



Department of
Biomedical Engineering

香港城市大學
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Empowering Cancer Immunotherapy with Cellular Reprogramming

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Yeung Kin Man Academic Building

Abstract

Immunotherapy leads to long-term survival of cancer patients, yet generalized success has been hampered by insufficient antigen presentation and exclusion of immunogenic cells from the tumor microenvironment. We have developed an approach to reprogram tumor cells in vivo by adenoviral delivery of the transcription factors PU.1, IRF8, and BATF3, which enabled them to present antigens as type 1 conventional dendritic cells. Reprogrammed tumor cells remodeled their tumor microenvironment, recruited, and expanded polyclonal cytotoxic T cells, induced complete tumor regressions, and established long-term systemic immunity in different mouse melanoma models. In human tumor spheroids and xenografts, reprogramming to immunogenic dendritic-like cells progressed independently of immunosuppression, which usually limits immunotherapy. Our studies paves the way for first-in-human trials and other applications of immune cell reprogramming in vivo.

Biography

Filipe Pereira is a Professor in Molecular Medicine at the Faculty of Medicine of Lund University in Sweden. Dr. Pereira is recognized for his work at the interface of cellular reprogramming and immunology and for fostering development of reprogramming-based immunotherapies. He pioneered the induction of dendritic cells from fibroblasts and cancer cells. Dr. Pereira co-founded Asgard Therapeutics, which received investment from leading European VCs to translate in vivo dendritic cell reprogramming to benefit cancer patients. For his scientific accomplishments and innovation efforts, he received several notable scientific awards, including 2 ERC Grants, the Novo Nordisk Distinguished Innovator and the entrepreneurship award from Mount Sinai-KiiLN. Dr. Pereira is a fellow of the Swedish Wallenberg program in Molecular Medicine and Editor-in-Chief of the journal Cellular Reprogramming. He was also awarded the prestigious Swedish Fernström Prize and a medal of merit from his hometown in Portugal.