: Desafios e Perspetivas. I Encontro Internacional de Inovação em Saúde do Distrito Federal: da pesquisa científica a tecnologias imersivas, Brasília, Brazil, October 18-20, 2018.

Eaton P. Microscopia de Força Atômica Aplicada a Ciências Medicas. I Encontro Internacional de Inovação em Saúde do Distrito Federal, Brasília, Brazil, October 18-20, 2018.

Santos NC. AFM as a nanotool for cardiovascular risk evaluation. 2nd Biotech Ibero-American Congress and 7th Brazilian Biotech Congress, Brasília, Brazil, November 18-21, 2018.

Santos NC. Atomic force microscopy as a nanotool for cardiovascular risk evaluation. UPV/EHU – Universidad del País Vasco/Euskal Herriko Unibertsitatea, Bilbao, Spain, November 28, 2018.

Santos NC. AFM as a nanotool for cardiovascular risk evaluation. CHEM2NATURE Workshop “Multifunctional Biomaterials”, Porto, Portugal, December 12-14, 2018.

Communications in International Conferences

Makowski M, Felício MR, Franco OL, Gonçalves S, Santos NS. Studying the selectivity and activity of the designed antimicrobial peptide EcAMP1R2. 16th Iberian Peptide Meeting/4th ChemBio Group Meeting, Barcelona, Spain, February 5-7, 2018. (Poster Presentation).

Silva PM, Augusto MT, Marques MC, Porotto M, Moscona A, Santos NS. Cholesterol-conjugated peptide inhibitors of influenza virus: biophysical characterization. 16th Iberian Peptide Meeting/4th ChemBio Group Meeting, Barcelona, Spain, February 5-7, 2018. (Poster Presentation).

Guedes AF, Sargento L, Braz-Nogueira J, Lousada N, Moreira C, Carvalho FA, Santos NS. Fibrinogen-induced erythrocyte-erythrocyte adhesion relevance as cardiovascular risk factor. ARBRE-MOBIEU Plenary Meeting – Talking molecules: the networks that shape the living world, Warsaw, Poland, March 19-21, 2018. (Oral Presentation).

Carvalho FA, Ribeiro AS, Monteiro J, Guedes AF, Seruca R, Paredes J, Santos NS. AFM analysis of P-cadherin/SFK mechanotransduction signalling in breast cancer cells. ARBRE-MOBIEU Plenary Meeting – Talking molecules: the networks that shape the living world, Warsaw, Poland, March 19-21, 2018. (Oral Presentation).

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NS, Carvalho FA. Using AFM to study erythrocytes' morphology and elasticity on amyotrophic lateral sclerosis. ARBRE-MOBIEU Plenary Meeting – Talking molecules: the networks that shape the living world, Warsaw, Poland, March 19-21, 2018. (Oral Presentation).

Lopes CS, Carvalho FA, Bernardi P, Lin K, Mehrabian S, Radunovic A, Irvine G, Bader B, Walker RH, Danek A, Santos NS, de Carvalho M, Miltenberger-Miltenyi G. Clinical, genetic, and biophysical characterization of chorea-acanthocytosis – the Portuguese experience. 9th International Meeting on Neuroacanthocytosis Syndromes, Dresden, Germany, March 23-25, 2018. (Poster Presentation).

Carvalho FA, Guedes AF, Duval C, Swithenbank ML, Farrell DH, Ariëns RAS, Santos NC. The 94RGD97 sequence on the A α chain of fibrinogen is essential for the binding to its erythrocyte receptor. 25th International Fibrinogen and 3rd International Factor XIII Workshop, Winston-Salem (North Carolina), USA, June 3-7, 2018. (Oral Presentation).

Carvalho FA, Guedes AF, Moreira C, Fonseca AC, Nogueira JB, Ferro JM, Santos NC. Arterial hypertension and stroke patients present higher erythrocyte adhesion forces, contributing to fibrinogen-dependent cardiovascular risk. 25th International Fibrinogen and 3rd International Factor XIII Workshop, Winston-Salem (North Carolina), USA, June 3-7, 2018. (Poster Presentation).

Pronto-Laborinho AC, Gromicho M, Pereira M, Lopes CS, Santos NC, Carvalho FA, de Carvalho M. Molecular biomarkers associated with respiratory insufficiency in Amyotrophic Lateral Sclerosis. 4th Congress of the European Academy of Neurology, Lisbon, Portugal, June 16-19, 2018. (E-Poster Presentation).

Carvalho PM, Teixeira M, Sequeira D, Santos NC, Domingues MM. Liposome encapsulation of a fibrinolytic agent and its effect on clot degradation. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018. (Poster Presentation).

Felício MR, Franco OL, Santos NC, Gonçalves S. Antimicrobial peptides PaMAP2 and PaMAP1.9 reveal anticancer activity. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018. (Oral Presentation).

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NC, Carvalho FA. Changes on elasticity and morphology of erythrocytes from amyotrophic lateral sclerosis patients. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018. (Oral Presentation).

Martins IC, Martins AS, Faustino AF, Nascimento A, Santos NC. Zika virus capsid protein binds host lipid droplets via an auto-inhibitory mechanism. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018. (Oral Presentation).

Makowski M, Felício MR, Franco OL, Gonçalves S, Melo MN, Santos NC. Exploring the membrane activity of a designed antimicrobial peptide with fusogenic properties. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018. (Oral Presentation).

Makowski M, Felício MR, Franco OL, Gonçalves S, Melo MN, Santos NC. Exploring the membrane activity of a designed antimicrobial peptide with fusogenic properties. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018. (Poster Presentation).

Martins AS, Nascimento A, Faustino AF, Santos NC, Martins IC. Comparison of Zika virus capsid protein with related Flavivirus capsid proteins and their ability to interact with host lipid systems. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018. (Poster Presentation).

Silva PM, Augusto MT, Marques MC, Porotto M, Moscona A, Santos NC. Biophysical characterization of lipid-tagged peptides as fusion inhibitors for respiratory viruses. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018. (Poster Presentation).

Carvalho PM, Teixeira M, Sequeira D, Santos NC, Domingues MM. Liposome encapsulation of a fibrinolytic agent and its effect on clot degradation. 14th Greta Pifat Mrzljak International School of Biophysics, Split, Croatia, August 23–September 1, 2018. (Poster Presentation).

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NC, Carvalho FA. Changes on elasticity and morphology of erythrocytes from amyotrophic lateral sclerosis patients. 14th Greta Pifat

Mrzljak International School of Biophysics, Split, Croatia, August 23–September 1, 2018. (Oral Presentation).

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NC, Carvalho FA. Changes on elasticity and morphology of erythrocytes from amyotrophic lateral sclerosis patients. 14th Greta Pifat Mrzljak International School of Biophysics, Split, Croatia, August 23–September 1, 2018. (Poster Presentation).

Silva PM, Augusto MT, Porotto M, Moscona A, Santos NC. Biophysical characterization of lipid-tagged peptides as fusion inhibitors for respiratory viruses. 14th Greta Pifat Mrzljak International School of Biophysics, Split, Croatia, August 23–September 1, 2018. (Poster Presentation).

Makowski M, Felício MR, Franco OL, Gonçalves S, Melo MN, Santos NC. Exploring the membrane activity of a designed antimicrobial peptide with fusogenic properties. 35th European Peptide Symposium, Dublin, Ireland, August 26-31, 2018. (Poster Presentation).

Felício MR, Franco OL, Santos NC, Gonçalves S. PaMAP 1.9 and PaMAP 2: efficient multiresistant antimicrobial peptides present also anticancer activity. 35th European Peptide Symposium, Dublin, Ireland, August 26-31, 2018. (Poster Presentation).

Amaral VGS, Fernandes CM, Felício MR, Valle AS, Quintana PG, Almeida CC, Barreto-Bergter, Gonçalves S, Santos NC, Kurtenbach. Psd2 pea defensin shows preference for mimetic membrane rafts enriched with glucosylceramide and ergosterol. XLIII Congresso da Sociedade Brasileira de Biofísica, Santos, Brazil, September 27-30, 2018. (Poster Presentation).

Amaral C, Quelemes PV, Araujo AR, Baptista PV, Leite JR, Joanitti GA, Santos NC, Eaton P. Characterization and evaluation of the therapeutic potential of anticancer and antimicrobial peptides isolated from reptiles. I Encontro Internacional de Inovação em Saúde do Distrito Federal, Brasília, Brazil, October 18-20, 2018. (Poster Presentation).

Costa SR, Dematei A, Barbosa EA, Eaton P, Leite JRSA, Brand GS. Prospection, Synthesis and Application of Bradykinin Potentiating Peptide (BPPs) of Bothrops sp. I Encontro Internacional de Inovação em Saúde do Distrito Federal, Brasília, Brazil, October 18-20, 2018. (Poster Presentation).

Meneguetti BT, Cardoso MH, Santos NC, Marcelo C, Carvalho E. Desenvolvimento de peptídeos bioinspirados ao neuropeptídeo Y. V Congresso Internacional de Ensino, Pesquisa e Extensão da

Universidade Católica Dom Bosco – Saberes em Ação, Campo Grande, Brazil, October 23-25, 2018. (Oral Presentation).

Pronto-Laborinho AC, Lopes CS, Gromicho M, Santos NC, Carvalho FA, de Carvalho M. γ' fibrinogen and changes in morphology of erythrocytes in Amyotrophic Lateral Sclerosis. 29th International Symposium on ALS/MND, Glasgow, United Kingdom, December 7-9, 2018. (Poster Presentation).

Communications in National Conferences

Carvalho PM, Teixeira M, Sequeira D, Santos NC, Domingues MM. Liposome encapsulation of a fibrinolytic agent and its effect on clot degradation. XII CAML PhD Students Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Felício MR, Franco OL, Santos NC, Gonçalves S. Antimicrobial peptide PaMAP1.9 has high affinity for cancer cells. XII CAML PhD Students Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NC, Carvalho FA. Changes on elasticity and morphology of erythrocytes from amyotrophic lateral sclerosis patients. XII CAML PhD Students Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Makowski M, Felício MR, Franco OL, Gonçalves S, Melo MN, Santos NC. Exploring the membrane activity of a designed antimicrobial peptide with fusogenic properties. XII CAML PhD Students Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Martins AS, Faustino AF, Nascimento A, Carvalho FA, Santos NC, Martins IC. Zika virus capsid protein structure and its ability to interact with host lipid systems. XII CAML PhD Students Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Pronto-Laborinho AC, Lopes CS, Gromicho M, Pereira M, Santos N, Carvalho FA, de Carvalho M. Molecular Biomarkers Associated with Respiratory Insufficiency in Amyotrophic Lateral Sclerosis. XII CAML PhD Students Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Silva PM, Augusto MT, Marques MC, Porotto M, Moscona A, Santos NC. Biophysical characterization of lipid-tagged peptides as fusion inhibitors for respiratory viruses. XII CAML PhD Students Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Carvalho PM, Teixeira M, Sequeira D, Santos NC, Domingues MM. Liposome encapsulation of a fibrinolytic agent and its effect on clot degradation. Chemistry at ULisboa & 2018 Summer School – 3rd Meeting of the College of Chemistry, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Eaton P, Quaresma P, Soares C, Neves CS, de Almeida MP, Pereira E, West P. Methods to Measure Dimensions of Synthetic Nanoparticles. Chemistry at ULisboa & 2018 Summer School – 3rd Meeting of the College of Chemistry, Lisbon, Portugal, June 27-29, 2018. (Oral Presentation).

Faustino AF, Barbosa GM, Castanho MARB, Da Poian AT, Santos NC, Almeida FCL, Martins IC. Using minimal physiological pH changes to probe solvent accessibility and the structural arrangement of disordered regions of proteins via NMR. Chemistry at ULisboa & 2018 Summer School – 3rd Meeting of the College of Chemistry, Lisbon, Portugal, June 27-29, 2018. (Oral Presentation).

Felício MR, Franco OL, Santos NC, Gonçalves S. Antimicrobial peptide PaMAP1.9 has high affinity for cancer cells. Chemistry at ULisboa & 2018 Summer School – 3rd Meeting of the College of Chemistry, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Guedes AF, Sargento L, Braz-Nogueira J, Lousada N, Moreira C, Carvalho FA, Santos NC. Fibrinogen-induced erythrocyte-erythrocyte adhesion, a cardiovascular risk factor. Chemistry at ULisboa & 2018 Summer School – 3rd Meeting of the College of Chemistry, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NC, Carvalho FA. Changes on elasticity and morphology of erythrocytes from amyotrophic lateral sclerosis patients. Chemistry at ULisboa & 2018 Summer School – 3rd Meeting of the College of Chemistry, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Martins AS, Faustino AF, Nascimento A, Carvalho FA, Santos NC, Martins IC. Zika virus capsid protein structure and its ability to interact with host lipid systems. Chemistry at ULisboa & 2018

Summer School – 3rd Meeting of the College of Chemistry, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Silva PM, Porotto M, Moscona A, Santos NC. Biophysical characterization of lipid-tagged peptides as fusion inhibitors for respiratory viruses. Chemistry at ULisboa & 2018 Summer School – 3rd Meeting of the College of Chemistry, Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Carvalho PM, Teixeira M, Sequeira D, Santos NC, Domingues MM. Liposome encapsulation of a fibrinolytic agent and its effect on clot degradation. 1st Biophysics Party, ITQB, Lisbon, Portugal, July 6, 2018. (Poster Presentation).

Felício MR, Franco OL, Santos NC, Gonçalves S. Antimicrobial peptides PaMAP2 and PaMAP1.9 reveal anticancer activity. 1st Biophysics Party, ITQB, Lisbon, Portugal, July 6, 2018. (Poster Presentation).

Lopes CS, Pronto-Laborinho AC, de Carvalho M, Santos NC, Carvalho FA. Changes on elasticity and morphology of erythrocytes from amyotrophic lateral sclerosis patients. 1st Biophysics Party, ITQB, Lisbon, Portugal, July 6, 2018. (Poster Presentation).

Martins AS, Faustino AF, Nascimento A, Carvalho FA, Santos NC, Martins IC. Comparison of Zika virus capsid protein with related Flavivirus capsid proteins and their ability to interact with host lipid systems. 1st Biophysics Party, ITQB, Lisbon, Portugal, July 6, 2018. (Poster Presentation).

Silva PM, Augusto MT, Marques MC, Porotto M, Moscona A, Santos NC. Biophysical characterization of lipid-tagged peptides as fusion inhibitors for respiratory viruses. 1st Biophysics Party, ITQB, Lisbon, Portugal, July 6, 2018. (Poster Presentation).

Pronto-Laborinho AC, Lopes CS, Gromicho M, Pereira M, Santos NC, Carvalho FA, de Carvalho M. Molecular Biomarkers Associated with Respiratory Insufficiency in Amyotrophic Lateral Sclerosis". 4th PhD Students Meeting of the Mind-Brain College of the Universidade de Lisboa, Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15 2018. (Pitch Presentation).

Pronto-Laborinho AC, Lopes CS, Gromicho M, Pereira M, Santos NC, Carvalho FA, de Carvalho M. Molecular Biomarkers Associated with Respiratory Insufficiency in Amyotrophic Lateral Sclerosis". 4th PhD Students Meeting of the Mind-Brain College of the Universidade de Lisboa,

Reitoria da Universidade de Lisboa, Lisbon, Portugal, November 14-15 2018. (Poster Presentation).

Organisation of Conferences

Santos NC. Member of the Scientific Committee. 9th AIMS Meeting (Annual International Medical Students Meeting), Lisbon, Portugal, March 16-18, 2018.

Domingues MM. Member of the Poster and Oral evaluator. XII IMM PhD Students Meeting, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, May 23-25, 2018.

Santos NC. Member of the Scientific Committee. 6th International Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018.

Gonçalves S. Co-organizer. 3^o Encontro do Colégio de Química da ULisboa (3ECQUL), Lisbon, Portugal, June 27-28, 2018.

Felício MR. Co-organizer. 1st Biophysics party, ITQB, Lisbon, Portugal, July 6, 2018.

Guedes AF. Member of the Scientific Committee of the 1st Biophysics Party, ITQB, Lisbon, Portugal, July 6, 2018.

Domingues MM. Member of the Scientific Committee of the 1st Biophysics Party, ITQB, Lisbon, Portugal, July 6, 2018.

Domingues MM. Workshop chair. Session II – New technologies in drug development in Innovative approaches in targeted therapies: Brain, Infections and Cancer, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, December 13-14, 2018.

Internationalisation

Collaborative publications and/or funded projects with groups from Columbia University (New York, USA), Cornell University (New York, USA), New York University School of Medicine (USA), The Ohio State University (USA), University of Cagliari (Italy), Pompeu Fabra University (Barcelona, Spain), University of Leeds (England), Catholic University of Brasília (Brazil), Dom Bosco Catholic University (Campo Grande, Brazil), Federal University of Rio de Janeiro (Brazil), University of Brasília (Brazil), CONICET (Buenos Aires, Argentina), University of Buenos Aires (Argentina), University of Quilmes (Argentina), University of Santiago del Estero (Argentina),

Agency for Science, Technology and Research (Singapore), National University of Singapore (Singapore) and University of Queensland (Australia), Stony Brook University (USA), Universidade Federal de Goiás (Brazil), Universidade Estadual de Goiás (Brazil), Sorbonne Université (France), Universidade Federal da Grande Dourados (Brazil), Oregon Health and Science University (USA), University of Campania “Luigi Vanvitelli” (Italy) and Federal University of Ceará (Brazil).

Prizes, Honours and Awards

Makowski M. Best Poster Presentation. 6th Iberian Biophysics Congress and X Iberoamerican Congress of Biophysics, Castellón, Spain, June 20-22, 2018.

Carvalho PM. Best Poster Presentation. Chemistry at ULisboa & 2018 Summer School – 3rd Meeting of the College of Chemistry, Lisbon, Portugal, June 27-29, 2018.

Eaton P. Best Oral Communication. Chemistry at ULisboa & 2018 Summer School – 3rd Meeting of the College of Chemistry, Lisbon, Portugal, June 27-29, 2018.

Felício MR. Best Poster Presentation. 35th European Peptide Symposium, ESCOM Science Foundation (ESF), Dublin, Ireland, August 26-31, 2018.

Lopes CS. Best Poster Presentation. 14th Greta Pifat Mrzljak International School of Biophysics, Split, Croatia, August 23-September 1, 2018.

Eaton P. Best Poster Presentation. I Encontro Internacional de Inovação em Saúde do Distrito Federal, Faculdade de Medicina, UnB, Brasilia, Brazil, October 18 – 20, 2018.

Advanced Teaching

Santos NC. Lecturer. Atomic Force Microscopy. PhD Programme in Molecular Biosciences (MolBioS) from ITQB, IBET, REQUIMTE, CREM and IGC, Oeiras, Portugal, January 16, 2018.

Santos NC. Coordinator. “Nano & Biochemistry” module, LisbonBioMed PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 29-30, 2018.

Domingues MM. Lecturer. Fibrinogen clot structure in thrombosis. LisbonBioMed PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 29-30, 2018.

Carvalho FA. Lecturer. Biological and Biomedical Applications of Atomic Force Microscopy. LisbonBioMed PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 29-30, 2018.

Martins IC. Lecturer. From proteins to peptides, From Science to entrepreneurship, LisbonBioMed PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 29-30, 2018.

Gonçalves S. Lecturer. Drug resistance in bacterial cells: biophysical characterization of peptide-membrane interactions, LisbonBioMed PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 29-30, 2018.

Carvalho FA. Lecturer. Atomic Force Microscopy. MSc in Structural Biology, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal, April 9, 2018.

Santos NC. Lecturer. AFM-based force spectroscopy. MSc in Structural Biology, Instituto Superior Técnico, Universidade de Lisboa, Lisbon, Portugal, April 13, 2018.

Santos NC. Lecturer. Atomic force microscopy and force spectroscopy. MSc in Biochemistry, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Monte da Caparica, Portugal, May 18, 2018.

Santos NC. Lecturer. Molecular interactions probed by AFM-based force spectroscopy. PhD Program in Medicines and Pharmaceutical Innovation (i3DU), Faculdade de Farmácia, Universidade de Lisboa, Lisbon, Portugal, September 19, 2018.

Carvalho FA. Lecturer. Role of fibrinogen-erythrocyte and erythrocyte-erythrocyte adhesion on cardiovascular pathologies. Lisbon Biophysics Networking Meeting: From Protein Dynamics to Membrane Biophysics, October 12, 2018.

Carvalho FA. Lecturer. Molecular interactions of circulating fibrinogen as a risk factor for cardiovascular and cerebrovascular pathologies. Nanomedicina II event, Núcleo de Nanotecnologia da FCT-UNL, Faculdade de Ciências e Tecnologia, Universidade Nova de Lisboa, Portugal, November 21, 2018.

Santos NC. Lecturer. Nanomedicina na avaliação do risco cardiovascular. MSc in Biomedical Engineering and Biophysics, Faculdade de Ciências, Universidade de Lisboa, Lisbon, Portugal, December 11, 2018.

Science and Society

Felício MR. “What now?”, speaker at “Colégio Sagrado Coração de Maria”, Lisbon, Portugal, March, 2018.

NSantos Lab members also participated in different scientific related committees, including iMM/CAML PhD Students Committee (Martins AS, Makowski M, Amaral C, Silva I) and iMM Post-Doctoral Association (Domingues MM).

The research work of NSantos Lab was featured on mass media news on “Diário de Notícias on-line” (February 24, 2018), “Expresso on-line” (February 24, 2018), “O Jogo on-line” (February 24, 2018), “Notícias ao Minuto” (February 24, 2018), “Diário da Saúde” (February 24, 2018), “Correio da Manhã” (February 25, 2018, pp. 17-18), “Atlas da Saúde” (February 26, 2018), “Jornal Médico” (February 26, 2018), “Notícias de Aguiar” (February 27, 2018, p. 6), “Radio Clube Aguiarense” (February 28, 2018), “Notícias de Aguiar” (March 6, 2018, p. 5) and “Prevenir” (April, 2018, p. 14).

MSc Thesis Completed

André Rodrigues Nascimento, 04/05/2018, Biological activity and functions of the capsid protein of Zika virus and related flaviviruses, Faculdade de Ciências, Universidade de Lisboa. Supervisors: Nuno Santos and Ivo Martins.

Mafalda Vasconcelos, 03/07/2018, Modified Immunoassays to achieve earlier detection of pathogens and disease biomarkers. Faculdade de Medicina, Universidade de Lisboa. Supervisor: Ivo Martins.

PhD Thesis Completed

Ana Filipa Guedes, 11/07/2018, Molecular characterization of the fibrinogen-erythrocyte interaction as a cardiovascular risk, Faculdade de Medicina, Universidade de Lisboa. Supervisors: Nuno Santos and Filomena Carvalho.

Bárbara Gomes, 12/10/2018, Characterization of enveloped viruses inhibition by 25-hydroxycholesterol at the membrane level, Faculdade de Medicina, Universidade de Lisboa. Supervisor: Nuno Santos.



Marcelo Tavares Augusto, 18/12/2018, Enveloped viruses – a peptide inhibition strategy.
Faculdade de Medicina, Universidade de Lisboa. Supervisor: Nuno Santos.

