Research Programmes

Cell and Developmental Biology

Marco Milán: Development and growth control laboratory

Group Members

Group Leader

Marco Milán. *ICREA Research Professor*

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Highlights

- Adjacent cell populations grow and proliferate in a coordinated manner to give rise to well-proportioned organs. *Drosophila* p53 (dp53) and the apoptotic machinery play a fundamental role in this process.
- Receptor Notch exerts, through its extracellular domain and independently of transcription, a cell autonomous inhibitory effect on the activity of its own ligand that contributes to restrict, in space, Notch signalling.
- The miRNA pathway promotes tissue growth by targeting the TRIM-NHL protein Mei-P26, which in turn binds the proto-oncogene dMyc and sends it to degradation.

Publications

- Becam I, Fiuza UM, Arias AM and Milán M. A role of receptor Notch in ligand cis-inhibition in *Drosophila*. Curr Biol, 6 (20), 554-60 (2010)
- Herranz H, Hong X, Pérez L, Ferreira A, Olivieri D, Cohen SM and Milán M. The miRNA machinery targets Mei-P26 and regulates Myc protein levels in the *Drosophila* wing. EMBO J 29 (10), 1688-98 (2010)
- Mesquita D, Dekanty A and Milán M. A dp53-dependent mechanism involved in coordinating tissue growth in *Drosophila*. Plos Biol, 8 (12) (2010)
- Milán M and Cohen SM. Notch signaling: filopodia dynamics confer robustness. Curr Biol, 20 (18) R802-4 (2010)
- Sorrosal G, Pérez L, Herranz H and Milán M. Scarface, a secreted serine protease-like protein, regulates polarized localization of laminin A at the basement membrane of the *Drosophila* embryo. EMBO Rep, 11 (5), 373-9 (2010)

Collaborations

- A role of receptor Notch in ligand cis-inhibition in *Drosophila* Alfonso Martínez-Arias, University of Cambridge (Cambridge, UK)
- Lafora disease in *Drosophila*. Joan Guinovart, IRB Barcelona (Barcelona, Spain)
- miRNAs and growth control. Stephen M Cohen, Temasek Life Sciences Laboratory (Singapore)

Research projects

- Establishment and maintenance of compartment boundaries in the *Drosophila* wing imaginal disc. Proyectos Investigación Fundamental (BFU2007-64127/BMC). Spanish Ministry of Science and Innovation (MICINN). 2007-2010. Principal investigator: Marco Milán
- Compartments, organizing molecules and growth control in *Drosophila*. EMBO Young Investigator Programm. European Molecular Biology Organization (EMBO). 2008-open. Principal investigator: Marco Milán
- From genes to shape: analysis of morphogenesis in *Drosophila* and vertebrates. Consolider Ingenio-2010 (CSD2007-00008). Spanish Ministry of Science and Innovation (MICINN). 2008-2010. Principal investigator: Marco Milán
- EMBO YOUNG INVESTIGATOR PROGRAMME 2007 AWARD. Acciones Complementarias (BFU2008-00104-E). Ministry of Science and Innovation (MICINN). 2008-2011. Principal investigator: Marco Milán
- DEVELOPMENT AND GROWTH CONTROL LABORATORY. Grups de Recerca reconeguts per la Generalitat de Catalunya 2009-2013 (2009 SGR 1536). Agency for Administration of University and Research Grants (AGAUR). Principal investigator: Marco Milán

PhD Theses

- Scarface, a secreted serine protease-like protein, regulates polarized localization of laminin a at the basement membrane of the *Drosophila* embryo. Georgina Sorrosal, University of Barcelona (2010). Thesis director: Marco Milan. Honors: Cum Laude
- The roles of notch in wing fate specification and dv affinity boundary formation in the *Drosophila* wing primordium. Neus Rafel, University of Barcelona (2010). Thesis director: Marco Milan. Honors: Cum Laude

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