

Two Research Assistants in Telomere Biology (#FBRA01)

Get research experience with the possibility to prestart your PhD

The Institute of Molecular Biology gGmbH (www.imb-mainz.de), located in Mainz, Germany, is a Centre of Excellence for Life Sciences, funded by the Boehringer Ingelheim Foundation. We invite applications for two fully paid research assistant positions in the group of Dr. Falk Butter. The group uses cutting edge technology in proteomics, biochemistry, molecular biology and cell biology to identify and characterize novel telomeric proteins. Recent work includes the characterization of HOT1 (Kappei et al, EMBO J 2013) and ZBTB48 (Jahn et al., EMBO Rep 2017) as dynamic telomere binding proteins in human, and TelAP1 in trypanosomes (Reis et al., Nucleic Acids Res 2018). Furthermore, we recently described ZBTB10 as a subtelomeric variant binding protein (Bluhm et al., Nucleic Acids Res 2019). For a full overview of our research visit www.imb.de/research/butter.

Project 1: Characterization of DNA damage and telomere binding proteins in *S. pombe*

DNA, the storage of genetic information in the cell, is constantly under threat to be erroneously modified from endogenous cellular products and external environmental factors. To ensure the integrity of the DNA, cells have evolved an elaborate defense mechanism to correct DNA damages. The comprehensive understanding of DNA damage response can help to establish new cancer treatments. In the course of this project, we will perform a mass spectrometry based screen to identify proteins recognizing specific DNA damages in the yeast *S. pombe* to identify novel factors involved in DNA damage response. The focus of this project will be to characterize these novel players with a specific interest in emerging topics of DNA damage regulation including crosstalk with chromatin and non-coding RNA. A second focus will be the investigation of new telomere-binding proteins in *S. pombe* obtained in a recent quantitative interactomics screen in our group. Telomeres, the protective cap of chromosomes, are implicated in various biological processes including ageing and cancer development. In most differentiated cells, telomeres gradually shorten with each cell division, defining the proliferative capacity of a cell and upon reaching a limit, short telomeres ultimately induce cellular senescence. This end replication problem is counteracted in germ and stem cells by de novo addition of telomeric repeats enabled by the enzyme telomerase (also sometimes referred to as the immortality enzyme). This process is tightly regulated by telomere-associated proteins. Additionally, due to the unique structure of telomeres, they play an important role in DNA damage protection by hiding the single stranded end of the linear chromosome from the DNA repair machinery. This project is part of the newly established Collaborative Research Center (CRC1361) on DNA damage and genome stability, and will be in collaboration with the Baumann group at IMB. Additional support and training by several core facilities (e.g. cytometry, histology, microscopy, genomics, proteomics and bioinformatics) is available.

Project 2: Characterization of telomere binding proteins in zebrafish

In the last years, we have described two new telomere-binding proteins (HOT1 and ZBTB48/TZAP) important for telomere length homeostasis. We aim to extend our study of these telomeric regulators to the organismal level using zebrafish as a model system in understanding the proteins function in aging and cancer. In this project, we will establish transgenic and CRISPR-Cas knock-out lines of the telomeric proteins HOT1 and ZBTB48/TZAP to study their effects *in vivo*. We will apply state-of-the-art omics to obtain a global picture of gene regulation comparing germ line specific and somatic regulatory functions. Specific assays will be employed to investigate telomere length, effects on telomerase action as well as telomeric localization. This project is a collaboration with the Ketting group at IMB. Additional support and training by several core facilities (e.g. cytometry, histology, microscopy, genomics, proteomics and bioinformatics) is available.

The fully paid research assistant position requiring a Master degree is initially available for up to 9 months. The position is expected to be transferred to a fully paid PhD position of the International PhD program upon successful completion of the selection process. Parallel application to the current IPP call is also possible.

To apply, please email personnel@imb-mainz.de, quoting Ref. No. #FBRA01, a **single** PDF: cover letter, CV, certificates of qualifications, and two reference letters or the contact details of at least two referees. Informal enquiries please address to Dr. Falk Butter (f.butter@imb.de). IMB is an equal opportunity employer.

Starting: Mid 2019

Duration: Up to 9 months with the option of transferring to a fully funded PhD position

Deadline: 30 April 2019

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.