Paulo Filipe Lab

Major Interests / Objectives

1. To understand how host immune responses influence the differential outcome of two distinct types of Non-Melanoma Skin Cancers (NMSCs), namely Basal Cell carcinomas and Squamous Cell carcinomas. Also, how host responses, namely those mediated by macrophages, influence angiogenesis and lymphangiogenesis in NMSCs.

2. To identify the photoproducts of widely used drugs that act as photo-carcinogens (e.g. thiazides) and their mechanisms of skin carcinogenesis.

3. To understand how the cell cycle dynamics influences skin carcinogenesis and hair follicle senescence.

4. To validate potential biomarkers of disease activity and of recurrence in psoriasis. We are currently focusing our efforts on complement Factor H, recently identified by us as a potential biomarker.

Head of Laboratory

Paulo Manuel Leal Filipe (MD, PhD), Assistant Professor of Dermatology

Team

Ana Daniela Casimiro Cunha	Graduate	PhD Student
João António Augusto Ferreira	PhD	Staff Scientist
João Borges da Costa	PhD	Clinical Researcher
João Nuno Maia Rodrigues Silva	PhD	Clinical Researcher
Luís Miguel dos Santos Reis Soares de Almeida	PhD	Clinical Researcher
Marco António Assunção das Neves	Master	Lab Technician (Started January)
Maria Clara Gomes da Fonseca Pedro Bicho	PhD	Clinical Researcher
Miguel Duarte Botas Alpalhão	Master	Trainee (Started February)
Pedro Henrique Dobrões da Fonseca	Master	Lab Technician

Major Scientific Achievements

- 1) The identification of the photo-degradation products (intermediates and end-products) of Voriconazole, a triazole commonly prescribed for treatment and prophylaxis of severe fungal infections such as candidiasis and aspergillosis in immune-depressed patients. This will be relevant in the future identification of susceptible individuals (Journal of Photochemistry & Photobiology, B: Biology, 2018).
- 2) The identification of complement factor H by mass spectrometry in the serum of psoriatic patients as a promising predictor of disease remission and recurrence (Am Journal Translat Research, 2018).
- 3) The development of a novel methodology that allows the high-throughput analysis of the cell cycle stage at which DNA damage was introduced, the actual cell cycle stage, and the extent of DNA repair by single imaging at the single-cell level. This will provide an important add-on to our previously published methodology for the analysis of the cell cycle (Oncotarget, 2017). These methodologies will be relevant to understanding how the cell cycle influences skin carcinogenesis and hair follicle senescence (major Objective 3).
- 4) The optimisation of methodologies for the *in vitro* culture, maintenance and metabolic labelling of single hair follicles, and for the amplification of hair follicle stem cells.

Selected Publications

Teixeira A, Morlière P, Ferreira J, Conte MA, Galmiche A, Mazière JC, Santus R, Filipe P (2016). Interplay between Membrane Lipid Peroxidation and Photoproduct Formation in the Ultraviolet A-Induced Phototoxicity of Vemurafenib in Skin Keratinocytes. *Toxicol Sci.*, 154: 289-295. (IF: 4.081, Citations: 1. Source: Web of Science).

Pereira PD, Serra-Caetano A, Cabrita M, Bekman E, Braga J, Rino J, Santus R, Filipe PL, Sousa AE, Ferreira JA (2017). Quantification of cell cycle kinetics by EdU (5-ethynyl-2-deoxyuridine)-coupled-fluorescence-intensity analysis. *Oncotarget*, 8: 40514-40532. (IF: 5.168, Citations: 3. Source: Web of Science).

Morlière P, Hug GL, Patterson LK, Mazière JC, Ausseil J, Dupas JL, Ducroix JP, Santus R, Filipe P (2014). Chemistry of free radicals produced by oxidation of endogenous aminoketones. A study of 5 aminolevulinic acid and aminoacetone by fast kinetics spectroscopy. *Biochim Biophys Acta.*

1840(10): 3190-7. doi: 10.1016/j.bbagen.2014.07.002. Epub 2014 Jul 10. 1840, 3190-7. (IF: 4.702, Citations: 1. Source: Web of Science).

Pinheiro T, Silva R, Fleming R, Gonçalves A, Barreiros MA, Silva JN, Morlière P, Santus R, Filipe P (2014). Distribution and quantitation of skin iron in primary haemochromatosis: correlation with total body iron stores in patients undergoing phlebotomy. *Acta Derm Venereol.*, 94 (1): 14-9. doi: 10.2340/00015555-1601. 94, 14-9. (IF: 4.244, Citations: 6. Source: Web of Science).

Morlière P, Silva AMS, Seixas RSGR, Boscá F, Mazière J-C, Ferreira J, Santus R, Filipe P (2018). Photosensitisation by voriconazole-N-oxide results from a sequence of solvent and pH-dependent photochemical and thermal reactions. *Journal of Photochemistry & Photobiology, B: Biology*, 187: 1-9. doi:10.1016/j.jphotobiol.2018.07.023. (IF: 3.165, Citations: 0. Source: Web of Science and Scopus).

Ongoing Research Projects

2017/2021: Vascular patterns in non-melanoma skin cancer assessed by reflectance confocal microscopy and 3D imaging. Coordinator: Paulo Filipe. Funding Agency: Sociedade Portuguesa de Dermatologia e Venerologia and Several Laboratories. Reference: Angiogenesis PFilipe. Amount: € 19 850,00. Total Amount: € 19 850,00.

2016/2020: Th9-IL9R axis: a role in tissue memory in plaque-type psoriasis?. Coordinator: Paulo Filipe. Funding Agency: Novartis. Reference: Novartis PFilipe. Amount: € 30 400,00. Total Amount: € 30 400,00.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria do Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

Publications in Peer Review Journals

Sanches M, Marco-Pinto A, Filipe P, Maia e Silva J (2018). Jigsaw Puzzle” advancement flap. *Journal of Cutaneous and Aesthetic Surgery*. (IF:--, Citations: 0. Sources: Web of Science and Scopus).

Alpalhão M, Antunes J, Gouveia A, Travassos AR, Lopes L, Sanches M, Pinto A, Rodrigues B, Calado S, Ferreira J, Filipe P (2018). A randomized controlled clinical trial to assess the impact of motivational phone calls on therapeutic adherence in patients suffering from psoriasis. *Dermatologic Therapy*. <https://doi.org/10.1111/dth.12667> (IF: 1.563, Citations: 0. Sources: Web of Science and Scopus).

Pimenta R, Fonseca I, Borges-Costa J (2018). African Kaposi's Sarcoma. *Acta Médica Portuguesa*. (IF: 0.581, Citations: 0. Sources: Web of Science and Scopus).

Oliveira JM, Sobreira G, Velosa J, Telles Correia D, Filipe P (2018). Association of Isotretinoin with Depression and Suicide: A Review of Current of Current Literature. *J Cutan Med Surg.*, 22(1): 58-64. doi: 10.1177/1203475417719052. (IF: 1.212, Citations: 3. Sources: Web of Science and Scopus).

Borges-Costa J (2018). Basal cell carcinoma in a 17-year-old organ transplant recipient. *Pediatr Dermatol.*, 35(5): e312. doi: 10.1111/pde.13537. (IF: 1.041, Citations: 0. Sources: Web of Science and Scopus).

Carreira A, Ferreira JB, Pereira I, Ferreira J, Filipe P, Ferreira RB, Monteiro S (2018). Blad-containing oligomer: a novel fungicide used in crop protection as an alternative treatment for tinea pedis and tinea versicolor. *J Med Microbiol.*, 67(2): 198-207. doi: 10.1099/jmm.0.000675 (IF: 2.112, Citations: 0. Sources: Web of Science and Scopus).

Roda A, Pinto A, Filipe AR, Travassos AR, Freitas JP, Filipe P (2018). Clinical and laboratory factors associated with prolonged hospital stay among patients with cellulitis/erysipelas. *Acta Médica Portuguesa*. (IF: 0.581, Citations:--. Source: Web of Science).

Garrido PM, Borges-Costa J (2018). Eruptive melanocytic nevi in HIV infected patients: report of three cases. *Dermatol Online J.* 24(6). pii: 13030/qt2800d7xm (IF:--, Citations: 0. Source: Scopus).

Ortins-Pina A, Llamas-Velasco M, Turpin S, Soares-Almeida L, Filipe P, Kutzner H (2018). FOSB immunoreactivity in endothelia of epithelioid hemangioma (angiolymploid hyperplasia with eosinofilia). *J Cutan Pathol.* 45(6): 395-402. doi: 10.1111/cup.13141 (IF: 1.532, Citations:--. Source: Web of Science).

Arrais de Castro R, Villas P, Borges-Costa J, Tato Marinho R (2018). Hepatitis C virus infection: “beyond the liver”. *BMJ Case Reports*. <http://dx.doi.org/10.1136/bcr-2018-225817> (IF:--, Citations: 0. Sources: Scopus).

Roda A, Travassos AR, Soares-Almeida L, Has C (2018). Kindler syndrome in a patient with colitis and primary sclerosing cholangitis: coincidence or association? *Dermatol Online J*. 24(3). pii: 13030/qt4k08r7x4 (IF:--, Citations: 0. Source: Scopus).

Roda A, Travassos AR, Soares-Almeida L, Kutzner H (2018). Lupus erythematosus mimicking mycosis fungoides: CD123+plasmacytoid dendritic cells as a useful diagnostic clue. *Journal of Cutaneous Pathology*. <https://doi.org/10.1111/cup.13395> (IF: 1.532, Citations:--. Source: Web of Science).

Pimenta R, Urbano F, Soares-Almeida L, Fernandes S (2018). Neonatal Lupus Erythematosus in a newborn with Citrullinemia. *Acta Reumatologica Portuguesa*. (IF: 1.105, Citations: 0. Source: Web of Science and Scopus).

Marcos-Pinto A, Soares-de-Almeida L, Borges-Costa J (2018). Nonvenereal Penile Dermatoses: A Retrospective Study. *Indian Dermatol Online J*. 9(2): 96–100. doi: 10.4103/idoj.IDOJ_23_17 (IF:--, Citations:--).

Ortins-Pina A, Viana I, Filipe P, Soares-Almeida L (2018). Painful Pustules on Hands and Feet with Acute Hepatitis: Answer. *The American Journal of Dermatopathology*. 40(6): 454–455. doi: 10.1097/DAD.0000000000000853 (IF:--, Citations: 0. Source: Scopus).

Ortins-Pina A, Viana I, Filipe P, Soares-Almeida L (2018). Painful Pustules on Hands and Feet with Acute Hepatitis: Challenge. *The American Journal of Dermatopathology*. 40(6): e76–e77. doi: 10.1097/DAD.0000000000000854 (IF:--, Citations: 0. Source: Scopus).

Morliére P, Silva AMS, Seixas RSGR, Boscá F, Maziére JC, Ferreira J, Santus R, Filipe P (2018). Photosensitisation by voriconazole-N-oxide results from a sequence of solvent and pH-dependent photochemical and thermal reactions. *J Photochem Photobiol B*, 187: 1-9. doi: 10.1016/j.jphotobiol.2018.07.023 (IF: 3.165, Citations: 0. Sources: Web of Science and Scopus).

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Marcos-Pinto A, Ortins-Pina A, Sanches M, Maia Silva J (2018). Reconstruction of an anterior auricular defect through a tunnelized preauricular transposition flap. *J Cutan Aesthet Surg.* 11(1): 42–44. doi: 10.4103/JCAS.JCAS_126_17 (IF: 1.532, Citations:--. Source: Web of Science).

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Marcos-Pinto A, Ortins-Pina A, Borges-Costa J (2018). Skin Diseases in Africans. *Acta Médica Portuguesa.* (IF: 0.581, Citations:--. Source: Web of Science).

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Other National Publications

Borges-Costa J, Hofbauer G (2018). A Importância de Clínicas Dermatológicas dedicadas no atendimento de receptores de transplantes de órgãos. *Revista da Sociedade Portuguesa de Dermatologia e Venereologia*, 76(4): 371-2.

Tiago Torres, Paulo Filipe (2018). A Nova Formulação de Calcipotriol/Dipropionato de Betametasona em Espuma Cutânea para o Tratamento da Psoríase. *Revista da Sociedade Portuguesa de Dermatologia e Venereologia*. V.76, n.1 (2018): Janeiro-Março.

Alpalhão M, Filipe P (2018). Celulite e erisipela. Oliveira, Anabela (ed.), *Protocolos de Actuação na Urgência do Centro Hospitalar Lisboa Norte*.

Ortins-Pina A, Soares-Almeida L, Filipe P, Laureano Oliveira A (2018). Cutaneous Leishmaniasis and the role of Confocal Microscopy. *Revista da Sociedade Portuguesa de Dermatologia e Venereologia*, 76(4):445-50.

Miroux-Catarino A, Soares-Almeida L, Borges-Costa J (2018). Dermatofibromas eruptivos múltiplos em doente com infeção pelo VIH. *Revista da Sociedade Portuguesa de Dermatologia e Venereologia*, 76(3): 325-29.

Garrido PM, Borges-Costa J (2018). Doença de Lyme: Epidemiologia e Manifestações Clínicas Cutâneas. *Revista da Sociedade Portuguesa de Dermatologia e Venereologia*, 76(2): 169-176.

Margarida Rato, Adelina Costin, Constança Furtado, Cristina Sousa, Cristina Toscano, Cristina Veríssimo, Felicidade Trindade, Filipa Tavares Almeida, Glória da Cunha Velho, Goreti Catorze, Inês Raposo, Joana Selada, João A Ferreira, Judite Batista, Luis Santos, Manuel Sereijo, Manuela Silva, Margarida Apetato, Maria Sanches, Miguel Costa-Silva, Paulo L Filipe, Paulo Santos, Pedro D. Fonseca, Rosa Mascarenhas, Rui Bajanca, Virginia Lopes, Viviana Lewis, Maria da Luz Duarte, Célia Galhardas, Margarida Anes (2018). Epidemiologia das infeções fúngicas superficiais em Portugal. *Revista da Sociedade Portuguesa de Dermatologia e Venereologia*. v.76, n.3 (2018): Julho-Setembro.

Alpalhão M, Filipe P (2018). Escabiose. Oliveira, Anabela (ed.), *Protocolos de Actuação na Urgência do Centro Hospitalar Lisboa Norte*.

Alpalhão M, Filipe P (2018). Herpes Zoster. Oliveira, Anabela (ed.), *Protocolos de Actuação na Urgência do Centro Hospitalar Lisboa Norte*

Miguel Garrido P, Borges-Costa J (2018). Manifestações clínicas atípicas de infeção genital pelos virus Herpes simplex e abordagem terapêutica. Revista da Sociedade Portuguesa de Dermatologia e Venereologia, 76(1): 65-71.

Borges-Costa J (2018). Manifestações Dermatológicas. Capítulo 5 na Secção – Clínica da Infeção por VIH e da sida. Antunes, Francisco; Maltez, Fernandes (ed.), Manual sobre SIDA (8ª Edição, 2018).

Miroux-Catarino A, Soares-Almeida L, Borges-Costa J (2018). Multiple Eruptive Dermatofibromas in a patient with HIV infection. Revista da Sociedade Portuguesa de Dermatologia e Venereologia, 76(3):325-28.

Ana Ortins-Pina, Luís Soares-de-Almeida, Paulo Filipe, André Laureano Oliveira (2018). New World Leishmaniasis: The Role of Confocal Microscopy in Diagnosis and Follow-up - Tropical Dermatology. Revista da Sociedade Portuguesa de Dermatologia e Venereologia.v.76, n.4 (2018): Outubro-Dezembro.

Miroux-Catarino A, Borges-Costa J (2018). Notificação de parceiros – caracterização da população e preferências de 100 doentes consecutivos da Consulta de Venereologia de um Hospital Português. Revista da Sociedade Portuguesa de Dermatologia e Venereologia, 76(2): 151-156.

Teixeira A, Borges-Costa J (2018). Patologia anogenital por papilomavírus humano em doentes com vírus da imunodeficiência humana. Revista Portuguesa de Medicina Geral e Familiar, 34(6): 371-4.

Roda A, Freitas JP (2018). Qual o papel dos filtros solares na prevenção do carcinoma basocelular? Revista fotobiológica.

Pimenta R, Freitas JP (2018). Revisão das abordagens terapêuticas no Vitíligo. Acta Fotobiológica Volume 34 – Suplemento 1- 2018.

Alpalhão M, Filipe P (2018). Toxidermias. Oliveira, Anabela (ed.), Protocolos de Actuação na Urgência do Centro Hospitalar Lisboa Norte.

Alpalhão M, Filipe P (2018). Uretrites. Oliveira, Anabela (ed.), Protocolos de Actuação na Urgência do Centro Hospitalar Lisboa Norte.

Alpalhão M, Filipe P (2018). Urticária aguda. Oliveira, Anabela (ed.), Protocolos de Actuação na Urgência do Centro Hospitalar Lisboa Norte.

Ortins-Pina A, Soares-Almeida L, Borges-Costa J (2018). Vacina contra o VPH. Revista da Sociedade Portuguesa de Dermatologia e Venereologia, 76(4):419-24.

Ortins-Pina A, Soares-Almeida L, Borges-Costa J (2018). Vacinação contra o vírus do papiloma humano em Dermatologia. Revista da Sociedade Portuguesa de Dermatologia e Venereologia, 76(4): 419-24.

Invited Lectures and Seminars

Pimenta R. A farmácia de Dermatologia – Terapêutica tópica. Curso satélite Dermatologia das 24ª Jornadas de Pediatria, Hospital Santa Maria, Lisbon, Portugal, February 7, 2018.

Sanches M. Acne. Curso satélite Dermatologia das 24ª Jornadas de Pediatria, Hospital Santa Maria, Lisbon, Portugal, February 7, 2018.

Roda A. Comichões de verão: picada de inseto e estrófulo. Curso satélite Dermatologia das 24ª Jornadas de Pediatria, Hospital Santa Maria, Lisbon, Portugal, February 7, 2018.

Pimenta R. Corticoterapia tópica – Selecionar a molécula e forma de apresentação para maximizar a eficácia e reduzir os riscos. Curso satélite Dermatologia das 24ª Jornadas de Pediatria, Hospital Santa Maria, Lisbon, Portugal, February 7, 2018.

Roda A. Semiologia cutânea – o dicionário da dermatologia. Curso satélite Dermatologia das 24ª Jornadas de Pediatria, Hospital Santa Maria, Lisbon, Portugal, February 7, 2018.

Marcos-Pinto A. Alterações cutâneas no recém-nascido. Curso de Dermatologia Pediátrica, Centro Hospital Lisboa Norte, Hospital Santa Maria, Lisbon, Portugal, February 13, 2018.

Marcos-Pinto A. Infecções cutâneas. Update em Medicina, Albufeira, Portugal, April 20, 2018.

Borges-Costa A. Comunicação sobre patologia dermatológica em viajantes. Curso de Medicina das Viagens da Universidade Nova de Lisboa, Lisbon, Portugal, April 2018.

Borges-Costa A. Doença de Paget vulvar e outras neoplasias malignas da vulva. Curso de patologia genital feminina, Grupo de Estudo das Doenças Sexualmente Transmissíveis da Sociedade Portuguesa de Dermatologia e Venereologia, Lisbon, Portugal, April 2018.

Pimenta R. Dermatite de contacto. Provas epicutâneas. Curso Pós-Graduado de Atualização em Doenças Alérgicas Pediátricas, May 12, 2018.

Pimenta R. Pele e sol: Além dos cancros da pele. Congresso sobre “Sol, pele e cancro cutâneo em 2018”, Universidade Católica, Lisbon, Portugal, May 12, 2018.

Roda A. Sol e pele: Além dos cancros de pele. Congresso sobre “Sol, pele e cancro cutâneo em 2018”, Universidade Católica, Lisbon, Portugal, May 12, 2018.

Marcos-Pinto A. Doenças sexualmente transmissíveis. Curso de Medicina na Adolescência, Centro Hospitalar Lisboa Norte – Hospital de Santa Maria, Lisbon, Portugal, May 17, 2018.

Soares-Almeida L. Dermatoses espongióticas e psoriasiformes. Invited guest speaker. Curso de Iniciação à Dermatopatologia, SPDV, Lisbon, Portugal, May 19, 2018.

Soares-Almeida L. D2T10.1D Sulfones. Invited guest speaker for the round table “Reappraisal of classical drugs”. EADV Paris, Paris, France, September 14, 2018.

Filipe P. Nail psoriasis: When and how to treat. Invited guest speaker. EADV Paris, Paris, France, September 15, 2018.

Marcos-Pinto A, Costin A, Tapadinhas C, Bartolo E. Bullous pemphigoid in infant. 3^o. Curso de Dermatologia Pediátrica para residentes, Sevilla, Spain, September 21-23, 2018.

Soares-Almeida L. Hair Histopathology. Invited guest speaker. VIII Symposium de Trichology, Lisbon, Portugal, September 29, 2018.

Alpalhão M, Sanches M. Apresentações dermatológicas mais frequentes em Medicina Geral e Familiar. Congresso Nacional de Internos de Ano Comum 2018, Lisbon, Portugal, October 2018.

Borges-Costa A. Como evitar o erro médico nos procedimentos médico-cirúrgicos? I Curso Pós-Graduado de Atualização em Direito da Medicina, Leges Artis e Prática Clínica, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, October 2018.

Pimenta R. Neonatal lupus. EADV Resident Course – Advanced Pediatric Dermatology, November 2-3, 2018.

Communications in International Conferences

Borges-Costa J, Roda A, Soares-Almeida L, Filipe P. Generalized cutaneous candidiasis in a renal transplant recipient with Crohn's disease. XVIII Reunion of Skin Care in Organ Transplant Patients Europe, Zurich, Switzerland, April 2018. (Oral Presentation).

Borges-Costa J. Basal cell carcinoma in a 17-year-old kidney transplanted patient. XVIII Reunion of Skin Care in Organ Transplant Patients Europe, Zurich, Switzerland, April 2018. (Poster Presentation).

Roda A, Pinto A, Filipe AR, Travassos AR, Freitas JP, Filipe P. Characteristics associated with prolonged hospital stay among patients with cellulitis/erysipelas. 15th EADV Spring Symposium, Budva, Montenegro, May 3-6, 2018. (Poster Presentation).

Roda A, Travassos AR, Soares-Almeida L, Has C. Kindler syndrome in a patient with colitis and primary sclerosing cholangitis: Coincidence or association? 15th EADV Spring Symposium, Budva, Montenegro, May 3-6, 2018. (Poster Presentation).

Pimenta R, Sanches M, Gouveia A, Soares-Almeida L, Freitas JP, Filipe P. Pyoderma gangrenosum: A retrospective study of 35 cases. 15th EADV Spring Symposium, Budva, Montenegro, May 3-6, 2018. (Poster Presentation).

Pimenta R, Roda A, Alves N. Vacuum-assisted closure therapy in Fournier's gangrene. 15th EADV Spring Symposium, Budva, Montenegro, May 3-6, 2018. (Poster Presentation).

