HIRI HELMHOLTZ Institute for RNA-based Infection Research

Job announcement No. 108/2020

The Helmholtz Institute for RNA-based Infection Research (HIRI) is offering a

Doctoral researcher position: ERC Funded Project T-FRAME

in the research group **"Recoding Mechanisms in Infections"** of Junior Professor Neva Caliskan.

The Helmholtz Institute for RNA-based Infection Research investigates the role of ribonucleic acids (RNA) in infection processes. In this way, we contribute to the fight against increasing antibiotic resistance, chronic infections and newly emerging pathogens. We develop innovative therapeutic approaches at the interface of RNA and infection research and make these findings clinically applicable. The Helmholtz Institute for RNA-based Infection Research was established in May 2017 as a joint venture between the Helmholtz Centre for Infection Research (HZI) in Braunschweig and the Julius-Maximilians-University Würzburg (JMU). For more information, please visit www.helmholtz-hiri.de.

Project description:
Junior Professor Caliskan heads the research group "Recoding Mechanisms in Infections" at the Helmholtz Institute for RNA-based Infection Research (HIIRI) in Würzburg. With her ERC-funded project "T-FRAME" she is investigating the relevance of so-called frameshifting in eukaryotic cells during infections. To work on this project, we are looking for highly motivated PhD candidates to study the complexity of eukaryotic and bacterial translation and the role of RNA-protein complexes using in vivo single-molecule analysis tools. The project will be carried out in a highly international, collaborative and interdisciplinary work environment, with a range of possibilities to develop new skills.

Project summary and goals:
The segments of certain genes that carry the code for proteins, can also contain sequence elements that can hinder the production of proteins. However, these obstacles do not only cause problems, but also hold opportunities for the cell to increase its coding capacity by using an "alternative reading grid" also known as programmed ribosome frameshifting. Frameshifting has been extensively studied in viruses and bacteria, but is poorly understood in humans. The Caliskan lab aims to close this gap by combining interdisciplinary expertise ranging from global to single-molecule analysis of frameshifting molecular complexes. Understanding the effects of frameshifting on infections and innate immunity will in the long run provide us with new tools for synthetic biology and new opportunities for RNA-centric antiviral drugs and immunotherapies.

The Caliskan lab is well equipped with access to a rapid quench flow, microscale thermophoresis, single-molecule fluorescence optical tweezers, confocal microscope and single-quad mass spectrometer assisted HPLC. In addition, the lab is entitled to use all core facilities both at the HZI in Braunschweig and at the University of Würzburg.

Qualifications:
- Master's Degree in biochemistry, molecular biology, biophysics or a related field within the life sciences
- Background in RNA and protein biochemistry, including the analysis of RNP complexes and translation assays in vivo and in vitro (through thesis, publications or work experience)
- Experience with Python or MATLAB
- Experience with single-molecule fluorescence and microscopy techniques (TIRF, confocal, light sheet), and image analysis is an advantage
- Excellent English language skills (written and spoken). Note that knowledge of German is not required, but an advantage
- Ability to work independently and as part of an international team
- A strong desire to do research, enthusiastic, creative, and highly self-motivated

We offer:

Equal Opportunities are part of our personnel policy. With equal professional qualification, disabled applicants will be prioritized.

Starting date:	February 1, 2021 – Initial term 1 year, with the possibility of an extension of additional 2 years –
Salary:	follows TVöD E13 (50%) with the possibility of an additional payment of 10%
Location:	Würzburg
Probation period:	6 months
Published:	13.10.2020
Closing date:	15.11.2020
Application:	Applicants are required to complete the online application form here: https://hzi.opencampus.net/ Please choose Application HZI Jobs and select **108/2020** in the required field.

For more details regarding the project, please contact Junior Professor Caliskan via e-mail at neva.caliskan@helmholtz-hiri.de.

In case of any problems with the online application system, please contact the HZI Graduate School at HZIGrad.School@helmholtz-hzi.de.