



Infectious  
Diseases Labs

ID LABS



# Prof Olivier Lantz

Institut Curie, Inserm  
Paris



**Thursday 7<sup>th</sup> March 2024**  
11:00 AM to 12:00 PM (SGT)

**Venue: F1 Connexis South - L14**  
Infuse Theatre

## MAIT cell development and functions

The exquisite reactivity of MAIT cells towards the ubiquitous microbial compound 5-OP-RU suggests a specific role in bacterial diseases. The co-evolution of the MAIT TCR alpha chain with the restricting MR1 molecule between species also indicates important function(s) related to TCR specificity. While cytokines such as IL-12 and IL-18 induce the secretion of type I cytokines by MAIT cells (IFN-g, TNFa), a tissue-repair program is triggered by TCR stimulation. MAIT cell properties and tissue residency are linked to the expression of PLZF. As these features are shared with other innate like subsets, the exact function(s) of MAIT cells under selective pressure is/are unclear.

We will first present recent results testing a putative role of TCR features in MAIT cell type 1 and 17 subset commitment in mice using scRNAseq and TCR repertoire analysis. We then studied whether 5-OP-RU-specific T cells from other species express the same differentiation program found in human or mouse MAIT cells. Using scRNAseq, we characterized the development of 5-OP-RU-specific T cells in 6 species spanning 110 million years of mammalian evolution. We evidenced a conserved sequence of transcriptional events during the maturation of 5-OP-RU-specific thymocytes leading to a deeply conserved transcriptional program associating cytotoxicity and tissue repair functions.

We also recently elucidated some of the mechanisms involved in the ability of MAIT cells to promote the repair of skin wound. We have now extended these results to another setting: we evidenced a protective mechanism by which MAIT cells detect microbiota metabolites produced upon intestinal inflammation and promotes tissue repair in return.

**Prof Olivier Lantz** received his MD and PhD from Paris Orsay University in 1986 and 1990, respectively. He studies the biology of NKT and MAIT cells and CD4 T cells and the interactions between the immune system and tumors. He discovered MAIT cells and performed their initial characterization in several species. He demonstrated their anti-microbial reactivity restricted by MR1 and evidenced their abundance in human blood. He demonstrated that MAIT cells are selected and expand in the thymus after stimulation by a bacterial metabolite. He currently focuses on the development of MAIT cells and the analysis of their function in mouse models.

**Hosted by: Dr Angeline Rouers**

Webinar is open to all. No registration required

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