Les mardis de L'IAB

IAB CELL BIOLOGY TRANSLATIONAL MEDICINE

DELPHINE DELACOUR

IBDM, Marseille (France)

DECIPHERING THE PRINCIPLES OF EPITHELIAL TISSUE ORGANIZATION

8.SEPTEMBER 2026 – 11 AM – LECTURE HALL

Epithelia constitute the primary physical barrier against external insults while simultaneously ensuring organ function. Defects in epithelial assembly or function lead to a broad spectrum of pathological conditions, ranging from rare developmental disorders to cancer. Despite their fundamental importance, the mechanisms by which epithelial cells coordinate individual behaviors across entire tissues to ensure spatial organization, integrity, and function remain poorly understood. To date, epithelial coherence has been studied predominantly in invertebrate systems or in transformed cell lines, limiting our understanding of its regulation in physiological mammalian contexts.

The intestinal epithelium represents an exceptional model to address these questions. It is one of the most rapidly renewing tissues in mammals and is continuously exposed to challenges. Its homeostasis relies on the precise balance between cell proliferation, differentiation, migration, and death. However, the cellular and developmental principles governing intestinal tissue organization and maintenance remain largely unexplored.

The overarching objective of this project is to elucidate how functional domains of the intestinal epithelium are established, maintained, and coordinated in space and time. Specifically, the project aims to:

1. understand the mechanisms that preserve the integrity of the proliferative compartment and determine their role in crypt formation and maintenance;
2. uncover epithelial connectivity and collective behavior within the differentiated compartment, both under homeostatic conditions and in response to perturbations.

A major strength of this project lies in its integrative and comparative strategy, combining in vivo and in vitro murine models with human disease-relevant systems. The project brings together advanced approaches in cell and developmental biology, tissue engineering, histology, molecular biology, biophysics, and computational modeling. This multidisciplinary framework will enable the identification of adaptive mechanisms by which epithelial cells polarize, self-organize, and dynamically regulate their fate in response to their environment, with broad implications for developmental biology, regenerative medicine, and disease pathology.

Invited by : Monika Dolega

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Allée des Alpes, 38700 La Tronche (tram line B, stop : Grand Sablon)
The seminar is followed by discussions and exchanges with the speaker and a sandwich buffet is offered

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