



CRBM

Centre de Recherche en Biologie Cellulaire de Montpellier



CRBM external seminar

Thursday, September 21st, 11:00 am Salle Marcel Dorée

Physical and genetic constraints to epithelial growth.

Gantas PEREZ-MOCKUS

Post-doc in Jean Paul Vincent's lab - Control of patterning, growth and apoptosis by cell-cell signalling. Francis CRICK Institute, London, UK



Gantas PEREZ-MOCKUS studied molecular and cellular biology at the University Pierre and Marie Curie. Captivated by how signalling pathways translate spatial and temporal cues into shape changes and cell fate commitment, he investigated embryonic morphogenesis in the lab of Francois SCHWEISGUTH at the Pasteur Institute, in Paris and obtained his PhD in 2016. Starting in 2017, he became part of Jean Paul VINCENT's lab at the Francis Crick Institute, in London where he has been focusing on growth control.

Abstract

Growth deceleration and arrest are general features of epithelial tissue growth during development. Yet, despite the ubiquity of these features, the mechanisms regulating them remain poorly studied.

In this presentation, I will present my post-doctoral work where I used the *Drosophila* wing precursor, a pseudo-stratified epithelium, to investigate how despite being restrained by their environment and genetic program, wing discs grow.

Initially, I will address the role of nuclear packing and oxygen availability, which are two physical constraints influencing growth deceleration. Following this, I will focus on the proliferation arrest that marks the end of the wing disc stage and how it is regulated by the nuclear receptor EcR and varying levels of its ligand, ecdysone. Finally, I will share some preliminary results and future research plans, in which I intend to combine work in *Drosophila* and mouse intestinal organoids. My aim is to test the hypothesis that tissues utilise temporal gradients of circulating hormones to track developmental time, both during healthy development and regeneration.

Selected publications

Perez-Mockus, G., Cocconi, L., Alexandre, C., Aerne, B.L., Salbreux, G., and Vincent, J.P. (2023) The ecdysone receptor promotes or suppresses proliferation according to ligand level **bioRxiv** and **Accepted in Dev Cell**.

Hecht, S.*, **Perez-Mockus, G.***, Schienstock, D., Recasens-Alvarez, C., Merino-Aceituno, S., Smith, M., Salbreux, G., Degond, P., Vincent, J.P. (2022) Mechanical constraints to cell-cycle progression in a pseudostratified epithelium. **Current Biology** * **Co-First authors**

Spatial regulation of contractility by Neuralized and Bearded during furrow invagination in *Drosophila*. **Perez-Mockus, G.**, Mazouni, K., Corradi, G., Conte, V. and Schweisguth, F. (2017) **Nature Communications** 2017.