IMG

Institute of Molecular Genetics
of the Czech Academy of Sciences

Regular Wednesday IMG seminar

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"Single-cell to tissue-scale memory of infection and inflammation"

The role of epithelial and stromal cells in driving inflammation, together with immune cells, is being increasingly appreciated. However, we currently lack tissue-scale frameworks to define and test how inflammation collectively impacts epithelial, stromal, and immune cells. This poses a fundamental challenge for understanding the cellular mechanisms that drive or sustain health and disease within, and across, barriers such as the skin, airway, and intestine. Our lab is addressing this challenge by quantifying and controlling how inflammation changes the ecology of barrier tissues. Our central hypothesis is that inflammation is distributed and stored in multiple cell types, with the capacity to form tissue-level collective cellular networks. Starting from our human single-cell RNA-sequencing data collected from infectious and inflammatory diseases, we are developing quantitative approaches to define how static cellular ecosystems are arranged in barrier tissues. These studies are informing time-series modeling of murine inflammatory models focused on Type 1, 2 and 17 inflammation to understand how the same pressure applied to epithelial, stromal, and immune cell subsets shifts functional states and interactions in distinct barrier tissues. We anticipate to identify the gradual inflammatory transitions which maintain essential tissue functionality and critical "tipping points" in tissue state that compromise barrier functions.

The seminar will be held

on Wednesday 3rd April 2024 at 15:00

in the Milan Hašek Auditorium at IMG

(Institute of Molecular Genetics of the Czech Academy of Sciences, Vídeňská 1083, Prague 4)