Pimenta R, Fernandes S, Tapadinhas C, Soares-Almeida L, Filipe P. Targetoid lesions in newborn with citrullinemia. European Society for Pediatric Dermatology 2018 18th Annual meeting, June 7-9, 2018. (Poster Presentation).

Pimenta R. Juvenile xanthogranuloma. 3^o Curso de Dermatologia Pediátrica para residentes, Sevilla, Espanha, September 21-23, 2018. (Oral Presentation).

Roda A, Pimenta R, Fernandes S. Periorificial and acral dermatitis: a case report. 3^o Curso de Dermatologia Pediátrica para residentes, Sevilla, Espanha, September 21-23, 2018. (Oral Presentation).

Marco-Pinto A, Borges-Costa J, Reis M, Filipe P. Dermatoses in a black population from African Countries of Official Portuguese Language. 27th EADV Congress, Paris, France, September 2018. (Poster Presentation).

Marcos-Pinto A, Borges-Costa J, Reis M, Filipe P. Dermatoses in Africans. 27th EADV Congress, Paris, France, September 2018. (Poster Presentation).

Marcos-Pinto A, Marques T, Borges-Costa J. Lymphomatoid papulosis in a human immunodeficiency virus-positive man. 27th EADV Congress, Paris, France, September 2018. (Poster Presentation).

Miroux-Catarino A, Borges-Costa J. Partner notification-characterization of the population and preferences of 100 consecutive patients of a Venereology Consultation. 27th EADV Congress, Paris, France, September 2018. (Poster Presentation).

Marcos-Pinto A, Borges-Costa J. Verrucous perianal herpes virus infection in a human immunodeficiency virus-positive man treated with Imiquimod. 27th EADV Congress, Paris, France, September 2018. (Poster Presentation).

Pimenta R, Pina A, Soares-Almeida L, Filipe P, Oliveira AL. Reflectance confocal microscopy for the diagnosis of granulomatous dermatitis. World Congress of Confocal Microscopy, Rome, Italy, October 18-20, 2018. (Poster Presentation).

Roda A, Pimenta R, Pina A, Cardoso JC, Filipe P, Oliveira A. Aquagenic wrinkling of palms viewed by reflectance confocal microscopy. World Congress of Confocal Microscopy, Roma, Italy, October 18-20, 2018. (Poster Presentation).

Marcos-Pinto A, Rodas A, Travassos AR. Folliculitis decalvans induced by erlotinib. Hair & Scalp Combined Course, Bologna, Italy, October 19-21, 2018. (Oral Presentation).

Pimenta R. Neonatal lupus. EADV Resident Course – Advanced Pediatric Dermatology, November 2-3, 2018. (Oral Presentation).

Marcos-Pinto A, Maia Silva J. Reconstruction of ear defects. Advanced Surgery Course, Brussels, Belgium, November 15-17, 2018. (Oral Presentation).

Alvim C, Paiva R, Pacheco T, Macedo D, Fernandes I, Soares-Almeida L, Borges-Costa J. Kaposi sarcoma, a single center experience. 2018 Reunion of the Connective Tissue Oncology Society, Rome, Italy, November 2018. (Poster Presentation).

Communications in National Conferences

Castro R, Vilas P, Borges-Costa J, Marinho R. Infecção pelo vírus da hepatite C: “para lá do fígado”. Sessão de Casos Clínicos da Sociedade Portuguesa de Gastrenterologia, Lisbon, Portugal, February 2018. (Oral Presentation).

Roda A, Travassos AR, Soares-Almeida L, Filipe P. Carcinoma espinocelular em doente com psoríase sob terapêutica biológica. Dermcademy + Dermatalks 3 – Moving Forward, Lisbon, Portugal, April 13-14, 2018. (Poster Presentation).

Marcos-Pinto A. Infecções cutâneas. Update em Medicina, Albufeira, Portugal, April 20, 2018. (Oral Presentation).

Sanches M, Marques T, Roda A, Filipe P, Antunes J. Uma associação inesperada? DermAcademy Updates and Challenges, April 2018. (Oral Presentation).

Pimenta R, Roda A, Soares-Almeida L, Fernandes S, Leal-Filipe P. Lúpus neonatal em lactente com citrulinémia. Reunião da Primavera SPDV 2018, Luso, Portugal, May 25-26, 2018. (Oral Presentation).

Pimenta R, Cardoso JC, Leal-Filipe P, Oliveira AL. Técnicas não invasivas no diagnóstico de Sarcoidose cutânea. Reunião da Primavera SPDV 2018, Luso, Portugal, May 25-26, 2018. (Oral Presentation).

Pimenta R, Arzberger E, Oliveira AL. Dermatoscopia e microscopia confocal de reflectância no diagnóstico de granuloma facial-2casos. Reunião da Primavera SPDV 2018, Luso, Portugal, May 25-26, 2018. (Poster Presentation).

Roda A, Pinto A, Travassos AR, Soares-Almeida L. Edema labial persistente: um caso de queilite granulomatosa por reação de corpo estranho. Reunião da Primavera SPDV 2018, Luso, Portugal, May 25-26, 2018. (Poster Presentation).

Roda A, Travassos AR, Soares-Almeida L. Foliculite decalvante induzida por erlotinib. Reunião da Primavera SPDV 2018, Luso, Portugal, May 25-26, 2018. (Poster Presentation).

Pimenta R, Oliveira AL, Pinto B, Uva L, Soares-Almeida L, Filipe P. Líquen plano pigmentado inverso-dermatoscopia e microscopia confocal como meios complementares. Reunião da Primavera SPDV 2018, Luso, Portugal, May 25-26, 2018. (Poster Presentation).

Roda A, Lopes L, Pimenta R, Soares-Almeida L. Quando o ácaro desafia o dermatopatologista. Reunião da Primavera SPDV 2018, Luso, Portugal, May 25-26, 2018. (Poster Presentation).

Pimenta R. Juvenile xanthogranuloma. 3º Curso de Dermatologia Pediátrica para residentes, September 21-23, 2018. (Oral Presentation).

Roda A, Queirós C, Uva L, Travassos AR, Soares-Almeida L, Leal-Filipe P. Displasia de células escamosas em doentes tratados com hidroxiureia: uma série de quatro casos. XVIII Congresso Nacional de Dermatologia e Venereologia, Lisbon, Portugal, November 30-December 2, 2018. (Oral Presentation).

Pimenta R, Pina A, Quadros C, López-Presa D, Ferreira A, Alves D, Soares-Almeida L, Leal-Filipe P. Doença linfoproliferativa CD30+ com apresentação cutânea e envolvimento do sistema nervoso central. XVIII Congresso Nacional de Dermatologia e Venereologia, Lisbon, Portugal, November 30-December 2, 2018. (Oral Presentation).

Roda A, Pina A, Travassos AR, Soares-Almeida L, Leal-Filipe P. Erupção granuloma anular-like como manifestação inicial de leucemia/linfoma de células T do adulto. XVIII Congresso Nacional de Dermatologia e Venereologia, Lisbon, Portugal, November 30-December 2, 2018. (Oral Presentation).

Roda A, Travassos AR, Freitas JP, Soares-Almeida L, Leal-Filipe P. Esclerose cutânea e eosinofilia periférica: revisitando a doença de Schulman. XVIII Congresso Nacional de Dermatologia e Venereologia, Lisbon, Portugal, November 30-December 2, 2018. (Oral Presentation).

Marcos-Pinto A, Machado S, Sanches M, Correia T. Estomatologia de contacto alérgica a aromas em dentífricos. XVIII Congresso Nacional de Dermatologia e Venereologia, Lisbon, Portugal, November 30-December 2, 2018. (Oral Presentation).

Pimenta R, Soares-Almeida L, Leal-Filipe P, Oliveira AL. Microscopia confocal na avaliação de infecções e infestações cutâneas. XVIII Congresso Nacional de Dermatologia e Venereologia, Lisbon, Portugal, November 30-December 2, 2018. (Oral Presentation).

Marcos-Pinto A, Almeida C, Soares-Almeida L, Leal-Filipe P. Vasculite gangrenosa juvenil do escroto: uma causa rara de úlcera genital. XVIII Congresso Nacional de Dermatologia e Venereologia, Lisbon, Portugal, November 30-December 2, 2018. (Oral Presentation).

Roda A, Pimenta R, Fernandes S, Soares-Almeida L, Filipe P. Acrodermatite enteropática: Relato de um caso. XVIII Congresso Nacional de Dermatologia e Venereologia, Lisbon, Portugal, November 30-December 2, 2018. (Poster Presentation).

Pimenta R, Soares-Almeida L, Filipe P, Oliveira AL. Algoritmo diagnóstico de dermatoses inflamatórias por microscopia confocal. XVIII Congresso Nacional de Dermatologia e Venereologia, Lisbon, Portugal, November 30-December 2, 2018. (Poster Presentation).

Sanches M, Vale-Fernandes P, Costa-Rosa J, Rito M, Moura C, Rafael M, Cravo M, Pecegueiro M. Caracterização da população com mutação BRAF V600 nos doentes com melanoma maligno cutâneo na consulta de Dermatologia do IPOLFG. XVIII Congresso Nacional SPDV, December 2, 2018. (Oral Presentation).

Science and Society

Roda A. Sol e pele: Além dos cancros de pele. Congresso sobre “Sol, pele e cancro cutâneo em 2018”, Universidade Católica, Lisbon, Portugal, May 12, 2018.

MSc Thesis Completed

Beatriz Fernandes, 05/04/2018, Estudo da prevalência de Virus do Papiloma Humano nas mãos de profissionais de Saúde. Supervisor: Paulo Filipe

Inês Neves, 24/05/2018, NAG and Beta2microglobulin as biomarkers of steroid resistance in children with idiopathic nephrotic syndrome: a systematic review and meta-analysis. Supervisor: Paulo Filipe.

Pedro Simas Lab

Major Interests / Objectives

We utilise murid herpesvirus 4, which causes persistent infection in B-lymphocytes in laboratory mice, as a model to study human gammaherpesvirus pathogenesis, namely Kaposi's sarcoma associated herpesvirus (KSHV). KSHV is the etiologic agent of KS and primary effusion lymphoma. KSHV infection of tumour cells is primarily latent and KSHV drives cells to proliferate. KSHV persists in latently infected tumour cells as an extrachromosomal, multi-copy episome (plasmid). KSHV latency-associated nuclear antigen (kLANA) mediates KSHV episome persistence, thus tumour cell viability. Since there is no tractable animal model for KSHV, the MuHV-4 model provides a unique opportunity to study gammaherpesviruses *in vivo*.

Head of Laboratory

João Pedro Monteiro e Louro Machado de Simas, PhD

Team

Andreia Filipa Bonecas Mósca	PhD	Junior Post-Doctoral Researcher (Started December)
Anita Marisa Pinto Sousa	Graduate	MSc Student (Started September)
Catarina Neves Costa	Graduate	MSc Student (Started September)
Marta Pires de Miranda	PhD	Senior Post-Doctoral Researcher
Nelly Marine Carreira da Silva	Graduate	MSc Student
Tânia Alexandra da Cruz Rodrigues	Graduate	Trainee

Laboratory Keywords / Research Areas

Herpes virus, B-lymphocytes, Chronic infection, Kaposi sarcoma herpesvirus (KSHV), B cell and lymphomas, MuHV-4 and animal model of infection.

Major Scientific Achievements

We found that despite 60 million years of evolutionary divergence, kLANA and mLANA act reciprocally on TR DNA and kLANA can rescue mLANA deficient virus to enable chimeric virus to establish latent infection in mice. This system will allow, for the first time, *in vivo* investigation of kLANA in a well-established small animal model of infection.

This work is of broad interest as it successfully tests the concept of functional substitution of a human pathogen gene into a model pathogen to allow *in vivo* investigation. Previously, such chimeric viruses were felt to be non-viable due to evolutionary divergence, and have not been used. Importantly, these findings have the potential to be applied to other human pathogens, which lack small animal models.

Selected Publications

Habison AC, de Miranda MP, Beauchemin C, Tan M, Cerqueira SA, Correia B, Ponnusamy R, Usherwood EJ, McVey CE, Simas JP, Kaye KM (2017). Cross-species conservation of episome maintenance provides a basis for *in vivo* investigation of Kaposi's sarcoma herpesvirus LANA. *PLoS Pathogens*, 13(9): e1006555. (IF: 6.608, Citations: 3. Source: Web of Science).

Decalf J, Godinho-Silva C, Fontinha D, Marques S, Simas JP (2014). Establishment of Murine Gammaherpesvirus Latency in B Cells Is Not a Stochastic Event. *PLoS Pathogens*, 10(7): e1004269. (IF: 6.608, Citations: 5. Source: Web of Science).

Godinho-Silva C, Marques S, Fontinha D, Stevenson PG, Simas JP (2014) Defining Immune Engagement Thresholds for *in vivo* Control of virus-driven Lymphoproliferation. *PLoS Pathogens*, 10(6): e1004220. (IF: 6.608, Citations: 1. Source: Web of Science).

Correia B, Cerqueira SA, Beauchemin C, Pires de Miranda M, Li S, Ponnusamy R, Rodrigues L, Schneider TR, Carrondo MA, Kaye KM, Simas JP, McVey CE (2013). Crystal structure of the gamma-2 herpesvirus LANA DNA binding domain identifies charged surface residues, which impact viral latency. *PLoS Pathogens*, 9(10): e1003673. (IF: 6.608, Citations: 18. Source: Web of Science).

Rodrigues L, Popov N, Kaye KM and Simas JP (2013). Stabilization of Myc through Heterotypic Poly-Ubiquitination by mLANA is Critical for γ -Herpesvirus Lymphoproliferation. *PLoS Pathogens*, 9(8): e1003554. (IF: 6.608, Citations: 6. Source: Web of Science).

Ongoing Research Projects

2018/2021: Investigação de um gene tumoral viral num modelo de infecção em murino através de um vírus quimera. Coordinator: João Pedro Simas. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: 027947/2017. Amount: € 239,156,12. Total Amount: € 239,156,12.

2017/2020: CONGENTO - Consortium for Genetically Tractable Organisms. Coordinator: João Pedro Simas. Funding Agency: Fundação para a Ciência e a Tecnologia/Portugal2020. Reference: 027947/2017. Amount: € 560.086,20. Total Amount: € 3,408,283,80.

2016/2019: Chimera virus model to investigate the pathogenesis of Kaposi's sarcoma herpesvirus in laboratory mice. Coordinator: João Pedro Simas. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/IMI-MIC/0980/2014. Amount: € 199 998,00. Total Amount: € 199 998,00.

Other Projects

2016/2018: TwinToInfect: Unleash iMM's research excellence in immunity and infection through twinning to infect Lisbon and Portugal with its increase in competitiveness and innovation. Coordinator: Maria Manuel Mota. Funding Agency: European Commission. Reference: TWINNING 692022. Amount: € 893 500,00. Total Amount: € 999 996,25.

Publications in Peer Review Journals

Pires de Miranda M, Quendera AP, McVey CE, Kaye KM, Simas JP (2018). In vivo persistence of chimeric virus after substitution of the KSHV LANA DNA binding domain with that of MuHV-4. *Journal of Virology*, 15. pii: JVI.01251-18. doi: 10.1128/JVI.01251-18. (IF: 4.368, Citations: 0. Sources: Web of Science and Scopus).

Lawler C, de Miranda MP, May J, Wyer O, Simas JP, Stevenson PG (2018). Gammaherpesvirus Colonization of the Spleen Requires Lytic Replication in B Cells. *Journal of Virology*, 14;92(7). pii: e02199-17. doi: 10.1128/JVI.02199-17. (IF: 4.368, Citations: 0. Sources: Web of Science and Scopus).

Sérgio de Almeida Lab

Major Interests / Objectives

Our research focuses on the mechanisms that regulate chromatin dynamics during transcription and DNA damage repair and how they coordinate to safeguard the genome integrity. Our general aims are twofold: first, we aim at investigating the epigenetic regulation of transcription; in addition, we study the molecular mechanisms that sense, signal and repair DNA damage. A major focus of our research is to understand how changes in transcription and DNA repair are linked to cancer development.

Head of Laboratory

Sérgio Alexandre Fernandes de Almeida, PhD, Assistant Professor

Team

Alda Filipa Queirós Oliveira e Silva	Graduate	MSc Student (Started September)
Alexandra Coitos Vítor	PhD Student	PhD Student (Started January Left December)
Ana Isabel Afonso Duarte	Master	Trainee (Left May)
Ana Rita Fialho Grosso	PhD	Senior Post-Doctoral Researcher (Left January)
Beatriz Caetano Pereira Lucas	Graduate	MSc Student (Started February Left November)
Catarina Gomes Lisboa Marcelo Gouveia	Master Student	MSc Student (Left January)
Cristiana Marisa de Sousa Morgado	Master	Lab Technician (Started October)
Inês Correia da Silva Pires Faleiro	Master	PhD Student (Started January)
João Maria Rodrigues Perlico da Cruz Sabino	Master	PhD Student
João Pedro Agostinho de Sousa	Graduate	MSc Student (Left September)
Lim Bert De Swert	Graduate	BSc Student (Started January Left June)
Madalena Isabel Reto de Almeida	Graduate	MSc Student (Started September)
Mafalda Alexandra Ramos de Matos	Master	PhD Student (Left March)
Michael Andreas Oberhuemer	Other	BSc Student (Started January)
Robert Manfred Martin	PhD	Senior Post-Doctoral Researcher
Srchaiyanya Sridhara	PhD	Junior Post-Doctoral Researcher (Started October)

Laboratory Keywords / Research Areas

DNA repair, Chromatin, Gene expression, Cancer.

Major Scientific Achievements

- Published two original manuscripts in international journals (*Nucleic Acids Research* and *Science Advances*).
- Presented our research work in seven national and international conferences.
- Participated in advanced teaching in PhD and MSc programmes.
- Completed one PhD, two MSc theses in Portuguese universities and two MSc theses in international universities.

Selected Publications

Vítor AC, Sridhara SC, Sabino JC, Afonso AI, Grosso AR, Martin RM, de Almeida SF (2019). Single-molecule imaging of transcription at damaged chromatin. *Science Advances*, 5(1):eaau1249. doi: 10.1126/sciadv.aau1249. (IF: 11.511. Source: Web of Science).

Sridhara SC, Carvalho S, Grosso AR, Gallego-Paez LM, Carmo-Fonseca M, de Almeida SF (2017). Transcription dynamics prevent RNA-mediated genomic instability through SRPK2-dependent DDX23 phosphorylation. *Cell Rep.*, 18(2): 334-343. doi: 10.1016/j.celrep.2016.12.050 (IF: 8.282, Citations: 14. Source: Web of Science).

Grosso AR, Leite AP, Carvalho S, Matos MR, Martins FB, Vítor AC, Desterro JM, Carmo-Fonseca M, de Almeida AF (2015). Pervasive transcription read-through promotes aberrant expression of oncogenes and RNA chimeras in renal carcinoma. *eLife*. doi: 10.7554/eLife.09214 (IF: 7.725, Citations: 36. Source: Web of Science).

Carvalho S, Vitor A, Sridhara SC, Martins FB, Raposo AC, Desterro JM, Ferreira J, de Almeida SF (2014). SETD2 is required for DNA double-strand break repair and activation of the p53-mediated checkpoint. *eLife*. doi: 10.7554/eLife.02482 (IF: 7.725, Citations: 81. Source: Web of Science).

Carvalho S, Raposo AC, Martins FB, Grosso AR, Sridhara SC, Rino J, Carmo-Fonseca M, de Almeida SF (2013). Histone methyltransferase SETD2 coordinates FACT recruitment with nucleosome dynamics during transcription. *Nucleic Acids Research*. doi: 10.1093/nar/gks1472 (IF: 10.162, Citations: 60. Source: Web of Science).

Ongoing Research Projects

2018/2021: O papel determinante que lesões no DNA desempenham na transcrição e o seu impacto na diferenciação celular e em cancro. Coordinator: Sérgio de Almeida. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: BREAKandENTER - LISBOA-01-0145-FEDER-030438. Amount: € 239 753,90. Total Amount: € 239 753,90.

2018/2021: Papel fisiológico de inativação seletiva de núcleos em células multinucleadas. Coordinator: Robert Martin. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: ENUCLEATE - LISBOA-01-0145-FEDER-032271. Amount: € 239 227,92. Total Amount: € 239 227,92.

2018/2019: The inhibition of such R-loop suppressor enzymes leads to the selective killing of estrogen-dependent breast cancer cells. Coordinator: Sérgio de Almeida. Funding Agency: Fundo iMM-Laço. Reference: Fundo iMM-Laço. Amount: € 29 325,00. Total Amount: € 29 325,00.

2016/2019: Novel tumorigenic mechanisms of aberrant epigenetic regulation in clear cell renal cell carcinoma. Coordinator: Sérgio de Almeida. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIM-ONC/0016/2014. Amount: € 199 944,00. Total Amount: € 199 944,00.

2015/2019: Decoding pseudogene transcriptional regulation during cell proliferation. Coordinator: Ana Rita Grosso. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/00510/2014/CP1236/CT0007. Amount: € 50 000,00. Total Amount: € 50 000,00.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

Publications in Peer Review Journals

Landsverk HB, Sandquist LE, Sridhara SC, Rødland G, Sabino JC, de Almeida SF, Grallert B, Trinkle-Mulcahy L, Syljuåsen RG (2018). Regulation of ATR activity via the RNA polymerase II associated factors CDC73 and PNUTS-PP1. *Nucleic Acids Research*. doi: 10.1093/nar/gky1233. (IF: 11.561, Citations:--. Source: Web of Science).

Invited Lectures and Seminars

de Almeida SF. At the intersection of chromatin structure, transcription and DNA repair. Dunn School of Pathology Research Seminars, Oxford University, Oxford, UK, January 18, 2018.

de Almeida SF. Invited Speaker. Reciprocal regulatory links between transcription and DNA repair. Cabimer Research Seminars, Seville, Spain, February 16, 2018.

de Almeida SF. Invited Speaker. Single-molecule imaging of transcription at damaged chromatin. IGC seminar series, Oeiras, Portugal, May 18, 2018.

de Almeida SF. Invited Speaker. Reciprocal interactions between transcription and DNA repair. EMBO Workshop - RNA and genome maintenance, Mainz, Germany, October 10-13, 2018.

de Almeida SF. Invited Speaker. Single-molecule imaging of DNA break-induced transcription initiation. Symposium on Tumour Biology, Lisbon, Portugal, December 5, 2018.

Communications in International Conferences

Vítor AC, Sridhara SC, Sabino JC, Afonso AI, Grosso AR, Martin RM, de Almeida SF. Single-molecule imaging of transcription at damaged chromatin. EMBO Workshop: Chromatin dynamics and nuclear organization in genome maintenance, Illkirch, France, June 2018.

de Almeida SF. Reciprocal interactions between transcription and DNA repair. EMBO Workshop - RNA and genome maintenance, Mainz, Germany, October 10-13, 2018.

Matos MR, Posa I, Carvalho FS, Morais VA, Grosso AR, de Almeida SF. A systematic pan-cancer analysis of somatic variants reveals epigenetic drivers of intratumor heterogeneity. Cell Symposia TCGA Legacy: Multi-Omic Studies in Cancer, Washington DC, USA, 2018.

