iMM-Laço-HUB is recruiting a Postdoctoral Computational Biologist under an Employment Contract Reference IMM/CT/80-2021

The iMM – Instituto de Medicina Molecular João Lobo Antunes (iMM), has very recently created the iMM-Laço-HUB that is a structure dedicated to the study of breast cancer to uncovered novel modalities of treatments (more information at http://immlaco.org). The iMM-Laço-HUB now opens a call for the hiring of a Postdoctoral Computational Biologist under an Unfixed-term contract, under the project "***Multi-Dimensional Cartography of the Breast Cancer Micro-Environment***".

Work Plan and Objectives: In 2020, over 600 000 women died from breast cancer worldwide. Treatment of breast cancer, in particular metastatic, raises many challenges, due to resistance to available therapies. The development of novel, or combinatorial, treatments for breast cancer is an urgent unmet clinical need. The iMM-Laco-HUB objective is to create an unprecedented in depth multi-dimensional cartography of human breast cancer and to do so we will encompass spatial information about the genetic of the tumour cells, the local specific gene expression profile, the visualisation of the stroma architecture and localisation and phenotype of immune cells. In addition, a large body of evidence emerged supporting that microbiota may influence oncogenesis and its subsequent progression and response to anticancer therapy. Thus, we aim to evaluate *in situ* the tumour genetic and clonal distribution (using whole exome sequencing), the microbiota (using 16S rDNA sequencing) and the host stroma and immune responses (using RNA-sequencing, spatial transcriptomics and multiplexed imaging). The strength of iMM-Laco-HUB is to combine non-overlapping and complementary types of expertise (oncologists, pathologists, immunologists and computational biologists) to create a multi-dimensional atlas of the breast tumour tissue. We believe that this holistic approach will permit the reconstruction of micro-volumes at cellular resolution allowing visualisation of the cross talks between tumour–immune/stroma cells and microbiota to unravel the major parameters and pathways that can be targeted to limit cancer progression and to determine the clinical course of the patients.

What iMM seeks: The iMM-Laço-HUB is looking for a Postdoctoral Computational Biologist to join the laboratory of Dr Nuno Morais and interact closely with the Breast Cancer Lab coordinated by Dr Karine Serre. The successful candidate will also work in close collaboration with Professor Sergio Dias (iMM) and Professor Luis Costa (iMM and Head of the Oncology department of Hospital de Santa Maria). He/She must be a ***highly motivated***, ***pro-active***, ***independent***, ***gregarious*** and ***versatile*** individual to join our multi-disciplinary team. He/She should be passionate about iMM-Laço-HUB's missions of bringing hope to the women who are diagnosed with breast cancer and of being an instrumental member of a multi-disciplinary team dedicated to create a cellular and molecular map of the breast cancer microenvironment for the design of novel therapies and to support clinical decisions.

The principal activities of the PostDoctoral Researcher will include:

- Performing the bioinformatics analyses and integration of the aforementioned complex data (exome, transcriptome, microbiome, etc.) from local tumour samples and public databases (e.g., The Cancer Genome Atlas)
- Leading the development of bioinformatics tools for non-computational researchers and oncobiologists to explore data generated by the project when publicly released
- Collaborating with and/or co-supervising computational biology MSc and PhD students
- Participating in the conception of projects related with the iMM-Laço-HUB and in the writing of associated grant applications
- Reporting results to a multidisciplinary team of oncologists, immunologists, molecular biologists and computational biologists and jointly interpreting them
- Participating in the outreach and science communication activities promoted by the iMM-Laço-HUB

The following skills and qualifications are required:

- PhD in Biological Sciences, Biomedical Sciences or Bioengineering, preferentially in Bioinformatics and/or Computational Biology
- Good programming skills, preferentially with advanced knowledge in programming in R
- Experience in bioinformatics analyses of next-generation sequencing data, preferentially transcriptomic data
- Knowledge in Statistics and Linear Algebra
- High organization skills and strong work ethics (care, rigour, consistency, intellectual honesty)
- Proficiency in English, spoken and written, and excellent verbal and written communication skills

What iMM offers: iMM will offer outstanding working conditions, including a full-time contract, starting predictably in April 2022, and the possibility to work in the interface between hospital and biomedical institute on clinical and basic research. iMM will also offer access to state-of-the-art high-performance computing infrastructure, namely a multi-hundred-core cluster.

