

Job posting

Type of position

scientific

administrative

Target group

graduates

post docs

other

Title

The Institute of Molecular Biology gGmbH
funded by the Boehringer Ingelheim Foundation
has openings for

3 Postdoc Positions
(#CNP14)

Institution

The Institute of Molecular Biology gGmbH (IMB) is a Centre of Excellence for Life Sciences, funded by the Boehringer Ingelheim Foundation. It is located within the campus of the Johannes Gutenberg-University, Mainz, Germany.

Position

In an ERC funded project, the laboratory of Christof Niehrs studies epigenetic gene regulation by R-loops and nucleic acid modifications during development in embryonic stem cells and mouse, where 3 related postdoc positions are available.

Responsibilities

 mass Spectrometry of Epigenetic DNA Modifications

We investigate regulatory DNA modifications that play roles in development & disease. We utilize highly sensitive mass spectrometry (Triple Quadrupole Mass Spec) and stable isotope metabolic labelling to profile epigenetic changes, including 5mC, 5hmC, 5fC, 5caC, m6A, and others (e.g. Arab et al. 2019; Musheev et al., 2020). The successful candidate will study nucleic acid modifying enzymes to unravel how chemical modifications in DNA and R-loops regulate pluripotency and differentiation of mammalian embryonic stem cells and embryos. See also www.imb-mainz.de/research-at-imb/niehrs/research/ You will use mass spectrometry, as well as genome-edited CRISPR/Cas9 stem cell mutants, as well as various NGS protocols to carry out a multi-dimensional analysis to address: Which modifications can be identified and how do they change with different cellular states? Where in the genome and in which RNAs do the modifications occur? What are molecular determinants involved in targeting of modifications to specific sites? The project will involve strong interaction with computational biologists.

Non-coding RNA & R-loop epigenetics

We demonstrated a role for long non-coding RNAs and R-loop DNA:RNA hybrids in DNA methylation (Arab et al. 2014; Arab et al. 2019). In an ERC-funded project, we now aim to elucidate the mechanisms of DNA demethylation as well as the role played by long non-coding RNAs and R-loops in its regulation. See also www.imb-mainz.de/research-at-imb/niehrs/research/

Candidates will make use of mouse embryonic stem cells (ESCs) to interrogate genome-wide the role of ncRNAs and R-loops in targeting GADD45a and the DNA demethylation machinery in the genome. We will use CRISPR/CAS9 mediated ESC mutants, as well as ChIP-seq, RNA-seq, bisulfite-seq to carry out multi-dimensional data analysis to address: Where in the genome does demethylation occur? What are the molecular determinants in ncRNA & R-loops involved in targeting? What are the cofactors involved? The project will involve strong interaction with Computational Biologist.

The role of nucleic acids modifications in Mouse

We study the role of R-loop and DNA modifications (see above and PMID 34431536, 29884649) in wild type mice and targeted mouse mutants. Candidates will phenotype mutant mice and analyze genome-wide the role of ncRNAs, R-loops and /or DNA modifications to address their role in development and adult physiology. You will generate relevant CRISPR/Cas9 mouse mutants and apply cutting-edge next generation sequencing technology and computational analyses to analyse phenotypic changes.

Requirements

You have

- PhD & publications in a relevant field to the above
- Excellent communication skills and good team spirit
- Ability to solve problems independently
- Fluent in English (spoken and written)

We offer

- An international and vibrant working environment
- Part time technician support
- Competitive stipend or salary
- Training opportunities

**Application
procedure
(deadline etc.)**

To apply please send a SINGLE PDF file (quoting reference #CNP14) containing your cover letter stating research and career interests, CV, scans of your degrees (Germans: including copies of Abitur- & Master degree), and contact details of 2 references to hr@imb-mainz.de. Informal enquires can be addressed to Prof. Christof Niehrs (c.niehrs@imb-mainz.de).

Starting date: preferably by March 1st 2022

Duration: Initially 2 years; option for further extension

Application deadline: November 15th 2021

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 [here](#).

Contact

hr@imb.de