Internationalisation

During this year our team:

- Published two original research papers in international journals.
- Presented our research work in three international conferences.
- Maintained collaborative projects with research labs from the Oslo University and the Jacques Monod Institute in Paris.
- Hosted two ERASMUS students from Belgium and Austria.

Prizes, Honours and Awards

de Almeida SF. Member of the Lisbon Academy of Sciences.

Advanced Teaching

de Almeida SF. Invited Lecturer. BioSys PhD programme, Class of 2018, Faculty of Sciences, University of Lisbon, Lisbon, Portugal.

de Almeida SF. Coordinator of the module “Molecular & Cell Biology”, Class of 2018. Lisbon BioMed PhD Programme, University of Lisbon, Lisbon, Portugal.

MSc Thesis Completed

Beatriz Lucas, Biomedical Engineering, Instituto Superior Técnico, Universidade de Lisboa. Supervisor: Sérgio F. de Almeida.

Cristiana Morgado, Biologia Molecular e Genética, Faculdade de Ciências, Universidade de Lisboa. Supervisor: Sérgio F. de Almeida.

Lim de Swert, UC Leuven, Belgium. Supervisor: Sérgio F. de Almeida. (Erasmus).

Michael Oberhuemer, University of Vienna, Austria. Supervisor: Sérgio F. de Almeida. (Erasmus).

PhD Thesis Completed

Alexandra Vítor, 19/12/2018, “Reciprocal regulatory links between transcription and the DNA damage response”, Lisbon BioMed PhD Programme, Faculdade de Medicina, Universidade de Lisboa. Supervisor: Sérgio F. de Almeida.

Sérgio Dias Lab

Major Interests / Objectives

We study cancer as a systemic disease, and our main focus is to understand how cancers communicate with their "host". In detail, we study the role of blood vessels, the involvement of bone marrow-derived cells and of metabolic systemic signals in cancer onset and progression.

Head of Laboratory

Sérgio Jerónimo Rodrigues Dias, PhD, Associate Professor

Team

Ana Luísa Ferro Espadanal Torres Magalhães	PhD	Senior Post-Doctoral Researcher
Ana Patrícia Quintino Lopes	Graduate	MSc Student
Catarina Isabel de Melo Pinheiro	Graduate	MSc Student
Neidy Varela Rodrigues	PhD Student	PhD Student (Left August)
Rita de Sá Martins Pinto Gonçalves	Master	PhD Student (Left December)
Sandrina Nóbrega Pereira	PhD	Senior Post-Doctoral Researcher
Teresa Laura Mendes Serafim	PhD	Senior Post-Doctoral Researcher (Started December)

Laboratory Keywords / Research Areas

Angiogenesis, Tumour metastasis, Metabolism.

Major Scientific Achievements

We established a novel line of research at iMM, focused on cancer metabolism and its importance for cancer onset and progression. In 2018, we published several papers, and presented our findings in several National and International Conferences, reinforcing our role as leaders in this particular topic of cancer research. In addition to our ongoing International (David Lyden, Cornell University, USA) and National (Bruno Costa Silva, Champalimaud Foundation) collaborations, we established fruitful collaborations with several Labs at iMM, including Vanessa Morais, Edgar Gomes, Luís Costa, and Bruno Silva-Santos.

Selected Publications

Rodrigues NV, Correia DV, Mensurado S, Nóbrega-Pereira S, deBarros A, Kyle-Cezar F, Tutt A, Hayday AC, Norell H, Silva-Santos B, Dias S (2018). Low-Density Lipoprotein Uptake Inhibits the Activation and Antitumor Functions of Human V γ 9V δ 2 T Cells. *Cancer Immunology Research*. 6(4):448-457 (IF: 9.188, Citations: 0. Sources: Web of Science and Scopus).

Nóbrega-Pereira S, Caiado F, Carvalho T, Matias I, Graça G, Gonçalves LG, Silva-Santos B, Norell H, Dias S (2018). VEGFR-2-mediated reprogramming of mitochondrial metabolism regulates the sensitivity of acute myeloid leukemia to chemotherapy. *Cancer Research*. 78(3):731-741 (IF: 9.13, Citations: 2. Source: Web of Science).

Caiado F, Carvalho T, Rosa I, Remedio L, Costa A, Matos J, Heissig B, Yagita H, Hattori K, da Silva JP, Fidalgo P, Dias Pereira A, Dias S (2013). Bone marrow-derived CD11b+Jagged2+ cells promote epithelial to mesenchymal transition and metastization in colorectal cancer. *Cancer Research*, 73(14): 4233-46. (IF: 9.13, Citations: 24. Source: Web of Science).

Caiado F, Carvalho T, Silva F, Castro C, Clode N, Dye JF, Dias S (2011). The role of fibrin E on the modulation of endothelial progenitors adhesion, differentiation and angiogenic growth factor production and the promotion of wound healing. *Biomaterials*, 32(29): 7096-105. (IF: 8.802, Citations: 59. Source: Web of Science).

Gomes AL, Carvalho T, Torre C, Serpa J, Dias S (2010). Hypercholesterolemia promotes bone marrow cell mobilization by perturbing the SDF1:CXCR4 axis. *Blood*, 115(19): 3886-94. (IF: 15.13, Citations: 87. Source: Web of Science).

Ongoing Research Projects

2018/2021: Como o colesterol promove a metastização em cancro de mama. Coordinator: Sérgio Dias. Funding Agency: Fundação para a Ciência e Tecnologia. Reference: PTDC/MED-ONC/30436/2017. Amount: € 190 615,32. Total Amount: € 190 615,32.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

2016/2018: ReTuBi: Towards outstanding research and training in tumour. Coordinator: Edgar Gomes. Funding Agency: European Commission. Reference: Twinning 692322. Amount: € 788 725,00. Total Amount: € 999 975,00.

Publications in Peer Review Journals

Nóbrega-Pereira S, Dias S (2018). VEGF signaling in acute leukemia: mitochondrial connections. (Editorial). *Oncoscience*. 5(3-4): 54-56. (IF:--, Citations:--).

Gregório AC, Lacerda M, Figueiredo P, Simões S, Dias S, Moreira JN (2018). Meeting the needs of breast cancer: A nucleolin's perspective. *Critical Reviews in Oncology/Hematology*, 125: 89-101. (IF: 4.495, Citations: 2. Sources: Web of Science and Scopus).

Rodrigues NV, Correia DV, Mensurado S, Nóbrega-Pereira S, deBarros A, Kyle-Cezar F, Tutt A, Hayday AC, Norell H, Silva-Santos B, Dias S (2018). Low-Density Lipoprotein Uptake Inhibits the Activation and Antitumor Functions of Human V γ 9V δ 2 T Cells. *Cancer Immunology Research*. 6(4):448-457 (2018). (IF: 9.188, Citations: 0. Sources: Web of Science and Scopus).

Nóbrega-Pereira S, Caiado F, Carvalho T, Matias I, Graça G, Gonçalves LG, Silva-Santos B, Norell H, Dias S (2018). VEGFR-2-mediated reprogramming of mitochondrial metabolism regulates the sensitivity of acute myeloid leukemia to chemotherapy. *Cancer Research*, 78(3): 731-741 (IF: 9.13, Citations:--. Source: Web of Science).

Invited Lectures and Seminars

Dias S. Metabolic Shifts in cancer. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018.

Dias S. Chair. 8th International Conference on Tumour Microenvironment (ICMS), Lisbon, Portugal, June 10-14, 2018.

Nóbrega-Pereira S. Cancer Progression: Focus on stemness, invasion, metabolism and metastasis. ReTuBi Project Framework Second Joint Summer School, Hotel TRYP Lisboa Caparica, Portugal, September 17-20, 2018.

Nóbrega-Pereira S. Metabolic selection of tumor phenotypes. 10^o Simpósio de Metabolismo, FMUP, Porto, Portugal, October 17, 2018.

Dias S. VEGFR2 Reprograms Mitochondrial Metabolism and the response of Leukemia to Chemotherapy. Signalling Afternoon, Institute of Biomedicine (iBiMED), University of Aveiro, Aveiro, Portugal, November 20, 2018.

Dias S. Metabolic shifts in Cancer. Symposia on Tumour Biology: from basic biology to disease, Pestana Palace Lisbon, Lisbon, Portugal, December 5-6, 2018.

Communications in International Conferences

Nóbrega-Pereira S, Dias S. VEGFR2-mediated reprogramming of mitochondrial metabolism regulates the sensitivity of acute myeloid leukemia to chemotherapy. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018. (Highlighted Poster).

Magalhães A, Dias S. High systemic cholesterol favors tumor cell intravasation by promoting a vascular mimicry phenotype. 3rd ASPIC International Congress, Lisbon, Portugal, May 10-11, 2018. (Poster Presentation).

Magalhães A, Dias S. Low density lipoprotein favors the entry of tumor cells in circulation. 8th International Conference on Tumor Microenvironment (ICMS), Lisbon, Portugal, June 10-14, 2018. (Poster Presentation).

Nóbrega-Pereira S. The role of mitochondrial metabolism in breast cancer aggressiveness induced by hypercholesterolemia. 8th International Conference on Tumor Microenvironment (ICMS), Lisbon, Portugal, June 10-14, 2018. (Oral Presentation).

Nóbrega-Pereira S, Dias S. The role of mitochondrial metabolism in breast cancer aggressiveness induced by hipercolesterolemia. Mechanisms to Therapies, Innovations in Cancer Metabolism, Bilbao, Spain, October 9-11, 2018. (Poster Presentation).

Nóbrega-Pereira S, Dias S. The role of mitochondrial metabolism in breast cancer aggressiveness induced by hipercolesterolemia. Symposia on Tumour Biology: from basic biology to disease, Pestana palace Lisbon, Lisbon, Portugal, December 5-6, 2018. (Poster Presentation).

Advanced Teaching

Dias S. Coordinator. “Development and Cancer” Module of the Master Programme in Oncobiology, Faculty of Medicine, University of Lisbon.

Dias S. Coordinator. Módulo “Oncobiology” do Programa Doutoral LisbonBiomed, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon.

Advanced Teaching at other Universities: Lecturer at the following PhD Programmes:

- Programa de Doutoramento em Ciências Químicas, Biológicas e Engenharia (ITQB, Nova University of Lisbon).
- Programa Doutoral em Biologia Experimental e Biomedicina (University of Coimbra).
- Programa de Doutoramento em Medicina (FCM, Nova University of Lisbon).

And of the following Master Programmes:

- Mestrado em Biologia Humana e Ambiente (Faculty of Sciences, University of Lisbon).

Science and Society

“The biology of Cancer in one hour”. Several Lectures at Secondary Schools in the Lisbon Area (approximately 300 students in total), in the Framework of the “RetuBi (Research in Tumor Biology) Network”.

Vanessa Morais Lab

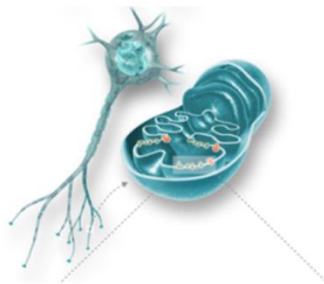
Major Interests / Objectives

Mitochondria homeostasis requires an intimate crosstalk between energy production and intrinsic quality control. At the synapse, mitochondria have a pivotal role in synapse maintenance and neurotransmitter release. Therefore, mitochondrial function is crucial for the maintenance of a healthy brain. Our research focuses on unravelling how synaptic mitochondria have learnt to adapt to their environmental demands. For this, we aim to decipher the mechanisms involved in mitochondrial quality control, bioenergetic adaptation at synapse and mitochondrial influence of neural stem cell fate. Additionally, we intend to unravel the impact of mitochondria DNA mutations upon overall brain function. Ultimately, the overarching goal is to reveal how the disruption of these acquired mechanisms contributes to neurodegeneration.

Head of Laboratory

Vanessa Alexandra Morais, PhD

Graphical Abstract



Team

Andreia Sofia Faria Pereira	MSc	PhD Student
Carlos Eduardo Cardanho dos Ramos	MSc	PhD Student
Elvira Pequeno Leites	MSc	PhD Student
Filipa Alexandra Barroso Gonçalves	MSc	PhD Student
Filipa Sofia Libório Carvalho	PhD	Junior Post-Doctoral Researcher
Filipe Carlos Pereira dos Reis Cortes Figueiredo	MSc	PhD Student
Joana Torres da Silva Fonseca Monteiro	Other	BSc Student (Started January Left December)
Joshua Robert Pogue	Other	BSc Student (Started June Left July)
Rita Abrunhosa Soares	MSc	PhD Student
Teresa Sofia Bento Piçarra	Other	BSc Student (Started April Left July)

Laboratory Keywords / Research Areas

Mitochondria, mtDNA, Neurodegeneration, Mitophagy, Quality control, synapse; Parkinson's Disease.

Major Scientific Achievements

At present, our projects are driving exciting hypotheses and yielding promising targets that now require validation and the exploration of molecular mechanisms. Success in these experiments will address key unanswered questions that will stratify the importance of mitochondrial function for synapse biology, and overall brain homeostasis. Additionally, we are also developing a novel platform for streaming of sequencing data arising from mitochondrial DNA, a unique tool that will enable us to determine mutation burden and heteroplasmy contribution. In sum, these novel findings will help raising the lab's profile and increase its competitiveness in future grant applications.

Selected Publications

Vos M, Geens A, Böhm C, Deaulmerie L, Swerts J, Rossi M, Craessaerts K, Leites E, Seibler P, Rakovic A, Lohnau T, De Strooper B, Fendt SM, Morais VA, Klein C, Verstreken P (2017). Cardiolipin promotes electron transport between ubiquinone and Complex-I to rescue PINK1 deficiency. *J Cell Biol*, 216: 695-708. (IF: 9.8, Citations: 8. Source: Web of Science).

Aerts L, Craessaerts K, De Strooper B, Morais VA (2015). PINK1 Kinase Catalytic Activity is Regulated by Phosphorylation on Serines 228 and 402. *J Biol Chem*, 290: 2798. (IF: 4.5, Citations: 28. Source: Web of Science).

Morais VA*, Haddad D, Craessaerts K, De Bock P, Swerts J, Vilain S, Aerts L, Overbergh L, Grünewald A, Seibler P, Klein C, Gevaert K, Verstreken P, De Strooper B* (2014). PINK1 Loss of Function Mutations Affect Mitochondrial Complex I Activity via NdufA10 Ubiquinone Uncoupling. *Science*, 344: 203. (IF: 34, Citations: 176. Source: Web of Science). *shared corresponding authors.

Haddad D, Vilain S, Vos M, Esposito G, Matta S, Kalscheuer V, Craessaerts K, Leyssen M, Morais VA*, Verstreken P* (2013). Mutations in the Intellectual Disability Gene Ube2a Cause Neuronal Dysfunction and Impair Parkin-Dependent Mitophagy. *Molecular Cell*, 50: 831. (IF: 14, Citations: 58. Source: Web of Science) *shared corresponding authors.

Morais VA, Verstreken P, Roethig A, Smet J, Snellinx A, Vanbrabant M, Haddad D, Frezza C, Mandemakers W, Vogt-Weisenhorn D, Van Coster R, Wurst W, Scorrano L, De Strooper B (2009). Parkinson's disease mutations in PINK1 result in decreased Complex I activity and deficient synaptic function. *EMBO Molecular Medicine*, 1: 99. (IF: 9, Citations: 296. Source: Web of Science).

O'flanagan CH, Morais VA, Wurst W, De Strooper B, O'Neill C (2015). The Parkinson's gene PINK1 regulates cell cycle progression and promotes cancer-associated phenotypes. *Oncogene*, 34: 1363. (IF: 8.5, Citations: 25. Source: Web of Science).

Ongoing Research Projects

2018/2021: Mecanismos moleculares que mantêm a Homeostase Mitocondrial no Cérebro. Coordinator: Vanessa Morais. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: PTDC/BIA-CEL/31230/2017. Amount: € 239 998,20. Total Amount: € 239 998,20.

2018/2019: Unravelling longitudinal mitochondrial DNA mutations in Multiple Sclerosis: association with disease activity and progression. Coordinator: Vanessa Morais. Funding Agency: National Multiple Sclerosis Society. Reference: NATIONAL MULTIPLE SCLEROSIS SOCIETY-PP-1712-29466. Amount: € 32 193,76. Total Amount: € 32 193,76.

2016/2021: SynapticMitochondria: Quality Control and Maintenance of Synaptic Mitochondria. Coordinator: Vanessa Morais. Funding Agency: European Commission. Reference: ERC StG 679178. Amount: € 1 300 000,00. Total Amount: € 1 300 000,00.

2016/2020: Homeostasis and Maintenance of Synaptic Mitochondria. Coordinator: Vanessa Morais. Funding Agency: European Molecular Biology Organisation. Reference: EMBO IG VMorais. Amount: € 150 000,00. Total Amount: € 150 000,00.

2015/2020: Maintaining Mitochondria Healthy: The Molecular Checkpoints involved in Mitochondrial Quality Control in Neurons. Coordinator: Vanessa Morais. Funding Agency: Fundação para a Ciência e a Tecnologia. Reference: IF/01693/2014/CP1236/CT0003. Amount: € 50 000,00. Total Amount: € 50 000,00.

Other Projects

2016/2019: PRECISE: Accelerating progress toward the new era of precision medicine. Coordinator: Maria do Carmo-Fonseca. Funding Agency: Portugal 2020. Reference: Lisboa-01-0145-FEDER-016394. Amount: € 1 199 140,10. Total Amount: € 2 499 827,92.

Publications in Peer Review Journals

Spinazzi M, Radaelli E, Horré K, Arranz AM, Gounko NV, Agostinis P, Maia TM, Impens F, Morais VA, Lopez-Lluch G, Serneels L, Navas P, De Strooper B. (2018). PARL deficiency in mouse causes Complex III defects, coenzyme Q depletion, and Leigh-like syndrome. *Proc Natl Acad Sci U S A*. [Epub ahead of print] (IF: 9.4, Citations: 0. Source: Web of Science and Scopus).

Leites EP, Morais VA (2018). Mitochondrial quality control pathways: PINK1 acts as a gatekeeper. *Biochem Biophys Res Commun*, 291: 31227-5. (IF: 2.3, Citations: 3. Source: Web of Science).

Goiran T, Duplan E, Chami M, Bourgeois A, El Manaa W, Rouland L, Dunys J, Lauritzen I, You H, Stambolic V, Biféri MG, Barkats M, Pimplikar SW, Sergeant N, Colin M, Morais VA, Pardossi-Piquard R, Checler F, Alves da Costa C (2018). Beta-Amyloid Precursor Protein Intracellular Domain Controls Mitochondrial Function by Modulating Phosphatase and Tensin Homolog-Induced Kinase 1 Transcription in Cells and in Alzheimer Mice Models. *Biol Psychiatry*, 17: 31515-9 (IF: 11.4, Citations: 6. Source: Web of Science).

Invited Lectures and Seminars

Morais VA. SynaNet H2020 Scientific Meeting, Lisbon, Portugal, January 2018.

Morais VA. WEIZMANN Institute of Science | Emerging Concepts in Mitochondrial Biology, Israel, February 2018.

Communications in International Conferences

Soares R, Xapelli S, Morais VA. Exploring how mitochondrial dynamics change during postnatal neural stem/progenitor cell differentiation. 2nd SynaNet Annual Scientific Meeting, Lisbon, Portugal, January 17-18, 2018. (Poster Presentation).

Cortes-Figueiredo F, Carvalho FS, Gieß RM, Bellmann-Strobl J, Morais VA, Paul F. Unravelling longitudinal mitochondrial DNA mutations in Multiple Sclerosis: association with disease activity and progression. 2nd SynaNet Annual Scientific Meeting, Lisbon, Portugal, January 17-18, 2018. (Poster Presentation).

Cortes-Figueiredo F, Carvalho FS, Gieß RM, Bellmann-Strobl J, Paul F, Morais VA. Unravelling longitudinal mitochondrial DNA mutations in Multiple Sclerosis: association with disease activity and progression. 2nd Annual NeurULisboa Meeting and Retreat, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, March 1-2, 2018. (Oral Presentation).

Carvalho FS, Cortes-Figueiredo F, Fonseca AC, Galego S, Ferro JS, Morais VA. Enlightening Precision Medicine: Identification of mitochondrial DNA mutations on stroke patients. Keystone Symposium | Mitochondrial Biology, Kyoto, Japan, April 23-26, 2018. (Poster Presentation).

Gonçalves F, Monteiro J, Enguita F, Morais VA. Effect of Parkinson's Disease PINK1 clinical mutants on Mitophagy. Keystone Symposium | Mitochondrial Biology, Kyoto, Japan, April 23-26, 2018. (Poster Presentation).

Faria-Pereira A, Spinazzi M, Craessaerts K, Savas J, De Strooper B, Morais VA. Unravelling the proteomic fingerprint of synaptic mitochondria. Cell Symposia: Multifaceted Mitochondria, San Diego, USA, June 4-6, 2018. (Poster Presentation).

Soares R, Sebastião AM, Xapelli S, Morais VA. Unveiling the role of mitochondrial dynamics in the regulation of neural stem cell fate. Cell Symposia: Multifaceted Mitochondria, San Diego, USA, June 4-6, 2018. (Poster Presentation).

Cortes-Figueiredo F, Carvalho FS, Gieß RM, Bellmann-Strobl J, Paul F, Morais VA. Unravelling longitudinal mitochondrial DNA mutations in Multiple Sclerosis. Nuclear and mitochondria instability in health and cancer, Scientific Symposium, Montargil, Portugal, July 3-5, 2018. (Oral Presentation).

Soares R, Sebastião AM, Xapelli S, Morais VA. Understanding the impact of mitochondrial dynamics during postnatal neural stem/progenitor cell differentiation. MitoPorto - mitochondrial evolution, metabolism and disease, Porto, Portugal, July 13, 2018. (Oral Presentation).

Carvalho FS, Cortes-Figueiredo F, Fonseca AC, Galego S, Ferro JS, Morais VA. Mitochondrial DNA mutations in stroke patients – a highway to a Precise Medicine. MitoPorto - mitochondrial evolution, metabolism and disease, Porto, Portugal, July 13, 2018. (Poster Presentation).

Cardanho-Ramos C, Faria-Pereira A, Morais VA. Unravelling mitochondrial dynamics and turnover in the synapse. MitoPorto - mitochondrial evolution, metabolism and disease, Porto, Portugal, July 13, 2018. (Poster Presentation).

Cortes-Figueiredo F, Carvalho FS, Gieß RM, Bellmann-Strobl J, Paul F, Morais VA. Multiple Sclerosis and mitochondria: a longitudinal cell-specific approach to mitochondrial DNA mutations. MitoPorto - mitochondrial evolution, metabolism and disease, Porto, Portugal, July 13, 2018. (Poster Presentation).

Faria-Pereira A, Spinazzi M, Craessaerts K, Savas J, De Strooper B, Morais VA. Synaptic mitochondria: In search of the functional consequences of its proteomic fingerprint. MitoPorto - mitochondrial evolution, metabolism and disease, Porto, Portugal, July 13, 2018. (Poster Presentation).

