Job title | PhD student in Protein Biochemistry/Cell Biology  
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Division | Medical Faculty of RWTH Aachen University  
Institute | Institute of Biochemistry and Molecular Biology  
Location | Pauwelsstrasse 30, 52074 Aachen, Germany  
Grade and salary | TVL-13, 65% (€33,935 - €48,915)  
Contract type | Fixed-term for 3 years  
Research topic | ADP-ribose as novel RNA modification  
Principal Investigator / supervisor | Dr. Roko Žaja & Dr. Karla Feijs-Žaja  
Project web site | fezalab.com  
Funding partner | START Programme RWTH  
Technical skills | Nanopore sequencing, recombinant protein purification, enzymatic assays, RT-qPCR, slot-blotting, cell culture, CRISPR/Cas  

**Current research in the FeZa lab**

Our cells are highly dynamic, interactive entities that respond to external as well as internal signals to maintain a healthy organism. One way of regulating protein, and thereby cell function, is by introducing posttranslational modifications. Well-known examples are phosphorylation and ubiquitination. We are interested in a modification called ADP-ribosylation, which in cells is performed by the 17 enzymes of the PARP family. These enzymes use co-factor NAD⁺ to attach ADP-ribose to their targets, which some of the PARPs can repeat to form chains of ADP-ribose (poly(ADP-ribosyl)ation). Our recent data imply that not only proteins, but also nucleic acids can be modified with ADP-ribose by several PARPs. This has raised many questions, such as how this RNA modification compares to other modifications such as an m7G or NAD⁺ cap or which RNAs are modified in response to which stimuli.

We are working on both protein ADP-ribosylation, as well as on the novel RNA modification and aim to determine the function of the lesser studied PARPs.
Further reading


The project

We are seeking to appoint a PhD student to investigate the function of the novel ADP-ribose RNA cap. The project will contain both *in vitro* as well as cell biology components, for example measuring the activity of the diverse PARP enzymes towards different RNA substrates using biochemical methods. To determine the function of RNA ADP-ribosylation in cells, the candidate will develop a method suitable to identify ADP-ribosylated RNA in cells and determine the consequences of modification for selected RNAs.

This project will include mostly *in vitro* methods such as recombinant protein purification, RNA modification and enzymatic assays, as well as in cell characterisation using CRISPR/Cas9, slot-blotting and Nanopore sequencing.

Your tasks

- Undertake research projects and contribute conceptually to the research
- Design and accurately execute experiments; establish and optimise protocols
- Keep accurate daily records of experiments
- Actively participate in general lab duties such as stock control and organisation
- Effectively communicate with the group members as required
- Knowledge of relevant literature and advances in the field

Our responsibilities

- Supervisor meetings at an agreed-on frequency, which at the start will be weekly or biweekly and can become less frequent gradually as suits both student and supervisor.
- An open environment, where we will discuss progress and problems in a weekly lab meeting and everyone is welcome to contribute to all ongoing projects.
- Regular journal clubs to teach critical assessment of the literature and brainstorming sessions to analyse, evaluate and ultimately create new ideas.
- We encourage participation in scientific workshops as well as soft-skill trainings.
The Institute of Biochemistry and Molecular Biology

The Institute of Biochemistry and Molecular Biology is one of three Biochemical Institutes. We share communal labs and equipment with the Institutes of Biochemistry and Immunology and of Biochemistry and Cell Biology. Weekly seminars enable collaboration between the three Biochemical Institutes. At the moment, the Institute of Biochemistry and Molecular Biology consists of the groups of Prof. Lüscher, Dr. Vervoorts-Weber, Dr. Korn and our group.

We are embedded in the University Hospital of RWTH Aachen University, where at the moment 59 professors, 824 scientific assistants and 4,347 non-scientific employees work together in 34 clinical departments and 23 institutes and administration facilities. Besides clinical research, fundamental research is undertaken in a variety of research areas. Different Core Facilities enable next-gen sequencing, mass spectrometry and super-resolution microscopy. Due to its strategic location, within an hour drive of major science hubs such as Maastricht or Cologne, any expertise not present in house can be found at close range.

We provide teaching and research training, contributing to the medicine and biotechnology courses. All group members contribute to teaching, especially during the practical courses for medicine students. Workshops can be attended in a range of topics, such as good scientific practise, conflict-management and languages. We place substantial emphasis on mentorship at all career stages and intend to create an inclusive environment. We have a core hours policy of 10am – 4pm, meaning that we arrange important meetings and events within these times. Other events, such as seminar series organised at a departmental level may fall outside these hours.

The Biomedical Graduate School (BMGS)

The BMGS was funded in 2017 to improve the guidance of PhD students at the University Hospital and to stimulate interaction between students affiliated with the different Institutes. It is divided in different sections, including the Cellular and Molecular Biology section that we are part of. Besides weekly seminars given by both group leaders and advanced PhD students, it organises a yearly retreat, literature discussions and soft-skill workshops. It also ensures that progress of students is evaluated on a yearly basis by a committee existing of project supervisor, promotor and external referees. All PhD students in our group are part of the BMGS.

Aachen

Aachen is a lovely city with both a historic city centre, resulting from being the seat of the German King for centuries, and modern architecture, resulting from the excellence of RWTH Aachen in this area. It has a vibrant student-life with many small cafés and restaurants, sports and shopping centres. Nature is not far away, with just across the border the Belgian Ardennes and to the south the German Eiffel. It has excellent connections by train to many European cities including Amsterdam, Paris, Munich and London. Nearby airports ensure connections to anywhere in the world.
How to apply & selection criteria

If you would like to apply for this position, carefully prepare the documents listed below and email them as one PDF with your name in the file name to rzaja@ukaachen.de. Applications are possible until the end of June, with interviews scheduled in July. The intended start date is 01.09.2023.

Documents:
- Cover letter
- CV
- Degree certificates with grades

Please include the following information with your application:
- Your contact details and personal data
- Your highest degree
- Your language skills
- Contact details for 2–3 references
- Why you are interested in the field/project described in the advertisement
- What makes you suitable for the project in question

Selection criteria
- MSc in relevant subject (biochemistry, molecular biology or related)
- Capacity for analytical thinking, creativity, initiative and independence
- Excellent written and verbal English communication skills
- Desired but not essential are previous experience with protein purification and enzymology, nucleic acid purification and analysis, sequencing