



Conservation of Apoptotic Force in Morphogenesis from *Drosophila* to Mouse

Post-doctoral position available at the CBI Toulouse

Team: <http://cbi-toulouse.fr/eng/equipe-suzanne>

Apoptosis-dependent morphogenesis Principal Investigator: **Magali Suzanne**

Host: LBCMCP, CBI-Toulouse, France

The Laboratory of Cellular and Molecular Biology of Proliferation Control (LBCMCP) is part of the Center of Integrative Biology of Toulouse (CBI Toulouse), a Centre of Excellence composed of 38 different teams from 5 different units. It combines disciplines such as Genomics, Systems Biology, Computational Biology, Cell Biology, Developmental Biology, Neurobiology and Behavioral Biology.

Collaborators:

Masayuki Miura, Tokyo, Japon / Alice Davy. CBD, CBI-Toulouse, France

Qualifications:

- *Interest in cell biology*
- *Expertise in mouse development is required*
- *Expertise in imaging would be a plus*
- *Expertise in flies would be a plus*
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Application process:

Highly motivated candidates should send to the following address magali.suzanne@univ-tlse3.fr a brief description of their research interests and career goals, their CV, and contact information for three references with their application.

Project:

Apoptosis is a cellular process essential to eliminate potentially harmful cells, but also to sculpt tissues during morphogenetic events. By following apoptosis in living tissue during an apoptosis-dependent morphogenetic event (*Drosophila* developing leg folding), we unraveled recently that apoptotic cells produce a pulling force upon the apical surface of the epithelium thanks to a Myosin II cable specific of apoptotic cells (Monier et al, 2015, Nature). This force is transmitted to the surrounding tissue, increasing local tension and promoting tissue folding. **This work reveals that apoptotic cells actively influence their surroundings and trigger tissue remodeling in *Drosophila*.** This discovery leads us to ask if this apoptotic force conserved in vertebrates.

In order to answer these questions, **we propose to compare apoptotic cell behavior in fly and mouse models.** It has been observed that apoptosis plays a role in neuro-epithelium bending at the dorsal ridge of mouse neural tube. As a consequence, inhibition of apoptosis could delay tube closure leading to spina bifida. Hence, neural tube closure in mouse appears to be an appropriated model system to test if an apoptotic force is generated in mammalian cells and if apoptosis could participate actively to tissue morphogenesis in vertebrate.

This project will be done in collaboration with the group of Masayuki Miura and Alice Davy.