Leites EP, Morais VA. The role of PINK1 in Mitochondrial Quality Control. MitoPorto - mitochondrial evolution, metabolism and disease, Porto, Portugal, July 13, 2018. (Poster Presentation).

Gonçalves F, Monteiro J, Enguita F, Morais VA. Unravelling the impact of Parkinson's Disease PINK1 clinical mutations on Mitophagy. MitoPorto - mitochondrial evolution, metabolism and disease, Porto, Portugal, July 13, 2018. (Poster Presentation).

Soares R, Sebastião AM, Xapelli S, Morais VA. Mitochondrial Dynamics: a target for neural stem cell fate modulation. 3rd SynaNet Annual Scientific Meeting, Lisbon, Portugal, December 12-13, 2018. (Oral Presentation).

Courses/Workshops:

Cardanho-Ramos C. “Statistics for beginner’s” (within LisbonBiomed 8 week course), Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 8-March 2, 2018.

Cardanho-Ramos C. “Second edition of the Career development and soft skills for young scientists - From Lisbon to the World”, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 20-21, 2018.

Cortes-Figueiredo F. "Second edition of the Career development and soft skills for young scientists - From Lisbon to the World", Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, February 20-21, 2018.

Gonçalves F. "Graphical design: How to tell a story with a picture" by Gil Costa, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, March 31, 2018.

Leites EP. "Graphical design: How to tell a story with a picture" by Gil Costa, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, March 31.

Cortes-Figueiredo F. "ABSTAT18 - Advanced Biostatistics for Bioinformatics Tool Users using R", IGC, Oeiras, Portugal, April 3-6, 2018.

Cardanho-Ramos C. "Nuclear and mitochondria instability in health and cancer Scientific Symposium", Montargil, Portugal, July 3-5, 2018.

Carvalho FS. "Nuclear and mitochondria instability in health and cancer Scientific Symposium", Montargil, Portugal, July 3-5, 2018.

Cardanho-Ramos C. "Workshop on High-Resolution Light Microscopy – 2nd Edition", Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 22-26, 2018.

Soares R. "Workshop on High-Resolution Light Microscopy – 2nd Edition", Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 22-26, 2018.

Faria-Pereira A. "GTPB Course: Proteomics Data Analysis", IGC, Oeiras, Portugal, May 28-June 1, 2018.

Cortes-Figueiredo F. "Workshop: Design & Communication in Science", Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, June 21-22, 2018.

Cortes-Figueiredo F. "Bioinformatics Cluster Usage Course - Linux essentials for beginners", Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, July 18, 2018.

Faria-Pereira A. "2nd Edition - Introduction to digital image analysis with ImageJ/Fiji course", i3S, Porto, Portugal, September 26-28, 2018.

Gonçalves F. "Motivation, Focus and Self-coaching" by James Hayton, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 24, 2018.

Leites EP. "Motivation, Focus and Self-coaching" by James Hayton, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 24, 2018.

Cortes-Figueiredo F. "ELB18S - Entry Level Bioinformatics", IGC, Oeiras, Portugal, November 5-9, 2018.

Cardanho-Ramos C. "Animal Course: CONGENTO Course on Laboratory Animal Science (Function A)", Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October/November, 2018.

Gonçalves F. "Animal Course: CONGENTO Course on Laboratory Animal Science (Function A)", Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October/November 2018.

Visit to External Labs:

Faria-Pereira A. Visit to Rámiro D. Almeida group to learn how to establish and manipulate primary neuronal cultures in microfluidic devices, Center for Neuroscience and cell biology, CNC, Coimbra, June 11-12, 2018.

Communications in National Conferences

Soares R, Sebastião AM, Xapelli S, Morais VA. Unveiling the role of mitochondrial dynamics in the regulation of neural stem cell fate. Annual Meeting of the Portuguese Society of Pharmacology, Lisbon, Portugal, February 5-7, 2018. (Oral Presentation).

Cardanho-Ramos C, Faria-Pereira A, Morais VA. Unravelling the distinct fingerprint of synaptic mitochondria. 2nd LisbonBioMed Retreat, Mafra, Portugal, April 10-12, 2018. (Oral Presentation).

Leites EP, Morais VA. The role of PINK1 in Mitochondrial Quality Control and Neurodegenerative Diseases. 2nd LisbonBioMed Retreat, Mafra, Portugal, April 10-12, 2018. (Oral Presentation).

Soares R, Sebastião AM, Xapelli S, Morais VA. Deciphering the role of mitochondrial dynamics in enhancing lineage-directed differentiation of neural stem cells. 2nd LisbonBioMed Retreat, Mafra, Portugal, April 10-12, 2018. (Oral Presentation).

Faria-Pereira A, Spinazzi M, Craessaerts K, Savas J, De Strooper B, Morais VA. Unravelling the distinct fingerprint of synaptic mitochondria. 2nd LisbonBioMed Retreat, Mafra, Portugal, April 10-12, 2018. (Poster Presentation).

Soares R, Sebastião AM, Xapelli S, Morais VA. Deciphering the role of mitochondrial dynamics in enhancing lineage-directed differentiation of postnatal neural stem/progenitor cells. III Symposium of the Portuguese Glial Network, I3S, Porto, Portugal, May 18, 2018. (Poster Presentation).

Cortes-Figueiredo F, Carvalho FS, Gieß RM, Bellmann-Strobl J, Paul F, Morais. Unravelling longitudinal mitochondrial DNA mutations in Multiple Sclerosis: association with disease activity and progression. XII iMM/CAML PhD Students' Meeting, Lisbon, Portugal, May 23-25, 2018. (Oral Presentation).

Gonçalves F, Monteiro J, Enguita F, Moris VA. Parkinson's Disease PINK1 clinical mutants impact on Mitochondria. XII iMM/CAML PhD Students' Meeting, Lisbon, Portugal, May 23-25, 2018. (Oral Presentation).

Cardanho-Ramos C, Faria-Pereira A, Morais VA. Unravelling the distinct fingerprint of synaptic mitochondria. XII iMM/CAML PhD Students' Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Faria-Pereira A, Spinazzi M, Craessaerts K, Savas J, De Strooper B, Morais VA. Unravelling the functional identity of synaptic mitochondria. XII iMM/CAML PhD Students' Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Leites EP, Morais VA. PINK1 in Mitochondrial Quality Control and Neurodegenerative Diseases. XII iMM/CAML PhD Students' Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Soares R, Sebastião AM, Xapelli S, Morais VA. Mitochondrial dynamics during postnatal neural stem/progenitor cell differentiation. XII iMM/CAML PhD Students' Meeting, Lisbon, Portugal, May 23-25, 2018. (Poster Presentation).

Cortes-Figueiredo F, Carvalho FS, Gieß RM, Bellmann-Strobl J, Paul F, Morais. Mitochondrial DNA mutations in Multiple Sclerosis: what is the relationship between mitochondrial genotype and disease triggering and progression?. 4th PhD Students Meeting of the Mind-Brain College of the Universidade de Lisboa, Lisbon, Portugal, November 14-15, 2018. (Oral Presentation).

Internationalisation

Our projects involve collaborations with international research groups in Europe and USA. Current international collaborators include:

In Europe - Bart de Strooper (VIB, Belgium); Patrik Verstreken (VIB, Belgium); Christine Klein (University Luebeck, Germany); Frederic Checler (CNRS, France); Cora O’Neil (UCC, Ireland) and Helene Plun-Favreau (UCL, England), Friedemann Paul (Charité | MDKZ, Berlin, Germany).

In USA - Jeffrey Savas (NorthWestern University, Chicago).

Prizes, Honours and Awards

Soares R. Mobility grant from Horizon 2020 TwinnToInfect project for participation in the Cell Symposia “Multifaceted Mitochondria”, San Diego, USA, June 4-6, 2018.

Soares R. IBRO International Travel Grant award for participation. 4th Eurogenesis Meeting, Bordeaux, France, June 11-13, 2018.

Leites EP. Biochemical Journal Best Poster Awards. MitoPorto 2018 Meeting, The role of PINK1 in Mitochondrial Quality Control.

Advanced Teaching

Morais VA. Member of the Scientific Advisory Board of the iMM Career Development Unit.

Morais VA coordinated (together with Sergio Almeida, Claus Azzalin and Nuno Morais) and taught at the “Cell and Molecular Biology” week, LisbonBioMed International FCT PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, January 2018.

Morais VA taught at the Functional Organisation of the Cell Course of the Master in Biochemistry of Health, Instituto de Tecnologia Química e Biológica António Xavier, Nova University of Lisbon, Oeiras, Portugal, October 2018.

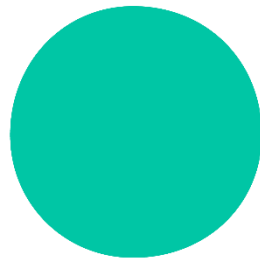
Morais VA taught at the Biochemistry of Neurodegeneration Course of the Master of Biochemistry of the Faculty of Science, NOVA University of Lisbon, October 2018.



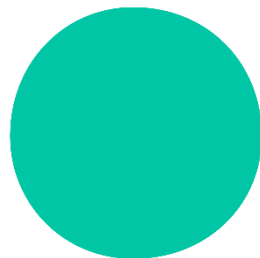
Morais VA taught in Molecular and Cellular Biology Course at the Faculty of Medicine, University of Lisbon, Lisbon, Portugal, November 2018.

Science and Society

Morais VA and all the members of her research group participated in the “Noite Europeia dos Investigadores” Lisbon (Portugal), 27 September 2018.



Technical Facilities



Biobank

Major Interests / Objectives

The Biobanco-iMM Centro Académico de Medicina de Lisboa (CAML) was created in 2012 by the Instituto de Medicina Molecular João Lobo Antunes (iMM), and since then it has received, processed and stored a wide variety of clinically annotated biological samples, donated voluntarily, and aiming at foster biomedical research.

Currently with thousands of human biospecimens, including blood, serum, saliva, urine, cerebrospinal fluid, and tumour tissue, representative of 60 different human diseases, the Biobanco-iMM CAML is a unique platform to support national and international scientific research, with potential high impact on public health and on the advance of patient care.

Head of Facility

Cláudia Faria, MD, PhD (Started April)
Sérgio Dias, PhD

Team

Ângela Maria Cerqueira Coelho Afonso	Master	Biobank Area Manager
Fabiana Cândida da Rocha Rodrigues	Graduate	Junior Technician
Nora El Awadi	Graduate	MSc Student (Started February Left August)
Susana Raquel Salsinha Ferreira	Master	Junior Technician

Keywords

Biobanks, Human samples, Clinical information, Biomedical research.

Major Achievements

In 2018, we started two new collections, Diabetes and Metabolic Disorders. In total, there are 58 active collections in Biobanco-iMM CAML covering all the main clinical areas. During this year, we received 41 requests for samples. Samples were used for different proposes and the collection that received more requests was the “Rheumatoid Arthritis” collection. During the past year, Biobanco-iMM CAML has been consolidated as an international partner. We hosted a student for a 6 months training period from the master programme in Biobanking from Nice

University, France. Biobanco-iMM CAML is certified with ISO 9001 Quality Management System by TÜV Rheinland Portugal, as part of the iMM Certification.

Selected Publications

Rosa N, Marques J, Esteves E, Fernandes M, Mendes VM, Afonso Â, Dias S, Pereira JP, Manadas B, Correia MJ, Barros M (2016). Protein Quality Assessment on Saliva Samples for Biobanking Purposes. *Biopreserv Biobank.*, 14(4): 289-97. doi: 10.1089/bio.2015.0054 (IF: 1.698, Citations:--. Source: Web of Science).

Afonso A, Polido-Pereira J, Dias S (2014). Biobank Profile: Biobanco-iMM, Lisbon Academic Medical Centre. *Biopreserv Biobank.*, 12: 433-434. doi: 10.1089/bio.2014.1262 (IF: 1.698, Citations:--. Source: Web of Science).

Publications in Peer Review Journals

Gonçalves S, Castro J, Pojo M, Martins E, Queirós S, Chautard E, Taipa R, Pires M, Pinto A, Pardal F, Custódia C, Faria CC, Clara C, Reis R, Sousa N, Costa B (2018). WNT6 is a novel oncogenic prognostic biomarker in human glioblastoma. *Theranostics*, 8(17): 4805-4823. doi: 10.7150/thno.25025 (IF: 8,537, Citations:--. Source: Web of Science).

Cavalli FMG, Hübner JM, Sharma T, Luu B, Sill M, Zapotocky M, Mack SC, Witt H, Lin T, Shih DJH, Ho B, Santi M, Emery L, Hukin J, Dunham C, McLendon RE, Lipp ES, Gururangan S, Grossbach A, French P, Kros JM, van Veelen MC, Rao AAN, Giannini C, Leary S, Jung S, Faria CC, et al. (2018) Heterogeneity within the PF-EPN-B ependymoma subgroup. *Acta Neuropathol.*, 136(2): 227–237 (IF: 15.872, Citations: 1. Source: Web of Science).

Invited Lectures and Seminars

Polido-Pereira J, Afonso A. Apresentação Curso Investigação Centro Hospitalar Lisboa Norte - Biobanco(s), Lisbon, Portugal, May 24, 2018.

Faria C. CAML Session- O que há de novo no CAML: O Biobanco – iMM CAML como promotor de investigação translacional: Exemplo de modelos pré-clínicos de metastização cerebral para estudar a doença humana, Lisbon, Portugal, October 25, 2018.

Faria C (National Coordinator of EATRIS-ERIC network). “Como Incentivar Projetos de Iniciativa do Investigador”, V Jornadas de Investigação Clínica e Inovação – 2CA Braga, Universidade do Minho, December 4, 2018.

Communications in International Conferences

Rodrigues F. ISBER Biospecimen Research Symposium - Factors Involved in DNA and PBMCs Quality in Cancer Research Luxembourg, Luxembourg, February 2018. (Poster Presentation).

Communications in National Conferences

Afonso A. Breast Cancer Weekend-Tissue Biobanks. Porto, Portugal, January 26-27, 2018.

Dias S. A importância dos Biobancos”. Curso de “Métodos e Técnicas de Investigação. Programa de Doutoramento em Ciências da Saúde, Universidade de Coimbra, Coimbra, Portugal, September 25, 2018.

Dias S. iMM Facility: Biobank. iMM Summit: Building partnerships between research and industry, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, November 16-18, 2018.

Faria C. João Barata’s Lab – Patient-derived models of brain metastases-a tool for translational medicine. iMM Summit - Building partnerships between research and industry, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, November 16-17, 2018.

Organisation of Conferences

Faria C. Organiser. “Dia da Investigação da FMUL” with GAPIC, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, December 12, 2018.

Faria C. Chair of the Young Investigators and Innovators Group. European Society for Pediatric Oncology - Brain Tumour Group (SIOPE BTG), organised the Training and Education Meeting, Denver, Colorado, USA, June 29, 2018.

Faria C is the Portuguese representative in the Board of National Directors of the European translational network EATRIS-ERIC and responsible for the creation of the Portuguese National Hub (2018).

Dias S. Organiser. ReTuBi (Research in Tumour Biology Network) Summer School, Caparica, Portugal, September 17-20, 2018.

Prizes, Honours and Awards

Faria C was awarded a scholarship as Visiting Scientist at the Labatt Brain Tumour Research Centre, The Hospital for Sick Children, Toronto, Canada (May 14 – July 15, 2018).

Faria C was nominated Ambassador of Bairrada Region for Research and Science 2018.

Advanced Teaching

Faria C taught the topic “Pediatric brain tumors – from the bedside to the bench and back; Session bridging the gap”. LisbonBioMed International FCT PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, January 11, 2018.

Science and Society

Faria C organised the participation of the Brain Tumour Team (BTT) in Corrida Saúde + Solidária on May 6, 2018. The run/walk event is yearly organised by the students of the Lisbon Medical School (AEFML). The BTT gathered health care professionals, scientists, patients and their families aiming to support cancer research and to create hope for the future of patients affected with brain cancer.

Within the framework of the “ReTuBi” Network, SDias spoke to high school students of the Lisbon area in the topics of “Biomedical Research” and “Cancer Research”.

Bioimaging

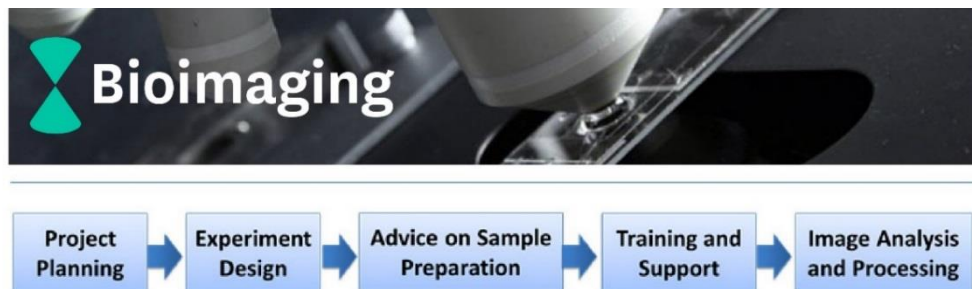
Major Interests / Objectives

The Bioimaging Facility acts as a support structure to carry out and nurture research done with Light Microscopy inside the institute. Besides managing resources, the Facility provides iMM scientists and visitors with excellence in scientific know-how and expertise in using light microscopy methods for their research. We assist in planning microscopy-oriented projects, choosing materials and equipment, analysing experimental results, processing acquired images and presenting data. Together with continuous training of new users, we organise regular courses to introduce users to the most recent microscopy techniques and foster interactions and collaborations between microscopy users at the iMM.

Head of Facility

José Miguel Rino Henriques, PhD

Graphical Abstract



Team

Ana Margarida Santos do Nascimento	Master	Senior Technician
António Francisco Pinção Loução Homem Temudo	Master	Senior Technician
José Pedro Serrado Monteiro Marques	Master	Senior Technician (Started July)

Keywords

Fluorescence microscopy, Laser scanning confocal microscopy, Lightsheet microscopy, Multiphoton microscopy, Image processing and analysis, Quantification of protein dynamics and interactions, Training in microscopy.

Major Achievements

In 2018, the Bioimaging Facility services were used by 198 users from 35 different research labs, 8 of which from outside the iMM. During the year, we trained 80 new users in at least one microscopy system. The Bioimaging Facility is a Zeiss labs@location Partner, integrating a community of leading research facilities with expertise in specific applications of technologies that provide in depth knowledge and scientific support to Zeiss customers community. In 2018, the Bioimaging Facility co-organized the 2nd edition of the ReTuBi Workshop on High-Resolution Light Microscopy at the iMM for 20 selected participants.

Selected Publications

Martin RM*, Rino J*, Carvalho C*, Kirchhausen T, Carmo-Fonseca M (*these authors have contributed equally to this work) (2013). Live-Cell Visualization of Pre-mRNA Splicing with Single-Molecule Sensitivity. *Cell Reports*, 4(6): 1144-1155.

<https://doi.org/10.1016/j.celrep.2013.08.013> (IF: 8.282, Citations: 61. Source: Web of Science).

Carvalho S, Raposo AC, Martins FB, Grosso AR, Sridhara SC, Rino J, Carmo-Fonseca M, de Almeida SF (2013). Histone methyltransferase SETD2 coordinates FACT recruitment with nucleosome dynamics during transcription. *Nucleic Acids Res*, 41(5): 2881-2893.

<https://doi.org/10.1093/nar/gks1472> (IF: 10.162, Citations: 60. Source: Web of Science).

Martins SB*, Rino J*, Carvalho T, Carvalho C, Yoshida M, Klose JM, de Almeida SF, Carmo-Fonseca M (*these authors have contributed equally to this work) (2011). Spliceosome assembly is coupled to RNA polymerase II dynamics at the 3' end of human genes. *Nat Struct Mol Biol.*, 18: 1115 (IF: 12.595, Citations: 53. Source: Web of Science).

Domingues I, Rino J, Demmers JA, de Lanerolle P, Santos SC (2011). VEGFR2 Translocates to the Nucleus to Regulate Its Own Transcription. *PLoS One*, 6: e25668.

<https://doi.org/10.1371/journal.pone.0025668> (IF: 3.394, Citations: 41. Source: Web of Science).

Henriques CM, Rino J, Nibbs RJ, Graham GJ, Barata JT (2010). IL-7 induces rapid clathrin-mediated internalization and JAK3-dependent degradation of IL-7R alpha in T cells. *Blood*, 115: 3269-77. <https://doi.org/10.1182/blood-2009-10-246876> (IF: 13.164, Citations: 61. Source: Web of Science).

Ongoing Research Projects

2017/2020 PPBI – Plataforma Portuguesa de Bioimagem. Coordinator: José Henriques. Funding Agency: Portugal 2020. Reference: PINFRA/22122/2016. Amount: € 306 178, 00 Total Amount: € 865 695,43.

Invited Lectures and Seminars

Rino J. Optical Microscopy. 3rd Meeting of the College of Chemistry - 2018 Summer School, Complexo 3Is of Rectory, Lisbon, Portugal, June 29, 2018.

Rino J. Fluorescence and Confocal Microscopy. Biosciences Analysis Tools Iberian Meeting, ITQB, Lisbon, Portugal, July 13, 2018.

Rino J. Live Cell Imaging of pre-mRNA Splicing with Single-molecule Sensitivity. Spanish Portuguese Meeting for Advanced Optical Microscopy 2018, Parque de las Ciencias, Granada, Spain, October 26, 2018.

Internationalisation

The Bioimaging Facility is a Zeiss labs@location Partner, integrating a community of leading research facilities with expertise in specific applications of technologies that provide in depth knowledge and scientific support to Zeiss customers community.

Advanced Teaching

Rino J. Lecturer (both theoretical lectures and hands-on sessions). IV Quantitative Fluorescence Microscopy Course, CNC - Centre for Neuroscience and Cell Biology, Coimbra, Portugal, September 24-28, 2018.

Flow Cytometry

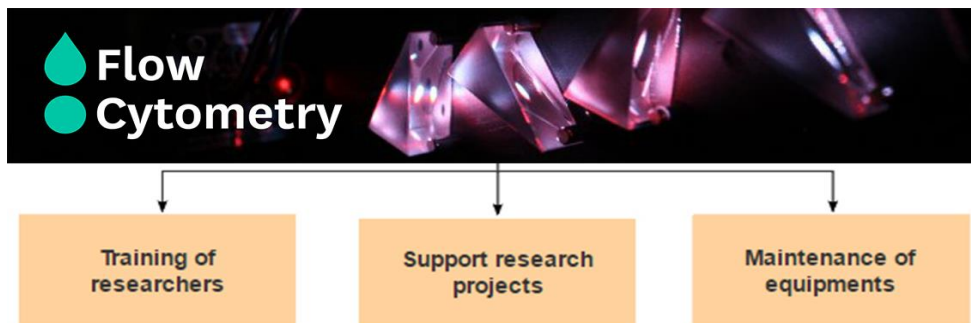
Major Interests / Objectives

The Flow Cytometry Facility provides a state-of-the-art flow cytometry service to iMM researchers as well as external groups from other research institutes. We aim at training researchers in the adequate use of the instruments and also on flow cytometry principles, experiment planning, as well as data analysis and interpretation. The facility is equipped with 4 cell analysers (1 BD LSRFortessa X-20, 2 BD LSRFortessa - one of them equipped with a High Throughput Sampler - and 1 BD Accuri C6), 2 cell sorters (BD FACSAria IIu and BD FACSAria III) and one imaging flow cytometer (Amnis ImageStreamX). Besides a cell sorting service, our staff ensures quality control and maintenance procedures on all instruments and the implementation of the Quality Management System, according to ISO 9001.

