

# Two PhD students positions in the Laboratory of Laboratory of RNA Viruses

The Laboratory of Laboratory of RNA Viruses <https://shorturl.at/ePpOn> at the International Institute
of Molecular and Cell Biology in Warsaw, headed by Stefan Bresson, PhD is looking
for **two** **PhD students**.

You will join the project entitled “Unravelling the Mechanisms of Gene Expression of Hepatitis A Virus” carried out as the Sonata Bis grant (2024/54/E/NZ6/00119) of the National Science Centre, Poland led by Stefan Bresson, PhD.

**Aim of the project:**

Project 1:

Upon infection, viruses hijack the cell's protein synthesis machinery and use it to assemble new viral proteins. One common strategy involves the use of an internal ribosome entry site (IRES), an RNA element which directly recruits host ribosomes to the viral RNA, bypassing conventional cap-dependent initiation. In order to function effectively, IRESs require the assistance of various cellular RNA-binding proteins. These accessory factors, termed ITAFs (IRES *trans-*acting factors), help the IRES fold into its final, active conformation. Our overarching goal is to identify novel cellular ITAFs which activate viral translation. In the future, these proteins could be targeted to treat viral disease.

In this project, we aim to characterize factors involved in IRES-dependent translation of picornaviruses, a diverse family of RNA viruses which includes numerous human pathogens. This work will involve: (1) high-throughput screening for cellular proteins which bind the viral IRES element, and (2) functional characterization of the identified proteins (viral infection and translation assays, CLIP-seq, etc.). In this project, you will learn: mammalian cell culture and viral infection, CRISPR/Cas9 gene editing, high-throughput proteomics and sequencing, and data analysis.

Project 2:

Upon infection, viruses hijack the cell’s translational machinery and use it to synthesize copious quantities of viral proteins. However, viral gene expression must be tightly controlled to ensure that individual viral proteins are produced at the right time and in sufficient quantities to support viral replication. Most viruses use some form of transcriptional regulation, in which individual viral genes are transcribed only in the amounts needed. Other viruses, including those in the *Picornaviridae* family, rely entirely on posttranscriptional regulation of gene expression. However, the mechanisms involved are still poorly understood.

Our goal is to define the gene regulatory strategies used by the Hepatitis A virus, a model picornavirus and important human pathogen. This work will involve the use of Ribo-seq profiling to investigate the role of translational regulation (e.g. ribosome frameshifting, cryptic translation initiation, etc.) for Hepatitis A gene expression. The resulting datasets may also provide insights into the translational regulation of host cell mRNAs during the course of infection. In this project, you will learn: mammalian cell culture and viral infection, CRISPR/Cas9 gene editing, high-throughput sequencing approaches such as Ribo-seq, and data analysis.

As **PhD students** you will be responsible for carrying out the experiments described above, depending on which project you join. Your role will also include conducting literature reviews to contextualize your findings, actively participating in lab meetings, presenting your work at national and international conferences, and contributing to the writing of research publications and your PhD thesis.

### **The admissions process is conducted through the Doctoral School website system. The PhD student can apply to this specific project carried out as part of the Warsaw-4-PhD doctoral school via website** <https://shorturl.at/cJKQY> **(the application system will be activated from** **19th of May 2025; deadline for sending application** **is 1st of June, 2025).** For more information, please follow the link <https://shorturl.at/mvxOR>

Candidates will be selected according to the procedure complying the rules for granting scholarships for young scientists in research projects funded by the National Science Centre (NCN Council Resolution No. 25/2024 dated March 4, 2024 r.), recruitment procedure for the Warsaw-4-PhD and the procedure complying with the rules of the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers as a part of HR Excellence in Research Strategy <https://bit.ly/3U0dydP>

**Requirements for the candidate:**

* 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.

**We offer:**

1. Full-time PhD scholarship 4 years (8 semesters) in amount:

a) before the mid-term evaluation 4800 pln net/month;

b) after mid-term evaluation 5300 pln net/month

1. Position with 100% focus on research (no teaching obligations)
2. Benefits including reduced-rate for an individual private medical care package
and membership in MultiSport programme
3. Full technical, administrative and organizational support from professional English-speaking personnel
4. Participation in courses, scientific training, support from peers, and academic mentoring

Deadline for applications is **1st of June, 2025.** The winter semester at the Doctoral School shall begin on **1st of October, 2025.**

**How to apply:**

* Apply via website <https://shorturl.at/cJKQY> (the application system will be activated from
19th of May, 2025; deadline for sending application is 1st of June, 2025). If you have
any enquiries about the recruitment process or the project, please send your request
to sbreeson@iimcb.gov.pl
* Please include the following statement in your email: *“I hereby agree to the processing
of my personal data, included in the application documents by the International Institute of Molecular and Cell Biology in Warsaw, 4 Księcia Trojdena Street, 02-109 Warsaw, for the purpose of carrying out the* *current recruitment process.”* Your personal data will be processed for the purpose of the recruitment procedure by the International Institute of Molecular and Cell Biology in Warsaw. Full information is available under the link <https://bit.ly/3UFWpY2>
* Procedure for reporting irregularities, taking follow-up actions, and protecting whistleblowers: <https://shorturl.at/u2mww>

