CRBM
Centre de Recherche en Biologie Cellulaire de Montpellier

CRBM external seminar
Tuesday, June 20th, 14:00 am Salle Marcel Dorée

Get the size right: Mechanisms of growth control underlying organ size determination and body proportions in *Drosophila*

Laura BOULAN

Post-doc in Pierre Leopold's lab - Genetics and Developmental Biology Unit
Curie Institute - Paris

Laura Boulan studied molecular and cellular biology in Paris at the Ecole Normale Supérieure and at the University Pierre and Marie Curie. She then joined the laboratory of Marco Milan at the Institute for Research in Biomedicine in Barcelona, where she obtained her PhD in Genetics in December 2013. During this period, she started exploring the molecular mechanisms of hormonal regulation underlying systemic growth control in Drosophila. Following on this topic, she pursued her research as a post-doctoral fellow in the team of Pierre Léopold at the Institute of Biology Valrose (Nice) and since 2019 at the Institut Curie (Paris).

Abstract

Growth control at different scales is a fundamental aspect of developmental processes. Organ-autonomous growth programs, mainly driven by morphogens, play a key role in controlling tissue growth in space, while systemic signals coordinate growth activity in time and across body parts, therefore adjusting organ growth to environmental and developmental cues. We are using *Drosophila melanogaster* to study how these different levels of control are integrated during development to ensure species-specific proportions and the robustness of organ size, in physiological conditions and in the face of developmental perturbations. I will first discuss our work on the role of hormones in mediating inter-organ communication to (i) maintain body proportions upon a local growth perturbation and (ii) buffer developmental noise to adjust organ size and ensure bilateral symmetry. I will then present ongoing lines of research using the wing primordia to explore how organs increase their mass, measure their size, and stop growing appropriately.

Selected publications

Blanco-Obregon D, El Marzkioui K, Brutscher F, Kapoor V, Valzania L, Andersen DS, Colombani J, Narasimha S, McCusker D, Léopold P, **Boulan L.** (2022). A Dilp8-dependent time window ensures tissue size adjustment in Drosophila. **Nature Communications** Sep 26;13(1):5629.

Boulan L, Léopold P. (2021). What determines organ size during development and regeneration? **Development**, 148 (1): dev196063.

Boulan L, Andersen D, Colombani J, Boone E, Léopold P. (2019). Inter-Organ Growth Coordination Is Mediated by the Xrp1-Dilp8 Axis in Drosophila. **Developmental Cell** 49:811-818.

Colombani J, Andersen DS, **Boulan L**, Boone E, Romero N, Virolle V, Texada M, Léopold P. (2015). Drosophila Lgr3 Couples Organ Growth with Maturation and Ensures Developmental Stability. **Current Biology** 25:2723–2729.