FCT Fundação para a Ciência e a Tecnologia
MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E ENSINO SUPERIOR

REPÚBLICA PORTUGUESA

Código do Concurso I 02/SAICT/2017

Designação do projeto | PTDC/BIA-MOL/29320/2017 *Deciphering the epigenetic barriers of aging for iPSC reprogramming*

Referência do projeto | PTDC/BIA-MOL/29320/2017

Região de intervenção |Lisboa

Entidade beneficiária proponente| Instituto de Medicina Molecular João Lobo Antunes

Data de aprovação | 2018-04-16

Data de início | 01-10-2018

Data de conclusão | 30-09-2021 **Prorrogado |**30-06-2022

Custo total elegível | 239.555,00 euros

Apoio financeiro Orçamento de Estado I 239.555,00 euros

Aging imposes a barrier for correct reprogramming of iPSCs. We propose to unravel the epigenetic barriers for somatic reprogramming of aged cells using an allelic-specific high-throughput approach. First, we will do genome-wide DNA methylation profiling of donor cells from both juvenile and aged mice and respective reprogrammed iPSCs.
Second, we will use genomic imprinting as a read-out for the stochastic epigenetic errors that might accumulate during reprogramming in aged-derived iPSCs. Third, we will study the impact of improved reprogramming protocols on the epigenetic signature of these iPSCs. Finally, any aberrant DNA methylation found in aged-derived iPSCs will be reverted using CRISPR/Cas9-based epigenetic editing. We hope to identify an allelic-specific
DNA methylation profile of aging and understand its impact on reprogramming.
We also hope to generate novel epigenetic editing tools helping to improve current protocols and enhance the quality of aged-derived iPSCs.