



UNIVERSITÉ  
DE MONTPELLIER

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INSTITUT DE GÉNÉTIQUE  
MOLÉCULAIRE DE MONTPELLIER



## HFSP Funded Postdoctoral position in gene regulation in Montpellier

### Translation dynamics during collective cell migration

#### Project

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Rapid, gene-specific translation allows cells to quickly respond to stimuli like nutrients and stress. Recent work showed that limb amputation in axolotls activates translation in skin cells at the wound edge, triggering epithelial migration to seal the wound. While key proteins involved remain unknown, the role of translation in collective migration has not been studied, even in well-established models like *Drosophila* dorsal closure. This process, involving coordinated movement of epidermal sheets, has revealed much about morphogenesis and wound healing, yet the impact of translation remains unclear.

Traditionally, rapid cellular decisions during injury and development are linked to transcription. However, increased translation observed in axolotls before migration suggests a crucial role. We hypothesize that translation regulates cell migration across species, with axolotls producing unique “band aid” proteins and flies using localized translation during dorsal closure. Identifying these proteins and their kinetics will uncover conserved and novel regulators of migratory behavior.

By combining the expertise of four leading labs—M. Lagha (in vivo translation kinetics, France), A. van Oudenaarden (single-cell ribosome profiling, Netherlands), O. Zhulyn (translation in axolotl regeneration, Canada), and N. Kelleher (spatial mass spectrometry, U.S.)—we aim to identify and characterize cellular “band aid” proteins and the machinery driving collective cell migration in axolotls and flies. These approaches will be applied to two model systems: axolotl limb regeneration and *Drosophila* dorsal closure. The project leader will primarily use quantitative imaging in *Drosophila* embryos combined with genetic/optogenetic manipulations. More info [here](#).

#### Selected key references

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##### [\[Zhulyn lab\]](#)

Zhulyn, O. et al. "Evolutionarily divergent mTOR remodels translome for tissue regeneration". **Nature**, 620: 163-171 (2023). doi: 10.1038/s41586-023-06365-1

##### [\[Lagha lab\]](#)

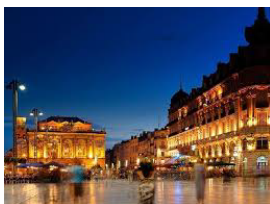
Dufourt, J. et al. "Imaging translation dynamics in live embryos reveals spatial heterogeneities". **Science** 372, 840-844 (2021). doi: 10.1126/science.abc3483

##### [\[van Oudenaarden lab\]](#)

VanInsberghe, M. et al. "Single-cell Ribo-seq reveals cell cycle-dependent translational pausing". **Nature** 597, 561–565 (2021). doi: 10.1038/s41586-021-03887-4

##### [\[Kelleher lab\]](#)

McGee, J.P. et al. "Automated imaging and identification of proteoforms directly from ovarian cancer tissue". **Nature communications**, 6478 (2023). doi: 10.1038/s41467-023-42208-3





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## Qualifications

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- Strong background in **molecular biology, genetics, and imaging**
- Knowledge in **developmental and cell biology**
- Proficiency in **English** (reading, writing, and speaking)
- Experience in **Drosophila genetics** would be a strong asset
- Ability to work effectively within an **international and interdisciplinary team**
- A **PhD in biology, biophysics**, or a closely related field is required
- Demonstrated **manual dexterity, precision, and rigor** in experimental work
- Proficiency in standard techniques: **molecular biology, imaging, genetics**
- Strong **organizational skills** and ability to communicate results effectively in both **written and oral form** (reports, presentations)

## Tasks

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- Supervision of a research project
- Drosophila genetics and embryo collection
- Imaging and image analysis
- Molecular biology (experimental design and execution)
- Mathematical modeling
- Functional genomics

## Environment

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IGMM, is located on the historic CNRS Montpellier "Route de Mende" campus. It is physically connected to CRBM and IRIM research institutes, forming a critical mass of 600 people who create an exceptional dynamic intellectual and technological environment. The labs at IGMM have access to high-tech facilities, in particular through BioCampus.

## Application details

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Please apply through this website: <https://euraxess.ec.europa.eu/jobs/363437>

Applicants should submit the following information to [mounia.lagha@igmm.cnrs.fr](mailto:mounia.lagha@igmm.cnrs.fr) by email containing "[HFSP Post doc application]" in the subject line:

- 1- Curriculum vitae with contact information of at least 2 referees.
- 2- brief description of previous research (<1 page)
- 3- cover letter describing your interest in the position

Starting after December 2025, the appointment will be made for 3 years. Salary will be commensurate to previous experience in accord with CNRS standards.

