



# Seminars



**Dr Andrea  
Pavesi**

## **Shaping *in vitro* solid tumor microenvironments models for T cell therapy and drug discovery**

Immunotherapy aims to redirect the patient's immune system to fight against pathology and holds great promise as a novel cancer treatment. While the research investment is at an all-time high in the immunotherapy and cell therapy sector, these new strategies are more likely to fail in solid tumor context during clinical trials. The critical immunosuppressive role of the tumor microenvironment (TME) in adoptive cell-mediated cancer immunotherapy is now recognized in the research and clinical community. However, our understanding of the relationship between the TME components and the immune system is limited. Our group is currently focused on developing and utilizing microfluidic platforms mainly for, but not limited to, cancer research by creating multicellular models with conditions and stimulations that play a fundamental role in specific human tissues. The microfluidics models represent an efficient preclinical tool to be potentially used during clinical trials to match the optimal drug and technique to individual cancer patients following a personalized medicine strategy. We successfully investigate the efficiency of engineered tumor-specific T cells combined with immune checkpoint inhibitors and small molecule treatment in a TME microfluidic model, which has a remarkable feature of monitoring cell-cell interactions and dynamics. Additionally, we explore different strategies to engineered T cells by boosting their killing efficiency and testing them in our 3D tumor microenvironment models.

*Dr Andrea Pavesi is a young investigator at the institute of molecular and cell biology (IMCB A\*Star). His group is currently focused on developing and utilizing microfluidic platforms mainly for, but not limited to, cancer research by creating multicellular models with conditions and stimulations that play a fundamental role in specific human tissues. Andrea is also a co-founding member of a Singapore-based start-up AIM Biotech, which recently obtained in December 2020 a series A investment round. AIM Biotech is also integrated into Andrea's lab as a joint service laboratory. Andrea completed his postdoc at the Singapore MIT Alliance (SMART) under Prof Roger Kamm's supervision, and before that, he was awarded with the Interpolitechnic PdD fellowship (Biomedical and Biomechanical engineering). Andrea also attended the ESSEC business school with a master's in health industries management.*

Thursday, 31<sup>st</sup> Mar 2021 | 3PM SGT | Via MS Teams

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