Working Conditions: The employment contract has a predicted estimated duration of 12 months. Gross monthly salary is **2.134,73€**. The indicated amount will be subject to the mandatory taxes accordingly to Portuguese Labour Law.

How to apply: Please submit your detailed CV, motivation letter, PhD degree certificate and contacts of **3** references, from **25th of October 2021** until **17th of December 2021** through the email imm-hr@medicina.ulisboa.pt.

Non-discrimination and equal access policy: iMM promotes a non-discrimination and equal access policy, wherefore no candidate can be privileged, benefited, impaired or deprived of any rights whatsoever, or be exempt of any duties based on their ancestry, age, sex, sexual preference, marital status, family and economic conditions, instruction, origin or social conditions, genetic heritage, reduced work capacity, disability, chronic illness, nationality, ethnic origin or race, origin territory, language, religion, political or ideological convictions and union membership.

Pursuant to Decree-Law nr 29/2001 of 3rd February, disabled candidates shall be preferred in a situation of equal classification, and said preference supersedes any legal preferences. Candidates must declare, on their honour, their respective disability degree, type of disability and communication / expression means to be used during selection period on their application form, under the regulations above.

Evaluation Criteria: Applications will be evaluated by Nuno Morais, Sergio Dias and Karine Serre (all PhD's) in accordance with the following method:

- 1st Phase: Curricular evaluation: 45% and Motivation Letter: 20%
- 2nd Phase: Interview: 35%

Results: Both admitted and excluded candidates list and final classification list shall be posted at iMM website at https://imm.medicina.ulisboa.pt/jobs/#results and all admitted candidates will be notified by email.

Preliminary Hearing and Final Decision Deadline: Pursuant to article 121 of the Administrative Procedure Code, after notified, all candidates have 10 working days to respond. Panel's final decisions are pronounced within a period of 90 days, from application deadline.

Recent References:

Alpuim Costa D, Nobre JG, Batista MV, Ribeiro C, Calle C, Cortes A, Marhold M, Negreiros I, Borralho P, Brito M, Cortes J, Azambuja Braga S and **Costa L**. Human Microbiota and Breast Cancer—Is There Any Relevant Link?—A Literature Review and New Horizons Toward Personalised Medicine. *Front. Microbiol.* 2021; 12.DOI: 10.3389/fmicb.2021.584332.

Gomes I, de Almeida BP, Dâmaso S, Mansinho A, Correia I, Henriques S, Cruz-Duarte R, Vilhais G, Félix P, Alves P, Corredeira P, **Barbosa-Morais NL**, **Costa L** and Casimiro S. Expression of receptor activator of NFkB (RANK) drives stemness and resistance to therapy in ER+HER2- breast cancer. *Oncotarget*. 2020; 11:1714–1728.DOI: 10.18632/oncotarget.27576.

Gregório AC, Lacerda M, Figueiredo P, Simões S, **Dias S**, Moreira JN. Meeting the needs of breast cancer: A nucleolin's perspective. *Crit. Rev. Oncol. Hematol.* 2018; 125:89–101. Available at: https://doi.org/10.1016/j.critrevonc.2018.03.008.DOI: 10.1016/j.critrevonc.2018.03.008.

Gomes CP, Nóbrega-Pereira S, Domingues-Silva B, Rebelo K, Alves-Vale C, Marinho SP, Carvalho T, **Dias S** and Bernardes Jesus B. An antisense transcript mediates MALAT1 response in human breast cancer. *BMC Cancer*. 2019; 19:1–11.DOI: 10.1186/s12885-019-5962-0.

Saraiva-Agostinho N, **Barbosa-Morais NL.** Interactive Alternative Splicing Analysis of Human Stem Cells Using psichomics. *Methods Mol Biol*. 2020; 2117:179–205.

Reis-Sobreiro M, Teixeira da Mota A, Jardim C, **Serre K**. Bringing Macrophages to the Frontline against Cancer: Current Immunotherapies Targeting Macrophages. *Cells*. 2021; **10**:2364.DOI: 10.3390/cells10092364.

Lisbon, 25th of October 2021