

Cell Biology Research Centre, CNRS and University of Montpellier, France

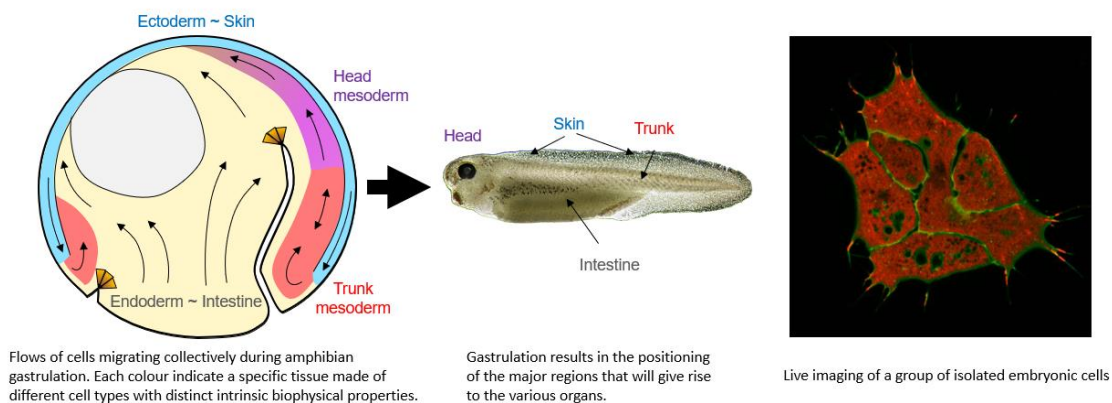
PhD in Cell Biology and Biophysics of Vertebrate Development

Analysis of actomyosin regulatory circuitry controlling migration of embryonic tissues

Embryonic development involves an ensemble of large-scale tissue migrations and deformations. These so-called morphogenetic movements are emergent properties resulting from forces generated by the cells themselves, largely through the actin cytoskeleton.

The Fagotto team focuses on amphibian gastrulation, one of the most fundamental and spectacular events in Developmental Biology. The *Xenopus* model allows a multiscale approach, where mechanisms underlying gastrulation can be investigated *in vitro* on isolated tissues and single cells, using a combination of state-of-the-art molecular manipulations, live imaging, biophysics, and computer simulation. We have thus uncovered a set of regulators of the actin cytoskeleton that appear central in setting the migratory properties of the gastrulating tissues. Interestingly, the same types of regulators have been implicated in cancer, indicating that results obtained in *Xenopus* embryos are of broad interest to understand general principles of tissue remodelling and collective cell migration.

We are looking for a highly motivated student with an outstanding academic record and strong background in Cell Biology and/or Biophysics to further characterize these regulators, with the goal to understand how their activities are integrated to tune cell motility and adhesion in various regions of the embryo.



The candidate will work in a highly dynamic environment, in an internationally reputed research centre for Cell Biology, under the supervision of experts in Developmental Cell Biology and Live Imaging, with tight contacts with physicists. Montpellier is a beautiful historical city set in southern France, with strong academic and scientific tradition and a vibrant student life.

Application procedure (deadline 14 April 2023) for a starting date 1 October 2023

CV, letter of motivation and academic transcripts should be sent to francois.fagotto@crbm.cnrs.fr and to claud.prigent@crbm.cnrs.fr

After a first round of selection by the host team, the successful candidate will be asked to apply through the University of Montpellier Doctoral School (CBS2) for a full three-year PhD studentship (EDCBS2 or LCNN).

Key publications:

Canty L., Zarour E., Kashkooli L., François P. and F. Fagotto (2017) Sorting at embryonic boundaries requires high heterotypic interfacial tension. *NATURE COMM.* 8, 157.

Kashkooli L., Rozema D., Espejo-Ramirez L., Lasko P. and F. Fagotto. (2021) Ectoderm to mesoderm transition by downregulation of actomyosin contractility. *PLOS BIOLOGY* 19: e300106.

Aslemarz A., Fagotto-Kaufmann M., Ruppel A., Balland M., Lasko P., Fagotto F. (2022) An EpCAM/Trop2 mechanostat differentially regulates individual and collective migration of human carcinoma cells. <https://biorxiv.org/cgi/content/short/2022.10.03.510449v1>.