Head of Facility

José Miguel Rino Henriques, PhD

Graphical Abstract



Team

Andreia Sofia Ramalho dos Santos	Master	Junior Technician
Bárbara Xavier Louro de Oliveira	Master	Junior Technician
Diana Leonor Constantino Macedo	PhD	Lab Technician (Left October)
Rute Regina Ferreira Gonçalves	Master	Junior Technician (Started December)

Keywords

Flow cytometry, High speed cell sorting, Multiparametric analysis, Imaging flow cytometry, Training in flow cytometry.

Major Achievements

In 2018, a total of 185 users from 36 research labs, 8 of them from outside the iMM, used the Flow Cytometry Facility. During the year, we trained 125 users in at least one flow cytometry analyser. The Flow Cytometry Facility is one of the founders of FLxFlow - a Portuguese network for Flow Cytometry created in 2017, which aims at bringing together the know-how of 4 core flow cytometry facilities in the Lisbon area, enabling advanced training and access to cutting-edge applications to the scientific community. In 2018, the 2nd FLxFlow Course on Principles and Applications of Flow Cytometry was held at Instituto Gulbenkian de Ciência, Oeiras. Jointly organised by the core flow cytometry facilities of iMM, IGC, CEDOC and FC, the course attracted 71 participants and 13 sponsoring companies.

Selected Publications

Pereira PD, Serra-Caetano A, Cabrita M, Bekman E, Braga J, Rino J, Santus R, Filipe PL, Sousa AE, Ferreira JA (2017). Quantification of cell cycle kinetics by EdU (5-ethynyl-2'-deoxyuridine)-coupled-fluorescence-intensity analysis. *Oncotarget*, 8(25): 40514-40532.

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5522303/>. (IF: 5.168, Citations: 3. Source: Web of Science).

Invited Lectures and Seminars

Rino J. Imaging Cells in Flow - Quantifying Cell Cycle Kinetics. 1st South Europe Amnis User Meeting and Workshop, San Raffaele Research Center, Milan, Italy, November 21, 2018.

Advanced Teaching

Rino J. Organiser and Lecturer (both theoretical lectures and hands-on sessions). 2nd FLxFlow Course - Principles and Applications of Flow Cytometry. Instituto Gulbenkian de Ciência, Oeiras, Portugal, November 12-16, 2018.

Histology and Comparative Pathology Laboratory

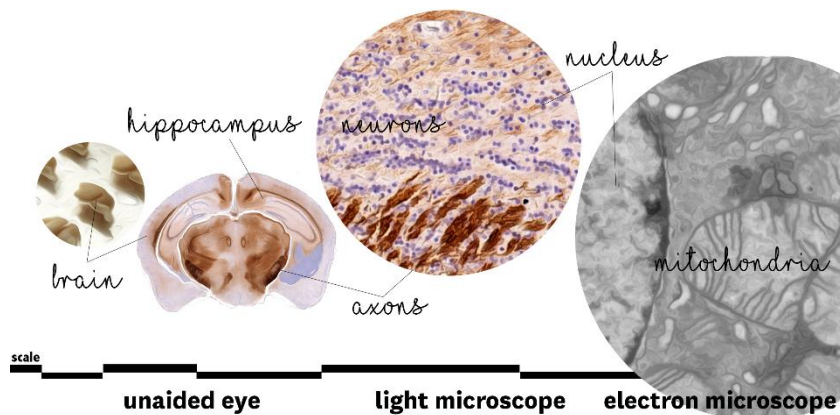
Major Interests / Objectives

Our mission is to achieve the highest level of quality in supporting researchers through: (1) training dissection skills and basic recording of macroscopic findings; (2) preparing the samples through state of the art histology and transmission electron microscopy services, including routine technique, paraffin, resin and cryo-embedding and sectioning, special stains, immunohistochemistry and immuno-EM; and (3) creating meaningful data from gross pathology observations and histopathology, with pathology reporting and document review for pathology content. Originality, integrity, and productivity while maintaining the highest level of technical proficiency and ethical principles is our motto; and we hope to keep up with your pace in the years to come.

Head of Facility

Tânia Gilot Mendes de Carvalho, PhD

Graphical Abstract



Team

Ana Margarida Biscaia Fernandes dos Santos	Master	Senior Technician
Ana Rita Varanda Correia Pires	Master	Senior Technician
Andreia Lúcia do Nascimento Pinto	Master	Senior Technician
Pedro Jorge Filipe Pereira	Master	Veterinarian Technician (Started June)
Pedro Reis Ruivo	MSc	Junior Technician (Started November)
Rute Sofia Marianito Brito	Graduate	Junior Technician (Left April)

Keywords

Histology, Pathology, Transmission Electron Microscopy, Immunohistochemistry, Comparative Medicine.

Major Achievements

A tremendous effort has gone into the renovations in the Electron Microscopy, a new microscope arrived, the room was refurbished and hopes are that this year EM will be able to emerge in a more spacious and better-designed wet lab able to support specimen receipt, accessioning, and processing.

On the other hand, our test menu continues to grow: new species, new diseases, new methods added to our portfolio, with increasing number of samples received, processed, analysed. But this was no simple feat as we were understaffed for most part of the year (babies arriving, team renewals). Nevertheless, everyone put hours of work and preparation to ensure that we achieved the expected goals and at the end of the year, the HPL was praised by the iMMers in the Facilities Satisfaction Survey, and by the auditors in the Institute's Quality Certification.

For next year this team will rise up to meet the pressure and respond with even more challenges, as we are very fortunate to have the best histopathology team in the world.

Selected Publications

Carvalho T, Trindade S, Pimenta S, Santos AB, Rijo-Ferreira F, Figueiredo LM (2018). Trypanosoma brucei triggers a marked immune response in male reproductive organs. *PLoS Neglected Tropical Diseases*, 12(8): e0006690. doi: 10.1371/journal.pntd.0006690. (IF: 4.367, Citations: 0. Sources: Web of Science and Scopus).

Bernardes de Jesus B, Marinho SP, Barros S, Sousa-Franco A, Alves-Vale C, Carvalho T, Carmo-Fonseca M (2018). Silencing of the lncRNA Zeb2-NAT facilitates reprogramming of aged fibroblasts and safeguards stem cell pluripotency. *Nature Communications*, 9(1): 94. doi: 10.1038/s41467-017-01921-6. (IF: 12.353, Citations: 4. Sources: Web of Science and Scopus).

Rijo-Ferreira F, Carvalho T, Afonso C, Sanches-Vaz M, Costa RM, Figueiredo LM, Takahashi JS (2018). *Nature Communications*, 9(1): 62. doi: 10.1038/s41467-017-02484-2. (IF: 12.353, Citations: 3. Sources: Web of Science and Scopus).

Publications in Peer Review Journals

Temido-Ferreira M, Ferreira DG, Batalha VL, Marques-Morgado I, Coelho JE, Pereira P, Gomes R, Pinto A, Carvalho S, Canas PM, Cuvelier L, Buée-Scherrer V, Faivre E, Baqi Y, Müller CE, Pimentel J, Schiffmann SN, Buée L, Bader M, Outeiro TF, Blum D, Cunha RA, Marie H, Pousinha PA, Lopes LV (2018). Age-related shift in LTD is dependent on neuronal adenosine A2A receptors interplay with mGluR5 and NMDA receptors. *Molecular Psychiatry*. doi: 10.1038/s41380-018-0110-9. (IF: 11.64, Citations: 5. Sources: Web of Science and Scopus).

Afonso MB, Rodrigues PM, Simão AL, Gaspar MM, Carvalho T, Borralho P, Bañales JM, Castro RE, Rodrigues CMP (2018). miRNA-21 ablation protects against liver injury and necroptosis in cholestasis. *Cell Death and Differentiation*, 25(5): 857-872. doi: 10.1038/s41418-017-0019-x. (IF: 8.0, Citations: 4. Sources: Web of Science and Scopus).

Pivetta TP, Simões S, Araújo MM, Carvalho T, Arruda C, Marcato PD (2018). Development of nanoparticles from natural lipids for topical delivery of thymol: Investigation of its anti-inflammatory properties. *Colloids and Surfaces B-Biointerfaces*, 164: 281-290. doi: 10.1016/j.colsurfb.2018.01.053. (IF: 3.997, Citations: 7. Sources: Web of Science and Scopus).

Fernandes SM, Pires AR, Matoso P, Ferreira C, Nunes-Cabaço H, Correia L, Valadas E, Poças J, Pacheco P, Veiga-Fernandes H, Foxall RB, Sousa AE (2018). HIV-2 infection is associated with preserved GALT homeostasis and epithelial integrity despite ongoing mucosal viral replication. *Mucosal Immunology*, 11: 236-248. doi: 10.1038/mi.2017.44. (IF: 7.36, Citations: 1. Sources: Web of Science and Scopus).

Nóbrega-Pereira S, Caiado F, Carvalho T, Matias I, Graça G, Gonçalves LG, Silva-Santos B, Norell H, Dias S (2017). VEGFR2-Mediated Reprogramming of Mitochondrial Metabolism Regulates the Sensitivity of Acute Myeloid Leukemia to Chemotherapy. *Cancer Res.*, 78(3): 731-741. doi: 10.1158/0008-5472.CAN-17-1166. Epub 2017 Dec 11. (IF: 9.13, Citations: 2. Sources: Web of Science and Scopus).

Communications in International Conferences

Pinto A. First overview of ultrastructural abnormalities in the Portuguese diagnosed patients: Correlation of hallmark defects with ciliary movement pattern. 3rd BEAT- Primary ciliary dyskinesia (PCD) Conference and 4th PCD Training School, CEDOC, NMS, Lisbon, Portugal, February 2018. (Oral Presentation).

Antão A, Pires AR, Ferreira C, Nunes-Cabaço H, Mauricio S, Rocha C, Matoso P, Victorino RMM, Fernandes SM, Sousa AE. HIV-2 impact on lymphoid organs: evidence of viral replication and tissue disruption. 2018 Conference on Retroviruses and Opportunistic Infections (CROI), Boston, USA, March 4-7, 2018. (Poster Presentation).

Communications in National Conferences

Pires AR. Desconforto associado ao movimento repetitivo: estudo sobre a perceção dos técnicos de anatomia patológica durante a microtomia. XIX Congresso Técnico de Anatomia Patológica, Ilha Terceira, Açores, May 2018. (Oral Presentation).

Antão A, Pires AR, Ferreira C, Nunes-Cabaço H, Mauricio S, Rocha C, Matoso P, Victorino RMM, Sousa AE, Fernandes SM. HIV-2 impact on lymphoid organs: evidence of viral replication and tissue disruption. XLIV Meeting of the Portuguese Society for Immunology (SPI), Lisbon, Portugal, June 27-29, 2018. (Poster Presentation).

Pinto A. Sample handling and targeting: from the bedside to the grid holder. 3^o Encontro Técnico de Microscopia Electrónica, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 2018. (Oral Presentation).

Organisation of Conferences

3rd Beat – Primary ciliary dyskinesia (PCD), Conference and 4th PCD Training School CEDOC, NMS, Lisbon, Portugal, February 2018.

XIX Congresso Técnico de Anatomia Patológica, Ilha Terceira, Açores, May 2018.

Pathology can be fun. Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, June 2018. Invited speakers: Dr. Jerrold Ward, NIAID, NIH; and Dr. Jeffrey Wolf, EPL Laboratories. Lectures: (1) Are Laboratory Animals Relevant for Studying Human Disease?; (2) Zebrafish anatomy, histology, and physiology; (3) Interactive Digital Slide Conference. 52 participants.

Meeting of the Portuguese Society of Veterinary Pathology, Universidade de Coimbra, Coimbra, Portugal, June 2018.

3º Encontro Técnico de Microscopia Electrónica. Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 2018.

Patents / Prototypes

1 Patent application. T Carvalho (inventor).

Advanced Teaching

2-day Necropsy Workshop. Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, November 2018. Aim: to train researchers, in-house and extramural in their dissection skills, in the necropsy technique in rodents. 40 participants.

Science and Society

Carvalho T. Painel de Júri. Open Day Colégio de São Tomás - Feira da Ciência, January 2018.

Carvalho T. Seminário sobre a vida e a ciência na minha vida. Assembleia do Liceu de São Tomás, June 2018. <http://www.colegiodestomas.com/liceu-assembleias>

MSc Thesis Completed

Ana Margarida Santos, 13/04/2018, "Perceção sobre o ruído e desempenho de tarefas do quotidiano laboral". Mestrado de Gestão e Avaliação em Tecnologias de Saúde. Supervisor: Tânia Carvalho.

Pedro Ruivo, 17/11/2018, "Aging pathology in Sprague Dawley rats: background lesions and comparative study between wild type and transgenic rats with neuronal overexpression of human adenosine a2a receptors". Masters in Veterinary Sciences. Supervisor: Tânia Carvalho.

Information Systems

Major Interests / Objectives

The Information Systems Unit (USI) mission is to help researchers reach their maximum productivity by using adequate Information Technology resources. Our aims are:

- Provide state-of-the-art information technology infrastructure and support services.
- Contribute to improve productivity of researchers and research outcomes.
- Facilitate and optimise management business processes.

USI intervenes mainly in the following areas:

- Information Technology (IT) support to iMM users
- Planning, implementation and maintenance of the infrastructure that stores, processes and protects research data
- Design, implement and integrate information systems to facilitate scientific and management processes

Head of Facility

Pedro Miguel Bernardino Eleutério, Graduate

Team

André Filipe Cardoso Gonzalez Fragoso	Other	Information Systems Senior Technician
Pedro André Lozano Luiz de Castro	Other	Information Systems Senior Technician
Ricardo da Silva Martinho	Other	Information Systems Junior Technician
Ricardo Jorge Oliveira Reis	Other	Information Systems Junior Technician (Left October)

Keywords

IT support, Data protection, Information integration, Web services and applications.

Major Achievements

A new ticketing system has been implemented successfully, which allows the centralization of all facilities reported issues on a single user platform. Besides USI, present users already include Lab Management, Bioimaging, and Flow Cytometry, however it can be later extended to all iMM facilities.



USI had a key role collaborating with the HR team on the implementation of UNIT4 Business World, the new HR management software, which should be a core component of iMM web applications ecosystem in the near future.

Storage space for Labs EGomes and CFranco has been centralised and expanded to 90Tb.

More than 75% of software updates/patches are now automatically deployed, using a more centralised and automatic procedure, with faster and more reliable results.

Windows desktop/laptop, and MacBook, upgrades to the latest operating system version (Windows 10 Enterprise, or macOS HighSierra) is now more than 50% concluded.

Laboratory Management

Major Interests / Objectives

Maintenance Contracts and Repairs – Equipment Management and Equipment & Infrastructure Maintenance and Repairs, including the organization of specific training courses. Our team is responsible for a comprehensive, institute-wide programme to identify and carry out required purchases, ensure maintenance and repairs and conduct periodic, detailed inspections to evaluate the maintenance conditions. Ultimately this guarantees any necessary corrective work and/or decision on taking out of service any equipment (decommission or retire).

Washing Room – Good laboratory techniques demand clean plastic and glassware material because the most carefully executed piece of work may give an erroneous result if dirty material is used. In all instances, they must be physically and chemically clean and, in many cases, it must be bacteriologically clean or sterile. Our team offers a specialised service of washing, sterilising, preparing and storing of materials.

Laboratory Design – The design of a laboratory facility can be a major factor in its success. A well-designed lab can be more efficient, quieter, more attractive and cheaper. A long-range, comprehensive organisational plan allows that the design developed is functional for the foreseeable needs of the users. Our team is fully committed to work and rise to new design challenges.

Head of Facility

Alexandra Maralhas, Graduate

Team

Ana Francisca Barroca Lemos	Master	Junior Technician (Started April)
Apolinário da Costa Gongo	Other	Junior Technician (Started August)
Bárbara Stefane Fernandes de Oliveira Paula	Other	Junior Technician (Started November)
Bashir Shamshudin Habib Alibhai	Other	Junior Technician (Started August)
Edna Neias Ferreira Gomes	Other	Lab Technician
Juliana Vieira Costa Brandão de Lima	Graduate	Junior Technician (Started May Left November)
Liudmila dos Santos Cupertino Borges	Other	Junior Technician (Left May)
Lucas Araújo da Silva	Other	Junior Technician (Started November)
Maria Fernanda Gonçalves da Veiga Vila-Chã	Other	Administrative Technician (Left January)

Maria Jardim Caramelo Dias Cabral	Master	Junior Technician
Paula Alexandra Rodrigues Luís	Other	Junior Technician (Left June)
Sara Diana Pinheiro dos Santos	Master	Junior Technician
Saulo de Tércio de Freitas Silva	Other	Junior Technician (Left August)

Keywords

Project, Budget and equipment management, Good laboratory techniques, Training, Purchasing and cost controlling, Laboratory planning, Design and refurbishment.

Major Achievements

Maintenance Contracts and Repairs – In 2018, we improved our support with 500 iMM equipments under a maintenance contract, comparing with previous 350 equipments, from the 2017 period. The know-how and experience of the team has been improved, comparing with the previous year, by the increased number of repairs without any associated cost. Additionally, our training support to 17 common equipments (started in March) reflects more than 200 hours of training (including external users) and, we were also responsible for 36 new equipment purchase processes.

Washing Room – This service was improved with the addition of new human resources that helped on making the service more scalable and prompter on meeting the researchers needs.

Laboratory Design – During 2018, 4 facilities offices and laboratory room and equipments have been changed/refurbished; 3 research laboratories have been undergone changes: 1 to an early renovated space and 2 to a refurbished space in order to provide more dry-lab space.

Communications in National Conferences

Maralhas A. Invited Speaker. The importance of preventive maintenance. Lab Talks – Segurança em Laboratório, Modus Complete, Lda., Porto Business School, Porto, Portugal, October 1-2, 2018.

Advanced Teaching

Back to Basics: 1:0:1 Workshops. Planning and organization of monthly presentations given by researchers, technicians and technical consultants with the goal of sharing knowledge and skills to the iMM researcher community.

Rodent

Major Interests / Objectives

The Rodent facility supports state-of-the-art animal research. We provide housing and care of laboratory rodents. We also support training and education in Laboratory Animal Science. The Rodent Facility strictly follows Portuguese and international laws and recommendations governing good practices and animal welfare. Namely, we follow 3R's principles, i.e., Replacement, whenever possible, of the animal model by alternative methods, Reduction of the number of animals used and, Refinement of experimental methodologies and animal care procedures.

Head of Facility

João Pedro Louro Machado Simas, DVM, PhD

Team

Ana Patrícia da Silva Almeida	Master	Junior Technician
Bruno Miguel da Conceição Novais	Master	Junior Technician
Cecília Gonçalves Simão	Other	Senior Technician
Daniel Corte Real Gomes da Costa	Master	Veterinarian Technician
Felícia Maria Augusto Ramos	Other	Senior Technician
Filipe Fernandes Delgado	Graduate	Junior Technician
Hugo de Barros Nogueira	Graduate	Junior Technician (Started May)
Iolanda Safira Sousa Moreira	Graduate	Rodent and Biosafety Level 3 Laboratory Manager
Márcia Pereira da Silva	Graduate	Senior Technician
Mihaela Elena Morari	Other	Senior Technician
Olena Pavlovska Borges Pinho	Other	Senior Technician
Patrícia Andrade da Fonseca Brites	Other	Junior Technician (Left September)
Pedro Manuel Nogueira Santos	Other	Senior Technician (Started June)
Sara Ghirelli	Other	Senior Technician

Keywords

Rodents, Laboratory animal science, Animal welfare.

Selected Publications

Buontempo F, McCubrey JA, Orsini E, Ruzzene M, Cappellini A, Lonetti A, Evangelisti C, Chiarini F, Evangelisti C, Barata JT*, Martelli AM* (2018). Therapeutic targeting of CK2 in acute and chronic leukemias. *Leukemia*, 32(1): 1-10 (review) *co-corresponding authors. (IF: 10.023, Citations: 6. Source: Web of Science and Scopus).

Real E, Rodrigues L, Cabal GG, Enguita FJ, Mancio-Silva L, Mello-Vieira J, Beatty W, Vera IM, Zuzarte-Luís V, Figueira TN, Mair GR, Mota MM (2018). Plasmodium UIS3 sequesters host LC3 to avoid elimination by autophagy in hepatocytes. *Nat Microbiol.* 3(1): 17-25. (IF: 14.174, Citations: 5. Source: Web of Science).

Schmolka N, Papotto PH*, Romero PV*, Amado T, Enguita FJ, Amorim A, Rodrigues AF, Gordon KE, Coroadinha AS, Boldin M, Serre K, Buck AH, Gomes AQ*, Silva-Santos B* (2018). MicroRNA-146a controls functional plasticity in $\gamma\delta$ T cells by targeting NOD1. *Science Immunology*, 4;3(23). pii: eaao1392. *Co-corresponding and co-last authors. Cover paper** (IF:--, Citations: 2. Source: Scopus).

Ongoing Research Projects

2017/2020: CONGENTO - Consórcio para Organismos Geneticamente Manipuláveis. Coordinator: João Pedro Simas. Funding Agency: Portugal 2020. Reference: PINFRA/22170/2016. Amount: € 560 085, 00 Total Amount: € 1 363 313,52.

Advanced Teaching

Laboratory Animal Science course (according to FELASA cat. B).

Zebrafish

Major Interests / Objectives

Provide a fully functional facility to be used by the iMM research units. Provide technical assistance to facilitate the use of zebrafish in a wide range of experimentation sets.

Head of Facility

Maria Leonor Tavares Saúde, PhD, Invited Associate Professor

Team

Aida Gonçalves Lino Barros	Other	Senior Technician
Ana Carolina Marmelo Bogalho	Graduate	Junior Technician (Started February Left July)
Ana Fiipa Carvalho Marques Dias	PhD	Research Technician (Started February)
Lara Margarida Marques Saraiva de Carvalho	Master	Zebrafish Area Manager

Keywords

Zebrafish, Development, Regeneration, Disease models, Small molecules screening.

Major Achievements

The facility, through the Consortium for GMO – CONGENTO:

- hired one technician (Graduate) and one researcher (PhD) that allowed the expansion of the services provided by the facility, namely microinjection of RNA, DNA and tumour cells;

- acquired a toxicology rack that will allow to perform drug screenings in a more controlled manner;

- acquired a swim tunnel respirometer that will allow to perform motor function studies in an adult zebrafish spinal cord injury model;

- changed the air conditioning system in both rooms (wet and dry) to allow air renewals according to the law, and installed an illumination system that recapitulates sunrise and sunset. These changes improved the quality of welfare of the fish and the people that work in the facility.

Selected Publications

Cordeiro M, Carvalho L, Silva J, Saúde L, Fernandes AR, Baptista PV (2017). Gold Nanobeacons for Tracking Gene Silencing in Zebrafish. *Nanomaterials* 7(1), 10; doi:10.3390/nano7010010. (IF: 3.553, Citations: 2. Source: Web of Science).

