



Seminar/Talk

Understanding cell fate regulation: from molecules to tissues

Steffen Rulands

Max Planck Institute PKS

Host: Edouard Hannezo

The emergence of complex organs relies on the tightly regulated interplay between many cells. But what is the mechanistic basis of these cell fate decisions? In this talk, I will demonstrate how the combination of novel possibilities in single-cell biology with methods from theoretical physics can reveal regulatory principles of cell fate regulation. Based on experiments using single-cell genomics I will first discuss how the primary layer of epigenetic regulation, DNA methylation, is established during early embryonic developments. I will show that the establishment of DNA methylation patterns relies on collective interaction of DNMT3 enzymes, giving rise to rapid oscillations in the concentration of methylated cytosines during lineage priming. In the second part of my talk I will then ask what information on cell fate regulation can be extracted from tissue level measurements. I will show that the clonal dynamics in lineage tracing experiments in growing tissues gives rise to tissue-independent behaviour of clone sizes. Understanding this universality provides a quantitative basis for the interpretation of clonal fate data.

Monday, June 18, 2018 10:30am - 11:30am

Mondi Seminar Room 3, Central Building



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station. Please find a schedule of the ISTA Shuttle on our webpage: <https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.