

Position Profile for Chinese Applicants running for 2019 Helmholtz – OCPC – Program

PART A (Info about the Position)

Helmholtz Centre and institute: Helmholtz Centre for Infection Research (HZI)

Title of the project: Regulation of HIV replication by RNA structure

Project leader: Jun.-Prof. Redmond Smyth

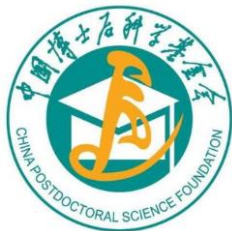
Web-address: https://www.helmholtz-hzi.de/en/research/research_topics/bacterial_and_viral_pathogens/genome_architecture_and_evolution_of_rna_viruses_garv/redmond_smyth/

Description of the project (max. half page):

During viral infection, HIV hijacks the host cell to translate its genomic RNA (gRNA) into viral proteins. At the same time, gRNA is also packaged into viral particles. Because these processes occur in the cytoplasm, they compete for utilisation of the gRNA. A long-standing hypothesis is that translation and packaging of the gRNA is tightly regulated by an RNA structural switch, but the mechanistic details underlying this phenomenon are still unclear, including whether or not the molecular switch is regulated by the binding of viral or cellular factors.

Using currently available methods, it is difficult to study RNA structure-function relationships on flexible and dynamic RNA molecules. Our research aims to move the RNA biology field away from ensemble measurements of RNA structure towards single molecule snapshots of RNA structure.

Thus, the post-doctoral fellow will establish single molecule structural probing of RNA molecules during HIV genome packaging and translation. Our unique approach can be applied to long RNAs in physiologically relevant environments (viral RNA in virions and the cytosol), and is particularly suited to situations where RNA dynamics frustrate structural characterisation by traditional biochemical experiments. In this way, the post-doctoral fellow will characterise RNA structures, and identify cellular and viral factors, that are important for two critical stages of HIV replication. Upon successful completion of this project, it is anticipated that the post-doctoral fellow will identify new, possibly druggable, functions of the HIV gRNA to enable the development of a new class of antiretroviral drugs to inhibit the production of viral particles.



Required qualification of the post-doc:

- PhD in molecular biology, molecular virology
- Experience with RNA sequencing
- Additional skills in bioinformatic analysis would be advantageous

PART B (Materials and Procedures)

The applicants shall submit the following documents to a Chinese postdoc station affiliated to a research institution or a university, after passing through the internal selection, the qualified application shall be forwarded to OCPC, and then to Helmholtz for evaluation:

- Detailed description of the interest in joining the project (motivation letter)
- Curriculum vitae, copies of degrees
- List of publications
- 2 letters of recommendation
- Proof of command of English language

PART C (General Conditions)

Additional requirements on the postdoctoral fellows:

- Chinese citizenship from Mainland China (allows application while staying abroad)
- Max. age of 35 years, PhD degree not more than 5 years by submission of application
- Very good command of English language
- Strong ability to work independently and in a team