Other Projects

2017/2020 CONGENTO - Consórcio para Organismos Geneticamente Manipuláveis. Coordinator: João Pedro Simas. Funding Agency: Portugal 2020. Reference: PINFRA/22170/2016. Amount: € 560 085, 00 Total Amount: € 1 363 313,52.

Invited Lectures and Seminars

Barros A. Handling Zebrafish- Practical Model. Module in CONGENTO Course on Laboratory Animal Science (Function A), Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, April and November 2018.

Carvalho L. Maintenance and Husbandry in Zebrafish. Module in CONGENTO Course on Laboratory Animal Science (Function A), Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, April and November 2018.

Dias AF. Zebrafish Behaviour and Welfare. Module in CONGENTO Course on Laboratory Animal Science (Function A), Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, April and November 2018.

Communications in National Conferences

Carvalho L. Zebrafish as a screening model. Short Talk at Congento Annual Meeting, IGC, Oeiras, Portugal, October 2018.

Organisation of Conferences

The Zebrafish Facility took part in the organisation of the CONGENTO Course on Laboratory Animal Science (Function A).

Science and Society

Carvalho L provided guided visits to:

February 19, 2018 – High School Students, 12^o year, Escola Artur Gonçalves, Torres Novas.

March 1, 2018 – High School Students, Escola Secundária Pedro Nunes, Lisbon.

March 14, 2018 – Undergraduate Students, Biotechnology Degree, Instituto Politécnico de Leiria, Leiria.

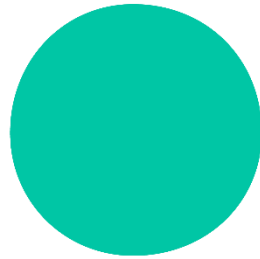
April 20, 2018 – Rheumatology MDs from Brazil.

May 29, 2018 – 8-year old students, Externato Champagnat, Lisbon.

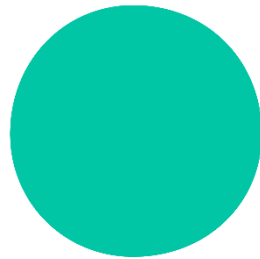
November 15, 2018 – Undergraduate Students, Cell Biology & Genetics Degree, ISPA, Lisbon.

December 17, 2018 – High School Students, Colégio de São Tomás, Lisbon.

The zebrafish facility received two high school students (12^o year) from Escola Artur Gonçalves, Torres Novas, for a 2-week intern ship.



Administrative Facilities



Career Development

Major Interests / Objectives

General Aim: Provide training opportunities for success in science to researchers at different stages in their careers.

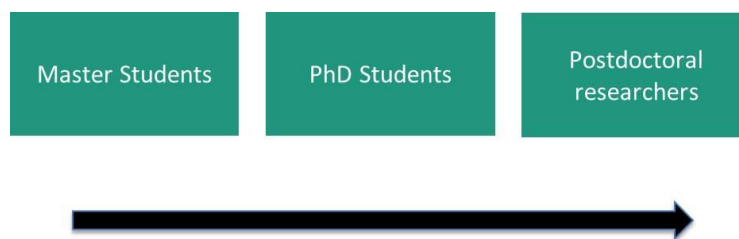
Ongoing Activities:

- Ensure full running of ongoing Master, PhD, and Postdoctoral Programmes: launch calls; administrative execution; managerial support to PhD students/Postdoctoral researchers' activities; support MSc/PhD students and Postdoctoral researchers throughout their training.
- Run Advanced Courses, scheduled upon CAML & LisbonBioMed Scientific Boards approval; cover all organisational aspects.
- Manage the "Master Programme @ iMM".
- Coordinate the "Training Programme for the Next Step".
- Support candidate's applications to PhD fellowships at iMM.
- Organise the Monday Lectures seminar series.
- Coordinate university students' traineeships at iMM (summer internships, CoLabs).

Head of Facility

Ana Filipa Duarte Nunes Almeida, PhD

Graphical Abstract



Keywords

Advanced-Training, Master Programme, PhD Programme, Postdoctoral Programme, Career development, Courses, Workshops.

Major Achievements

Specific Achievements:

- Overall managerial and administrative execution of the LisbonBioMed PhD Programme: international call launch, info dissemination, applications management, coordination of the selection and admission process, production of overall programme metrics and statistics and reporting, grounding the 8-week initial training programme and its implementation;
- Coordination of the iMM activities under the Biology at the Host Microbe Interface PhD Programme: selection process, opening day, annual meeting, course “Host-Microbe interactions II”, course “Statistics and Quantitative Biology”, lab rotations, admission at iMM/FMUL;
- “Master Programme @ iMM Lisboa”: assembly and dissemination of iMM’s Master project proposals/vacancies; “Open Afternoon”; “Best Master Thesis” Awards;
- “Training Programme for the Next Step”: personalised reviewing of full applications (including cover letters, research projects and CVs) and mock interviews for PhD, postdoctoral, and group leader positions;
- Organisation of traineeships at iMM (e.g. Summer Internships, CoLab Sessions).

Transversal managerial support to:

- FCT fellowships: applications, renewals, periods abroad, thesis committees, general queries;
- PhD students/Postdocs-driven initiatives, advanced courses, Monday Lectures and other scientific events.

Invited Lectures and Seminars

Nunes F. Lecturer. Session “Career development: beyond the scientific skills”. 7th i3S Annual Meeting, Póvoa de Varzim, Portugal, November 29, 2018.

Organisation of Conferences

2nd LisbonBioMed Scientific Retreat, Mafra, Portugal, April 10-12, 2018.

Internationalisation

In the context of the TwinnToInfect European project:

- “On-site training” to The Francis Crick Institute (Academic Training; People Development), July 31-August 1, 2018.

- “On-site training” to Institut Pasteur (Office in Charge of the Integration and Career Guidance of Scientists), October 1 2018.

Advanced Teaching

Nunes F. Lecturer. Seminar “Post-graduate training at iMM”, LisbonBioMed PhD Programme. Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, January 12, 2018.

Nunes F. Organiser. Course “Scientific Writing: Preparing a hypothesis-driven research paper”. CAML PhD Programme, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, March 8-May 17, 2018. (Nine classes of three hours each, plus written exam).

Nunes F. Organiser. Course “Writing your research paper”. Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, March 23-April 17, 2018. (Five classes of three hours each).

Nunes F. Lecturer. Seminar “Post-graduate training at iMM”. Biology at the Host Microbe Interface PhD Programme, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, May 4, 2018.

Nunes F. Organiser. Career Seminar “Beyond the bench: working as an editor for Nature Research”, by Véronique Gebala (Associate Editor at Nature Communications). Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, May 9, 2018.

Nunes F. Organiser. Curricular Unit “Introduction to Research”. MSc in Oncobiology, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, October 15-20, 2018.

Nunes F. Lecturer. Seminar “Entrepreneurship and strategies to take scientific ideas into the market”. MSc in Oncobiology, Faculty of Medicine, University of Lisbon, Lisbon, Portugal, October 18, 2018.

Science and Society

“Open Afternoon at iMM” (targeted to 1st year Master students). Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, April 18, 2018.

Visit to iMM: “Study Abroad in Scandinavia” programme, 18 students from the course Medical Biotechnology and Drug Development (Copenhagen, Denmark), October 11, 2018.



“Estágios de Vida 2018” from the Girl Move Academy. Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 18-November 5, 2018.

Communication Office

Major Interests / Objectives

The Communication is iMM's first line of interaction with society providing updated, reliable and relevant information on all of iMM's thematic areas, as well as promoting the very best scientific successes made by its research teams. Its mission is to support the internal and external communication of iMM's activities as well to advice iMM Direction on Public Affairs issues.

With the firm belief that science should inform decisions because it impacts everyone's lives, the Communication targets a wide range of audiences (policy makers, public opinion, patients' associations, medical societies, schools, academia, industry, media, arts, amongst others). It serves as spokesman for the institute and it's responsible to manage iMM's image aligned with the institute values and mission.

Head of Facility

Ana Maria Matias de Barros, PhD (Left January)

Ana Inês Jones Manteigas Domingues, PhD (Started June)

Team

Ana Cláudia Marques da Silva	Graduate	Junior Communication Officer
Sandra Isabel Gertrudes	Graduate	Administrative Technician (Left November)

Keywords

Corporate and institutional communication, Science communication, Public affairs, Digital communication, Outreach, Science in and for society.

Major Achievements

The Communication Office has been re-organised and since June 2018 has a new head. Several components of the office were re-structured namely:

- Internal communication - channels such as the TV screens are now being used to clearly inform about the news and events occurring at iMM; Establishment of effective links and partnerships with the other institutions within our campus (FMUL and Hospital). The collaboration with other

facilities was improved (e.g., the Communication and HR Offices are working together on specific tasks related to the incoming of new iMMers; creation of dissemination materials for events and others).

- Social media management - a new social media strategy is being implemented and it was created an iMM institutional account for Instagram, reaching 1310 organic followers in 5 months.

- Media office - 8 press releases; 553 clippings in national and international media outlets

- School visits and Outreach events - in 2018, 11 schools visited the institute with a total of 209 students and 22 teachers.

In 2018, the Communication Office was responsible for the implementation of several communication strategies within the Twinning projects. In particular a major awareness campaign to promote the work developed by the scientists involved in the Twinning projects at iMM, has been developed. The campaign targeting the general public was divided in several packages that were disseminated in newspapers, national television, social media, and locally in the Lisbon area as a mean to create a proximity to the local, national and international community.

Different graphical artworks were produced to illustrate the research outputs of the scientists and the ongoing international projects at iMM. A multimedia spot was produced and hired on prime time of two Portuguese national TV channels reaching a Gross Rating Point (GRPs) of 69 on a total dimension of 3,364 million potential viewers. Together with this, the artworks were disseminated through the 49 digital advertising billboards present in the streets and metro stations of the city of Lisbon. During four weeks, the citizens and visitors of Lisbon were able to visualize and interact with these signs. Simultaneously, the videos and graphical outputs were disseminated through the institutional social media channels reaching a total of more than 71 000 people and more than 21 000 views (combined numbers of YouTube and Facebook views).

This campaign was also highlighted in the Portuguese media, including the magazines Briefing, Meios e Publicidade, the TV news programmes Edição da Manhã SIC, Diário da Manhã TVI, and a radio show Prova Oral Antena 3, increasing the reach and impact of these actions.

Invited lectures

Domingues I. Lisbon Area PostDoc Meeting. Museu do Oriente, Lisbon, Portugal, November 21, 2018.

Internationalisation

Domingues I. “On-site training” to the The Francis Crick Institute, in the context of the TwinnToInfect project. The Francis Crick Institute, London, UK, November 19-20, 2018.

“On-site training” to the Institut Curie, in the context of the ReTuBi project. Institut Curie, Paris, France, November 27-29, 2018.

Advanced Teaching

Organisation. MasterClass on Instagram. Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, October 12, 2018.

Science and Society

Organisation of the iMM presence at the European Researchers’ Night 2018. National Museum of Natural History and Science, Lisbon, Portugal, September 28, 2018.

Human Resources

Major Interests / Objectives

The purpose of the Human Resources Office is to develop, implement and support programmes and processes that add value to iMM and its employees, leading to improvements in employee well-being, empowerment and growth, while committed to key iMM activity: Research. The mission is to provide effective human resource management through the development and implementation of policies, programmes and services that contribute to the pursuit of the iMM Vision “to promote individual freedom and ambition, not a culture of individuality”, and the common goal of creating new knowledge that will impact human health”. In order to increase the response capacity to internal requests and to improve the welcoming of new members, HR Office reinforced the team.

Head of Facility

Sofia Isabel Lopes dos Santos Vicente dos Santos, Graduate

Team

André Daniel dos Santos Brás Pereira	Graduate	Junior HR Administrative Technician (Started September)
Cláudia Aurora Mira Soeiro	Graduate	Senior HR Administrative Technician
Susana Isabel dos Santos Pedroso	Other	Junior HR Administrative Technician

Keywords

Human Resources team has solid technical and soft skills with the aim to promote Talent. Our goal is to select and support the most prepared candidates to maintain the excellent of iMM, whether is a research or support staff.

Major Achievements

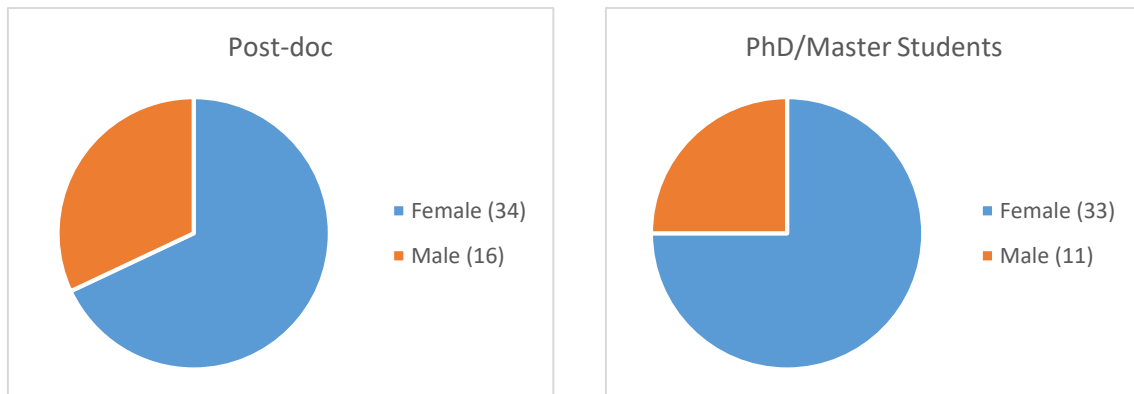
The Human Resources Office in 2018 had three major projects: 1. Implementation of Decree-Law nr 57/2016, from 29th August, altered by Law nr 57/2017, from 19th July, that approves a Doctoral Hiring regime to stimulate Scientific and Technological Employment in all knowledge areas; 2. Implementation of human resources management software - UNIT4; 3) Creation and implementation of the MyID Programme.

In line with the iMM’s strategy, the legal compliance inherent to the government's guidelines on scientific employment led to 100% implementation of the Decree-Law nr 57/2016, from 29th August, altered by Law nr 57/2017, from 19th July at iMM, a fact mentioned in the media. Under “Norma Transitória” were opened two selection processes, resulting in a total of 32 Post-Doctoral Researcher positions. Another 35 Selections Calls for Post-Doctoral Researcher were open under SAICT 2017.

It was very challenging and demanding to design, migrate and validate the data of about 2.100 people who have passed by iMM since 2003. As of 31/12/2018, there were 689, according to the detailed characterisation of page 21 of this Scientific Report.

Still following the alignment of the iMM Board of Directors, the MyID Programme was created with the main goal of helping, mainly the postdoctorals community (but also the Masters and PhD Students) to develop a process of self-knowledge, a career plan and setting professional goals by providing guidance, as well as, a varied network of contacts with Industry. All this with the use of innovative techniques and creative methods.

So far, there were 9 groups (from April to November 2018), reaching 94 people from 3 European Institutes - iMM, the Francis Crick Institute and Institute Pasteur – 54% of the participants were post-docs (while the other 46% were distributed between PhD and Master Students).



Nationalities			
Portugal	73	Spain	2
India	4	Guinea	1
Germany	2	USA	2
Thailand	1	France	2
Uruguay	2	Vietnam	1
Brazil	3	United Kingdom	1

In the near future, all our new projects will continue to be guided by iMM's principal goal: "Institute that offers a vibrant scientific environment, aiming to nurture innovative ideas (...) leveraged by high-quality human resources, increasing expenditure in infrastructures and knowledge transfer to the society".

Tech Transfer Office

Major Interests / Objectives

The Technology Transfer Office at iMM was established in May 2018 with the main goal of stimulating the valorisation of knowledge at IMM through:

- The creation of a favourable internal environment to foster innovation and speed up the translation of promising ideas and results into new medical solutions;
- The protection and licensing of intellectual property;
- The promotion of entrepreneurship and the creation of start-ups;
- A closer interaction with industry (at national and international level) leading to new collaborations;
- The participation in relevant European networks and initiatives related with translational research (e.g.: EATRIS), open innovation (e.g.: Open Innovation Test Bed – “SAFE-N-MEDTECH”) and business acceleration (e.g.: Healthtech Translation Advisory Board and EIT Health).

Head of Facility

António Pedro Alves da Silva, Graduate

Team

Bárbara Sofia Lopes Gomes	PhD	Tech Transfer Officer (Started August)
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Keywords

Technology transfer, Entrepreneurship, Intellectual property, Business development, Partnering, Innovation, Industry outreach.

Major Achievements

The IP portfolio of iMM was strengthened with 19 new inventions identified, 26 patents filed (in 13 different countries), and 6 patents licensed to companies. 7 start-up companies set to exploit iMM IP assets were supported, 6 of which are new start-ups.

To bring iMM knowledge and IP closer to the market, 57 collaborations with external organisations were supported, including 49 collaborations with industry. As a result, 23 collaborations are already active.

The involvement of iMM in international innovation networks was promoted. iMM will lead the business development activities of an Open Innovation Test Bed (“SAFE-N-MEDTECH”) funded by the EC to support industry in the pre-clinical and clinical development of medical devices enabled by nanotechnology.

2018 also marked the approval of iMM as a member of EATRIS, the European infrastructure for translational medicine. The participation in EATRIS will enhance our capacity to partner with industry and other external organisations in the development of new medical solutions to improve people’s lives.

In 2018, we have organised the first edition of the iMM Summit, a networking event open to all the iMM community to strengthen collaborations between iMM researchers and biotech and pharmaceutical companies. This event had the participation of 138 people and the presence of 14 companies. During two days, iMM scientists and entrepreneurs, industry representatives and policy makers had the opportunity to share ideas and discuss possible partnerships.

Communications in International Conferences

Silva P. Speaker at MedFIT to talk about new instruments to support translational research in Europe.

Organisation of Conferences

iMM Summit – November 16-17, 2018.

Finance and Operations

Major Interests / Objectives

The year of 2018 was the first full year under a new leadership and under the organisational changes that started to be put in place over the last semester of 2017. The results of a new organisation with more collaborative and agile process were very visible not only in iMM internal procedures but also in the relationship of iMM with the main financing bodies and ministerial entities. Due to its own nature, the former called Management Unit is now called Finance and Operations Office and it is now one of the four main pillars of iMM organisational structure (Research Labs, Technical Facilities, Administrative Facilities and Finance and Operations Office). In March 2018, the legal status of iMM was reviewed by INE (National Institute of Statistics) and iMM regained its private status and was excluded from the budgetary consolidation perimeter. This decision was probably the main achievement of 2018 allowing iMM to pursue with its operations aligned with the scientific fast-paced labs working on new discoveries every day at iMM. Internally, the teams were reshaped and new members either coming from different departments of iMM or from the corporate sector brought additional capacity allowing iMM to be better prepared for the future. 2018 was also a year of innovation at the Finance and Operations office with the Launch of the Blue Ocean Project designed to promote a creative and collaborative atmosphere within the team. Each department (Funding Office, Accounting, Project Management, Purchasing and Procurement and Legal) was challenged to pursue a 6 month project to solve a specific problem identified. Finally, 2018 continued the newly created tradition of having a Management Retreat where the objectives that were set in the scientific retreat of 2017 were evaluated and new objectives were set to 2019.

Funding Office – Proposal design support; Support in consortium formation - identifying missing competences; Liaison with funding agency; Administrative and financial grant support; Support to grant writing namely impact (dissemination, communication, exploitation) and implementation sections; Budgeting support and validation; Ethics compliance advice; Support on intermediate reporting closer with project management and with lab managers.

Accounting – iMM statutory accounts and tax returns; cost accounting; Reporting and compliance with DGO (Direcção Geral do Orçamento) regarding budget submission and execution (2018). In 2019, the focus will continue to be in bringing more analytics for better and faster compliance with accounting best principles and with project eligibility rules from funding bodies.

Project Management – From Contractual start to final report submission; related support to researchers; Execution control through project life cycle; Coordination of internal and external audits to projects; Risk monitoring to foresee future tendencies in cost evolution. A new project Management Dashboard was set up among the team for better control of budget and short-term financial cycle.

Purchasing Office – Tendering according to Portuguese and European legislation; Verification of the validity of expenses in the research project; Placing the order to the supplier, tracking delivery times and updating the researcher on lead times. New technological capabilities are under analysis to guarantee shorter lead times for products and a more user-friendly method of purchasing now with a more adequate Public Procurement Law after the revision reflected in DL60 of August the 3rd 2018.

Legal – Institutional and Researcher’s support; Main areas of expertise: Intellectual Property; Consortium Agreements; Public Law and Employment.

The Finance and Operations Office through its Director also provides support to the Executive Director in all matters regarding financial and management strategy while being responsible for overall budget submission in DGO and for setting up, while following, the execution of the operational budget of all iMM facilities. The Finance and Operations Office is also requested to give support in matters concerning inter-institutional collaborations. Finally, the Finance and Operations Office is accountable for promoting Quality Management System actions regarding up-to-date procedures, reports and assessments per facility and fulfilment of ISO 9001 requirements.

