Institute of Molecular Biology

Join us at IMB as

Master Student in
"Nuclear cytoskeleton research"

IMB (www.imb.de) is a research institute on the campus of the Johannes Gutenberg University in Mainz, Germany. It is generously funded by the Boehringer Ingelheim Foundation and the state of Rhineland-Palatinate. Our research focuses on the biology of the cell nucleus and ranges from the molecular level to systems and computational approaches. Researchers at IMB are supported by strong core facilities that offer state-of-the-art services in bioinformatics, cytometry, genomics, microscopy, proteomics, and protein production.

Background

The actin cytoskeleton fulfills essential functions in the context of cell migration, cell shape, mechanical signal transduction and many other aspects of cell biology. Actin is a globular protein that can undergo polymerization into so-called filamentous actin (F-actin). The dynamic nature of cytoplasmic actin polymerization and its regulation in the above-mentioned functions is well-understood based on intense research efforts from recent decades. Despite the huge knowledge we acquired on cytoplasmic actin, there is very little evidence for the existence and function of F-actin inside the nucleus. Only recently, based on technological advances, nuclear actin filaments have been observed and characterized – mainly in the context of key genome stability pathways such as DNA repair and the response to DNA replication stress. Our group is interested in nuclear F-actin-regulated processes with a strong focus on the contribution of myosins as actin-based motor proteins.

The project: "Characterization of myosin VI in genome stability"

Nuclear F-actin has recently been shown to support homology-directed repair (HDR) of DNA double-strand breaks (DSBs). Although myosin I and V were identified to move DSBs along nuclear actin filaments in *Drosophila*, we currently have no insight into the contributions of myosins to DSB repair in human cells. Our group recently identified myosin VI as member of the replication protection complex (www.nature.com/articles/s41467-023-39517-y). In addition, we collected preliminary data suggesting a function of myosin VI during DNA repair processes.
Currently, we are seeking a Master student to support us in solidifying our initial findings. Have we sparked your interest? Then apply to become part of our team (www.imb.de/research/ulrich/research)!

Tasks & responsibilities

Experience in cell culture handling is of advantage but not mandatory as the candidate will receive proper training on the respective techniques in our laboratory. Next to standard molecular biology techniques (SDS-PAGE, Western blotting, molecular cloning, etc.) the student will apply the following specialized methods in the course of the proposed project:

- Mammalian cell culture
- Live-cell microscopy
- Laser micro-irradiation of cell nuclei
- Survival assays
- Immunofluorescence staining
- Proximity ligation assays

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Requirements

- Excitement about genome stability research
- Very good oral and written communication skills in English

Why joining us

As a master student at IMB, you will be part of our Internship Programme (www.imb.de/internships). We offer a stimulating, diverse and international research environment, with a pleasant working atmosphere and the opportunity to perform state-of-the-art experiments. The institute is modern, well-equipped and centrally located with good public transport links and parking.

Our offer includes

- Advanced training opportunities
- Employee events
- Flexible working hours

What else you need to know

- **Starting Date: 15.10.2024, or as early as possible**
- **Duration: 6 months**
- **Deadline: 15.12.2024 (or earlier, if position is filled)**

Have we sparked your interest?

To apply, please download our application form and follow the instructions published on our website: www.imb.de/internships/apply. Please send a **single PDF file** containing your application form fully completed, CV, certificates and contact information of at least one professional reference to training@imb-mainz.de. IMB is an equal opportunity employer.

Declaration of Consent and Data Protection

By sending us your application, you are consenting to us saving your personal data in order to carry out the selection process. You can find more information on data protection and retention periods at www.imb.de/jobs/data-protection.