

Title: Characterizing the host translational response to viral infection

Supervisor: Stefan Bresson, PhD

Institute: International Institute of Molecular and Cell Biology in Warsaw

Laboratory: Laboratory of RNA Viruses

www: <https://shorturl.at/uorXR>

Project description:

Protein translation is a critical step in gene expression and tightly regulated in response to cellular stress. During viral infection, host cells typically suppress bulk cap-dependent translation to limit viral protein synthesis. At the same time, cells must synthesize key antiviral proteins, raising an important question: how are specific cellular mRNAs selectively translated when bulk translation is suppressed? To address this, we have developed a series of cell lines in which individual translation initiation factors can be rapidly and inducibly depleted. In this project, we will use this system to define the mechanisms that enable selective translation of cellular transcripts during the course of viral infection.

Aim:

We aim to characterize the mechanisms of cellular translation during the antiviral response. This work will involve high-throughput screening of a library of RNA reporters following rapid depletion of selected translation initiation factors. In this project, you will learn mammalian cell culture and viral infection, CRISPR/Cas9 gene editing, polysome profiling, high-throughput sequencing and proteomics, and data analysis.

Requirements:

- MSc degree in biology, biochemistry, or related field
- Solid knowledge in at least one of the following disciplines: molecular biology, biochemistry, or microbiology
- Basic hands-on experience in molecular biology
- Written and spoken fluency in English
- Willingness to learn and take on new challenges, ability to work independently, analytical thinking
- Good interpersonal skills and a collaborative attitude

Number of positions available: 1

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