



Predocctoral position in developmental biology

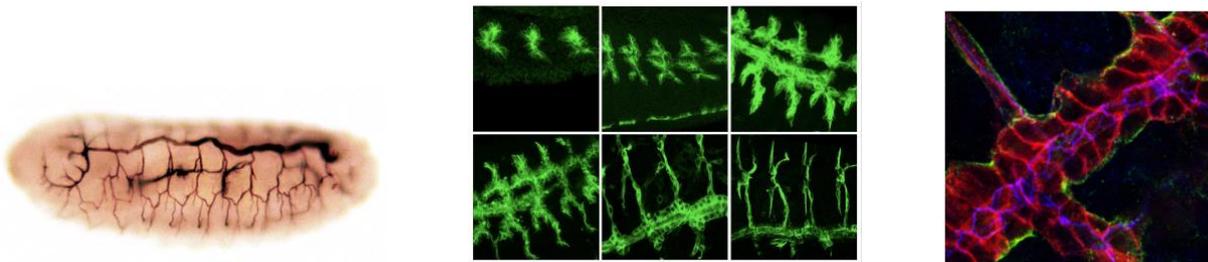
□ A 4-year pre-doctoral position (FPI fellowship) is available for a motivated candidate with strong interest in basic research at the Institut de Biologia Molecular de Barcelona, CSIC-Parc Científic de Barcelona

□ Project description:

Intrinsic and extrinsic mechanisms regulating the morphogenesis of tubular epithelia

A fundamental question in biology is to understand how organs form during development, i.e., how individual cells organise and coordinate to generate a functional structure. Intrinsic genetic programs as well as interactions with the surrounding environment are known to instruct organogenesis. We investigate organ formation using the tracheal system of the fruitfly *Drosophila melanogaster* as an amenable and tractable model. The tracheal system consists of a network of epithelial tubes that oxygenate the organism. Our projects focus around two main questions: 1) Interactions and requirements of the extracellular matrices (apical and basal ECMs) with the tracheal epithelia during morphogenesis. This approach should inform about how organs form in the context of a whole organism. 2) Remodelling and contribution of epithelial cell adhesion and cell polarity to tracheal formation. Cell adhesion and polarity are key features of epithelial tissues and this approach may help to understand tissue remodelling and homeostasis.

Our work lies at the interface of morphogenesis, developmental and cell biology, and requires advanced imaging techniques, as well as genetic, cell biology and molecular biology techniques



Related literature from the lab:

- Moussian, B., Letizia, A., Martínez-Corrales, G., Rotstein, B., Casali, A., and Llimargas, M. (2015) Deciphering the genetic programme triggering timely and spatially-regulated chitin deposition. *PLoS Genetics*. 2015 Jan 24;11(1):e1004939.
- Olivares-Castiñeira I, Llimargas M. (2018) Anisotropic Crb accumulation, modulated by Src42A, is coupled to polarised epithelial tube growth in *Drosophila*. *PLoS Genet*. 2018 Nov 26;14(11):e1007824. doi: 10.1371/journal.pgen.1007824. eCollection 2018 Nov.
- Letizia, A., He, D., Astigarraga, S., Colombelli, J., Hatini, V., Llimargas, M. and Treisman, J.E. (2019). Sidekick Is a Key Component of Tricellular Adherens Junctions that Acts to Resolve Cell Rearrangements. *Developmental Cell* 50. 10.1016/j.devcel.2019.07.007
- Klubmann-Fricke B-J; Martin-Bermudo MD* and Llimargas M*. (2022). The Basement Membrane controls size and integrity of the *Drosophila* tracheal tubes. (*Authors for correspondence) *Cell Reports*, 2022 Apr 26;39(4):110734. doi: 10.1016/j.celrep.2022.110734.
- De Giorgio E; Giannios P; Espinas ML and Llimargas M. (2022). Dissecting the roles of Expansion/Rebuf and the chitin synthase Krotzkopf Verkehrt in chitin deposition in *Drosophila*. BioRxiv DOI: 10.1101/2022.07.21.500966

□ Candidates should hold a degree in Biology, Biochemistry, Biotechnology, Biomedicine or similar

□ Applications and information should be addressed to:

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