Head of Facility

Fausto da Costa Santos Lopo de Carvalho, Master/MBA

Team

Assistant of the Board of Directors:

Ana Clara Pereira Faria Artur	Graduate	Board of Directors Assistant
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Funding:

Afonso Miguel dos Santos Duarte	PhD	Senior Funding Officer (Left December)
Bárbara Sofia Lopes Gomes	PhD	Junior Funding Officer (Moved to a different department in September)
Joana Cristina Costa	PhD	Senior Funding Officer
Marija Petkovic Garcia	PhD	Funding Consultant

Projects:

Andreia Sofia Gonçalves Almeida Vaz Veiga	Graduate	Project Manager
Eduarda Maria Seabra Rosmaninho	Master	Project Manager
Isabel Pequeno Roque	Graduate	Project Manager (Left October)
Madalena Gil Martins Reis	Master	Project Manager (Started February)
Maria Fernanda Gonçalves da Veiga Vila-Chã	Other	Administrative Technician
Maria José Flores Marques Antunes	Graduate	Project Manager
Maria Rosa Vieira Ventura	Graduate	Project Manager (Left February)
Sara Marisa Caseiro Rebelo	Graduate	Project Manager (Started July)
Tiago José Ramos Reis	Master	Project Manager (Left June)

Accounting:

Ana Filipa de Almeida Pereira	Other	Accounting Administrative Technician
Cláudia Filipa Dias Marques	Graduate	Accounting Administrative Technician (Left August)
Pedro Gaspar Rebelo Lopes Moura	Master	Financial Analyst
Pedro Miguel da Rosa Santos	Graduate	Accounting Administrative Technician
Sandra Paula da Silva Duarte	Graduate	Accounting Area Manager
Vera Cristina Felício da Conceição Rêgo	Other	Accounting Administrative Technician

Purchases:

Alexandre Manuel Raposo de Jesus	Master	Purchasing Area Manager
Ana Rita Fonseca Vicente	Graduate	Purchasing Administrative Technician
Cláudia Sofia Palmeiro Alves da Costa	Other	Purchasing Administrative Technician
Lúcia Cristina Manso Alves	Graduate	Purchasing Administrative Technician
Rita Santinho Grenho	Master	Purchasing Administrative Technician
Sandra Isabel Francisco Lopes	Graduate	Purchasing Administrative Technician
Vânia Isabel Estevens Polido Marques Paula	Graduate	Purchasing Administrative Technician

Legal:

André Rebelo da Silva Fialho	Graduate	Lawyer (Left March)
Inês Bilé da Silva Plácido	Graduate	Lawyer (Started August)

Front Office:

Ana Rita Matos Dias	Master	Administrative (Started October)
Joana Andrade e Sousa Lamas	Graduate	Administrative (Left May)

Keywords

Finance and Operations Office				
2019 Gold Rules and Targets				
FUNDING 	PROJECTS 	PURCHASES 	ACCOUNTING 	LEGAL
OPERATIONS	PROCESS	SAVINGS	ANALYTICS	PRECISION
<ul style="list-style-type: none"> • Deeper knowledge of iMM operations as a whole to better achieve the 360° view • Focus on strengthening the Pre Award core actions • Intermediate report support alongside with project manager • Further expand department internal marketing 	<ul style="list-style-type: none"> • Focus on process build up to support a spotless execution of daily tasks. • Improvement of internal communication to avoid overlapping of issues and allow for a transversal knowledge sharing • Department lift off to absolute excellence 	<ul style="list-style-type: none"> • Build up on the excellent past performance • Don't be in love with the excellent past performance • Generate financial and time savings from better processes supported by the right technology 	<ul style="list-style-type: none"> • Deeper financial analytics and control with a better prepared ERP Navision • Higher pressure and alerts regarding short term cash needs • Annual iMM budget controlled in a quarterly basis • Shorter monthly closing periods – 10 days goal 	<ul style="list-style-type: none"> • High pressure on detail and legal precision / compliance of every MTA or other related processes with both internal or external stakeholder • Sensitivity awareness radar in each decision to understand the impact in the full stakeholder chain
<small>Management Retreat 2018</small>				
<small>7</small>				

Major Achievements

Funding Office: Dissemination of over 300+ funding opportunities; Increased compliance between iMM researchers and Funding Office regulations; Support to 192 applications to 45 different International and to 14 different National Funding Programmes, namely in eligibility, ethical, legal, technical and administrative aspects; Support and management of the iMM's Director's Fund schemes; Technical coordination of seven institutional projects; Liaison with post award on widening projects.

Accounting: Accounting team compliant with DGO reporting obligations and Annual Budget of both costs and revenues. A new dashboard was put in place and refreshed on a monthly basis – Cash-Flow Dashboard to track cash cycle and needs. Decision from INE only came in March 2018, meaning that iMM had to set up a new accounting system to uninstalled it a few days after. This resulted in additional effort of accounting reconciliation and delays in the normal daily tasks. Nevertheless, the team managed to reorganize the task flow in the second semester allowing for a full recovery of these delays. Efforts in improving communication with other departments, namely project management and purchasing and procurement were visible with good results.

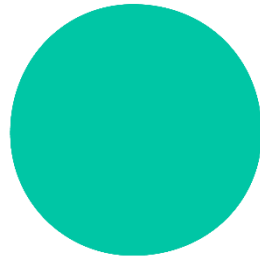
Purchasing Office: Improved organisation to comply with Public Procurement in the most agile possible way. The results of this transformation were very visible to the scientific community in general and allowed iMM to be an active voice for the changes that needed to be implemented in the public procurement code for scientific activities. Liaison with the new Legal Counsel of iMM was done in a very effective way allowing for a faster clarification of main hurdles and doubts from the funding bodies. For the majority of the purchases lead times were shorter with a positive impact within the scientific community.

Project Management: Report submission was done in a more accurate way with additional financial “pressing” regarding the short-term cash needs. H2020 project submissions done in a timely and precise way with accuracy both in the deliverables and in the financial reports. Widening projects were tested with a new governance model with pre-award and post-award working closer together with visible results. The team was reshaped with three new members coming to the team from Accounting, Purchases and from the corporate sector. A new set of skills was brought to the team allowing for a team better prepared for the future both in organisation and technical capabilities.

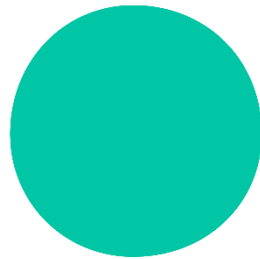
Legal: A new legal counsel – Inês Bilé – started in March 2018 as a result of a reshape strategy to this department. Legal is now an organised department with clear processes regarding its internal clients and processes. A new information repository is being set-up with the support of an IT solution for time record and control. In this way all, the processes managed by the Legal Counsel are organised and ready to be activated whenever needed. The legal counsel also served as a liaison between iMM and FMUL in a very complex process of a takeover of a start up born at iMM.

Quality Management System: Successful audit in 2018, SWOT and annual satisfaction survey completed for iMM.

2018 was a year with several changes some of them imposed by the legal framework that surrounds iMM and some of them encouraged by the Finance and Operations Director. All of the changes had a positive impact on the overall operations of iMM. iMM is in the right path to achieve higher levels of compliance concerning not only project execution and financial follow-up but also management best practices with a clear view on ownership and performance. Team motivation levels are now higher than before and the feeling of a common and higher purpose is now a fact. 2019 will bring several challenges in an ever-dynamic organisation, whether they come from accounting needs for a more analytical track record of expenses, project management accuracy in intermediate reports and transversal practices or even to a new set of calls that can eventually be reached by our Funding Team. Being closer to society is also an objective to iMM and having a solid fundraising strategy will be an objective to pursue in 2019.



Startups



Genomed

Major Interests / Objectives

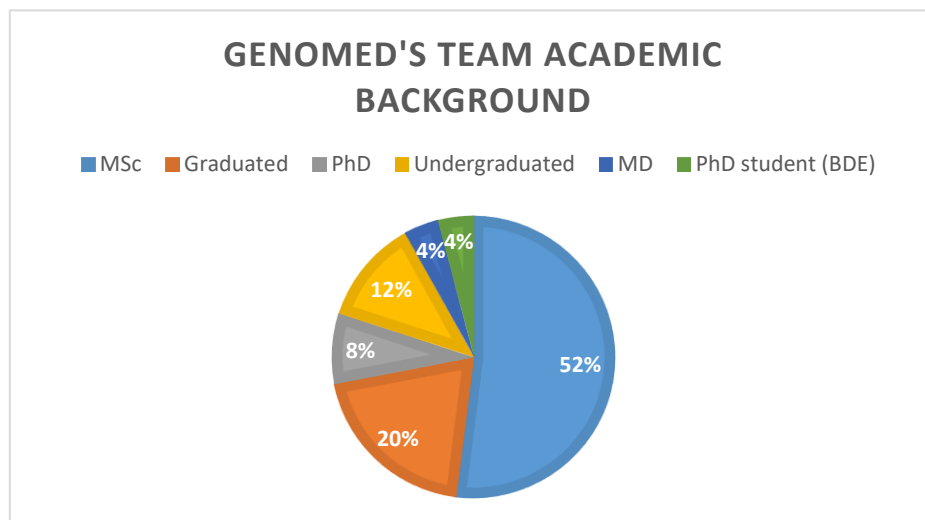
GenoMed is a spin-off company of iMM created in 2004. GenoMed’s mission is to provide cutting-edge technology transfer services relevant for medical applications. Currently, GenoMed offers more than 480 different tests that are used in diagnosis, prognosis and therapeutic follow-up. The main medical areas covered include Oncology, Haematology, Cardiology, Neurology, Gastroenterology/Hepatology, Nephrology, Endocrinology/Metabolic diseases, Obstetrics/Gynecology, Pneumology, Dermatology, Ophthalmology, Otorhinolaryngology, Pediatrics, Urology and Pharmacogenetics. Additionally, GenoMed provides parental and ancestry DNA testing.

Head

Teresa Porta Nova, MSc – Executive Director/Technical Director

Diana Antunes, MD – Clinical Director/Clinical Geneticist

Team



Keywords

Molecular diagnosis, Oncology, Genetics, Rare diseases.

Major Achievements

In 2018, we implemented more than 20 new NGS panels for various medical specialties as Haematology, Solid Tumours, among others. Those panels have been designed together with the clinicians and responding to their patient's needs.

GenoMed participated in the international collaborative study with the National Institute for Biological Standards and Control (NIBSC) for the evaluation of the first of the World Health Organisation 1st International Standards for Cancer Genomes.

Ongoing Research Projects

2018-Present: "Molecular Profiles in Colorectal Cancer: Prognostic Value and Indicators for Tailored Therapies". Coordinator: Prof. Marília Cravo (HBA). Participants: Ana Carla Sousa.

2017/2021: LysoMod, funded with the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 734825.

2017/2019: MyCardioGeneTest, funded by Lisboa2020, Portugal2020 from European Regional Development Fund (FEDER).

2016/2019: Characteristics and frequency of IDH mutations in real world AML patients in Portugal. Celgene. Coordinator: Prof. Carmo-Fonseca. Participants: Sónia Matos.

Participation in a collaborative study with the National Institute for Biological Standards and Control (NIBSC) for the evaluation of the World Health Organisation 1st International Standards for Cancer Genomes in October 2018.

Participation in a comparison/evaluation study with Biocartis to assess site experience with Idylla™ MSI Assay (Research Use Only, RUO) in November 2018.

Publications in Peer Review Journals

Mousinho F, Azevedo AP, Mendes T, Santos PSE, Cerqueira R, Matos S, Santos S, Ramos S, Viana JF, Lima F (2018). Concomitant Presence of JAK2V617F Mutation and BCR-ABL Translocation in Two Patients: a New Entity or a Variant of Myeloproliferative Neoplasms (Case Report). *Molecular Medicine Reports*, 18(1): 1001-1006. (IF: 1.922, Citations: 0. Sources: Web of Science and Scopus).

Mousinho F, Santos PES, Azevedo AP, Pereira JM, Lemos R, Matos S, Viana JF, Lima F (2018). Concomitant myeloproliferative and lymphoproliferative neoplasms, distinct progenitors: A case report and review of the literature. *Molecular and Clinical Oncology*, 9(3): 347 – 349. (IF:--, Citations:--).

Invited Lectures and Seminars

Matos S. Hematology Diagnostic Masterclass – Anemia Aplástica e Novas Tecnologias de Sequenciação. Lisbon, Portugal, May 12, 2018.

Communications in International Conferences

Coutinho AM, Tavares J, Carmo-Fonseca M, Antunes D. Rare variants in cardiomyopathy related genes - a Portuguese cohort population. ESHG 2018, Milan, Italy, June 16-19, 2018. (Poster Presentation).

Coutinho AM, Tavares J, Carmo-Fonseca M, Antunes D. Rare variants in cardiomyopathy related genes - a Portuguese cohort population. Genomic Medicine 2018 Nordic, Odense, Denmark, October 2-3, 2018. (Poster Presentation).

Silveira C. Breast Cancer – molecular diagnosis. Clinical Session about Breast Pathology, Praia, Cape Verde, December 1, 2018. (Oral Presentation).

Communications in National Conferences

Matos S, Botelho de Sousa A, Desterro J, Nunes A, Gomes da Silva M, Chacim S, Mariz J, Esteves G, Raposo J, Espadana A, Carda J, Martins V, Guerreiro H, Carmo-Fonseca M. IDH mutations and co-association with other mutations in myeloid gene in patients with Acute Myeloid Leukemia in Portugal. SPH Annual Meeting, Vilamoura, Portugal, November 15-17, 2018. (Poster Presentation).

Carvalho C, Pulido C, Silveira C, Correia ML, Medeiros P, Costa L, Carmo-Fonseca M. Genomic copy number aberrations determined with droplet digital PCR: a potential biomarker for risk assessment in early-stage breast cancer. Symposia on Tumour Biology: from basic biology to disease, Pestana Palace, Lisbon, Portugal, December 5-7, 2018. (Poster Presentation).

Gomes C, Sousa AC, Branco F, Palmela C, Rolim I, Henriques AR, Dario AR, Malveiro S, Janeiro A, Oliveira MH, Borralho P, Teixeira JA, Maio R, Fonseca I, Cravo M. Mutações BRAF e RAS no Cancro de Cólon e Recto: associação com fenótipo e prognóstico. 14.º Congresso Nacional de Cancro Digestivo, Algarve, Portugal, November 9-10, 2018. (Oral Presentation).

Industry Contract Research

2016/2019: Characteristics and frequency of IDH mutations in real world AML patients in Portugal. Celgene. Coordinator: Prof. Carmo-Fonseca. Participants: Sónia Matos.

2018: Next Generation Sequencing (NGS) to test BCR-ABL1 mutations in patients with CML and ALL Ph+ treated with TKIs. Incyte. Coordinator: Sónia Matos

Lymphact

In June 2018, GammaDelta Therapeutics Limited acquired Lymphact.

Major Interests / Objectives

Lymphact is a biopharmaceutical start-up focused on developing innovative personalised medical treatments. Our first product - DOT-Cells® - can target not only cancer and virus-infected cells, but also chemotherapy-resistant cancer stem cells and viral reservoirs, believed to cause disease recurrence. An improved anti-tumour function and the absence of severe associated side-effects are distinctive and unique features of our therapeutic approach.

Head

Diogo R. Anjos, MBA/CEO

Keywords

Cellular therapies, Immunology, Oncology, Immunotherapies, Start-up, Gamma-Delta.

Selected Publications

Almeida AR, Correia DV, Fernandes-Platzgummer A, da Silva CL, da Silva MG, Anjos DR, Silva-Santos B (2016). Delta One T Cells for Immunotherapy of Chronic Lymphocytic Leukemia: Clinical-Grade Expansion/Differentiation and Preclinical Proof of Concept. Clin Cancer Res. 22(23): 5795-5804. (IF: 10.199, Citations: 19. Sources: Web of Science and Scopus).

Ongoing Research Projects

Proprietary Research.

Patents / Prototypes

PCT IB2012/052545.

PCT EP2016/063077.

RoPlaVac

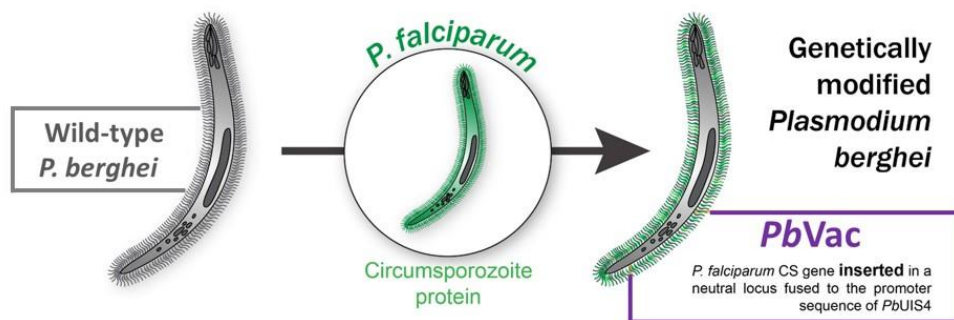
Major Interests / Objectives

RoPlaVac is a spin-off company of iMM, created in 2014. The mission of RoPlaVac is to develop medical solutions against malaria, one of the most prevalent diseases worldwide. Malaria is caused by *Plasmodium* parasites, injected into their mammalian host as sporozoites, through the bite of an infected mosquito. Currently, RoPlaVac is engaged in three main endeavours: Vaccination-Development of a new whole-organism vaccine against malaria, based on the use of genetically modified rodent *Plasmodium* parasites; *Plasmodium* sporozoite cryopreservation-Development of an effective method to cryopreserve *Plasmodium* sporozoites for use in research and vaccination; In vitro *Plasmodium* sporozoite production- Development of a cell culture-based method to produce infective *Plasmodium* sporozoites for use in research and vaccination.

Head

Miguel Prudêncio, PhD, Instituto de Medicina Molecular João Lobo Antunes, Group Leader – Prudêncio Lab

Graphical Abstract



Team

António Manuel Barbeiro Mendes	PhD	Senior Post-Doctoral Researcher
Maria Manuel Dias da Mota	PhD	Group Leader
Rui Miguel Prudêncio Cunha Pignatelli	PhD	Group Leader

Keywords

Malaria, *Plasmodium*, Vaccines, Liver Infection, Sporozoites, Cryopreservation.

Major Achievements

- International patent application (IPA) on RoPlaVac's novel vaccination strategy against malaria was granted in Europe and Hong-Kong;
- The first vaccine candidate employing RoPlaVac's patented technology underwent Phase I/IIa clinical trials.
- An effective cryopreservation method for *Plasmodium* sporozoites is under optimisation in collaboration with the company Smartfreez.
- An *in vitro* system for production of *Plasmodium* sporozoites has been developed and published, and is currently being optimised.

Selected Publications

Azevedo R, Markovic M, Machado M, Franke-Fayard B, Mendes AM, Prudêncio M (2017). A bioluminescence method for *in vitro* screening of Plasmodium transmission-blocking compounds. *Antimicrob. Agents Chemother.*, 61: 202699. (IF: 4.302, Citations: 4. Source: Web of Science).

Mendes AM, Reuling IJ, Andrade CM, Otto TF, Machado M, Teixeira F, Pissarra J, Gonçalves-Rosa N, Bonaparte D, Sinfrônio J, Sanders M, Janse CJ, Khan SM, Newbold CI, Berriman M, Lee C, Wu Y, Ockenhouse CF, Sauerwein RW, Prudêncio M (2018). Pre-Clinical Evaluation of a *P. berghei*-Based Whole-Sporozoite Malaria Vaccine Candidate. *NPJ Vaccines*, 3: 54. (IF: 3.143, Citations: 0. Source: Web of Science and Scopus).

A.M. Mendes, M. Machado, N. Gonçalves-Rosa, I.J. Reuling, L. Foquet, C. Marques, A.M. Salman, A.S.P. Yang, K.A. Moser, A. Dwivedi, C.C. Hermsen, B. Jiménez-Díaz, S. Viera, J.M. Santos, I. Albuquerque, S.N. Bhatia, J. Bial, I. Angulo-Barturen, J.C. Silva, G. Leroux-Roels, C.J. Janse, S.M. Khan, M.M. Mota, R.W. Sauerwein, M. Prudêncio (2018) A *Plasmodium berghei* Sporozoite-Based Vaccination Platform Against Human Malaria. *NPJ Vaccines*, 3: 33. (IF: 3.143, Citations: 1. Source: Web of Science and Scopus).

Invited Lectures and Seminars

Plasmodium Infection and Antimalarial Strategies. IMM Summit, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, November 16-17, 2018.

"Prudêncio Lab - *Plasmodium* Infection and Antimalarial Strategies", presentation for Fosun, Instituto de Medicina Molecular João Lobo Antunes, Lisbon, Portugal, November 19, 2018.

Organisation of Conferences

Organiser of TwinnToInfect Summer School – A TwinnToInfect Event, Hotel Tryp, Costa de Caparica, Portugal, September 17-20, 2018.

Patents / Prototypes

"Genetically modified rodent *Plasmodium* parasites as platforms for a whole-organism malaria vaccine" (WO 2013156949 A1, also published as CN104302313A, EP2838554A1, US20150071966). Patent applications filed in Angola, Australia, Brazil, China, India, Japan, Mozambique, South Africa, United States, and European Patent (Euro-PCT), November 2014. Patent granted in India (07.08.2015), Mozambique (17.08.2015), South Africa (23.12.2015), Japan (2015), Australia (03.02.2017), USA (15.02.2017), China (20.11.2017), Europe (11.05.2018) and Hong-Kong (20.07.2018).

TechnoPhage

Major Interests / Objectives

TechnoPhage is a highly innovative drug discovery biopharmaceutical company focused on the development of proprietary biological drugs and repurposed compounds. Within the biologics arm, TechnoPhage is developing two classes of drugs, namely light-chain single-domain antibodies (sdAbs) and bacteriophage cocktails. These two drug platforms are developed in parallel to address separately the limitations of two different medical issues, specifically, issues relating to current antibiotics, as well as the limitations associated with full-length antibody-based drugs. TechnoPhage currently has over 9 drug products into their development pipeline, each of which is being developed to treat medical indications such as diabetic foot ulcer infections, respiratory infections, Alzheimer's, age-related macular degeneration, plus other neurological and immunological disorders. We are in clinical stage with TP_102, a bacteriophage cocktail targeting diabetic foot ulcer infections.

Within the repurposing of chemical drugs, TechnoPhage has a chemical compound ready to enter clinical trials that targets the on/off period related to Levo-DOPA induced dyskinesia. The other ongoing project is in spinal cord degeneration, entering pre-clinical phase.

TechnoPhage has a strong IP position with over 20 patents in the area of phages and antibodies and a total of 84 patent applications in various jurisdictions including EU, USA, several countries in US and Latin America.

QUADRO 1: INDICADOR GASTÃO CUNHA FERREIRA - EMPRESAS
 Patenteamento internacional com origem portuguesa (prioridade portuguesa ou inventores residentes em Portugal) nos últimos 5 anos, resultados ordenados pelo acumulado dos últimos 5 anos

	REQUERENTE	2013	2014	2015	2016	2017	TOTAL
1º	BIAL	37	30	52	55	30	204
2º	HOVIONE	28	26	23	41	48	166
3º	NOVADELTA	7	17	24	31	21	100
4º	BOSCH	5	20	30	15	22	92
5º	VENIAN			2	3	78	83
6º	TECNIMEDE		3	9	18	47	78
7º	TECHNOPHAGE	10	20	13	16	13	72
8º	BIOSURFIT	8	14	11	9	24	66
9º	OLIVEIRA & IRMAO SA	16	17	10	5	4	52
10º	SECIL	5	14	11	11	5	46

Head

Miguel Garcia, PharmD, PhD, MBA

Graphical Abstract



Team

Ana Almeida	BSc	Technician
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Keywords

Infection, Bacteriophages, Neuroscience, Small domain antibodies, Repurposing.

Major Achievements

Based on 14 years of R&D, TechnoPhage is now in a clinical stage company with a position to bring its products to commercial stage.

Patents / Prototypes

Main relevant patents of TechnoPhage filed in EU:

Patent Name	Number	Date of Filing
Phage 1: Antibacterial Phage, Phage Peptides and Methods of Use Thereof	10708834.6	05.02.2010
Phage 2: Antibacterial Phage, Phage Peptides and Methods of Use Thereof	11820825.5	15.03.2013
TP102: Compositions Comprising Cocktails of Antibacterial Phages and Uses Thereof For The Treatment Of Bacterial Infections	13725496.7	19.03.2013
TA101: Anti-Tumor Necrosis Factor-Alpha Agents and Uses Thereof	12783676.5	19.09.2012
CollectAB: Cell-Based Methods for Coupling Protein Interactions and Binding Molecule	14722391.1	03.03.2014
Technobodies: Engineered rabbit antibody variable domains and uses thereof	08753864.1	30.04.2008
Antibody molecules and peptide delivery systems for use in Alzheimer's disease and related disorders (collaborative shareholder FMUL)	WO2016120843 A1	29.01.2016