

## **Job Vacancy**

### **University of Regensburg | Nummer 23.053**

The University of Regensburg with its more than 20,000 students is an innovative and interdisciplinary oriented campus university with a broad range of academic disciplines and research activities for young people from Germany and abroad. The chair "Computational Immunology" performs research at the interface between the method-driven, data science side and the hypothesis-driven, biological side of bioinformatics (<https://erhard-lab.de>). We develop statistical methods to extract quantitative parameters from molecular high-throughput data, and to integrate heterogeneous data sets. A network of experimental collaborators allows us to apply these new methods to specifically generated data to gain entirely new and exciting insights into the world of immunology. We invite applications for the position of a

#### **Doctoral Researcher (Ph.D. candidate) (m/f/d)**

to start at the earliest convenience. This is a full-time position (40,1 hours per week) based on a fixed-term contract valid for a period of 3 years. The position is suitable for part-time work. The salary is according to TV-L E13 (100%).

#### **Project**

Multi-omics techniques in combination with specialized computational analysis methods have revolutionized our knowledge and understanding of viral gene products. In close collaboration with experimental labs and using the computational tools developed in our lab ("PRICE", "Peptide-PRISM"), we recently re-annotated the genomes of different herpes viruses including the clinically highly relevant human cytomegalovirus (HCMV). In this project, we will go one step further to provide a temporally resolved and cell type-specific map of HCMV gene products. We will focus on the quantitative aspects of viral gene expression by analyzing data from metabolically labeled RNA and proteins, and on consequences of gene expression changes for surveillance by T cells. This unique combination of cutting-edge experimental technologies and new computational methods will shed new light on long-standing questions how HCMV escapes detection by the immune system. This project is part of the DFG funded research unit "Advanced Concepts in Cellular Immune Control of Cytomegalovirus".

#### **Your responsibilities:**

- Improvement of our bioinformatic method "GRAND-SLAM" for the analysis of translation kinetics ("Ribo-seq" data) with metabolic RNA labeling to decipher the temporal dynamics of viral gene expression.
- Integrative analysis of time-resolved, multimodal, high-throughput data to determine and quantify transcription initiation, translation, gene expression at the RNA and protein levels, and antigen presentation following cytomegalovirus infection in multiple cell types.
- Investigation of the complex virus-host cell interactions during cytomegalovirus infection and of the viral evasion of T- and NK-cell based immune responses in close collaboration with experimental researchers.

#### **We seek:**

- A university degree in bioinformatics, statistics, computer science, data science or a related discipline is necessary.
- Programming experience (preferably in R and Java) and hands-on approach as well as theoretical knowledge of statistical methods is required.
- Experience in working with biological molecular high-throughput data is desired.

- We expect good communication skills, willingness to conduct research in an interdisciplinary team, and a high degree of intrinsic motivation to engage with both the methodology and biology of our questions.

### **We offer:**

- As part of a young and international team, you will conduct research on cutting-edge and exciting topics in immunology using bioinformatics methods.
- The methodological part of the project contributes to our GRAND-SLAM/grandR toolkit, which is used by many researchers worldwide to study the kinetics of gene expression for a wide range of questions.
- You will have the special opportunity to acquire knowledge in both theoretical and practical bioinformatics research, learn to communicate your research in the two very different research branches of data science and biology, and make international contacts in both fields.
- We offer flexible work organization.
- Pursuing a Phd degree is encouraged.

The University of Regensburg aims to increase the proportion of women and therefore expressly encourages qualified women to apply. The University of Regensburg is particularly committed to support reconciliation of work and family life (for details visit <https://www.uni-regensburg.de/universitaet/personalentwicklung/familien-service>).

Candidates with registered severe disabilities are given preference over non-disabled applicants who do not otherwise have statutory preferential status if their overall personal aptitudes, skills and qualifications are equal. Please, indicate the existence of a severe disability so that a representative for people with disabilities can be invited to the interview if requested.

Please, also note that we will not cover travel and other expenses for personal interviews.

If you have any questions, please contact Prof. Dr. Florian Erhard (E-Mail: [florian.erhard@informatik.uni-regensburg.de](mailto:florian.erhard@informatik.uni-regensburg.de)). We look forward to receiving your detailed application (letter of motivation, CV, abstract from master thesis, contact information from two academic references), which should be sent in a single PDF file until March 19th 2023 to: [jobs@erhard-lab.de](mailto:jobs@erhard-lab.de)

### **Our representative publications:**

Erhard F, Dölken L, Schilling B, Schlosser A. Identification of the Cryptic HLA-I Immunopeptidome. *Cancer Immunol Res.* 2020.8(8):1018–26.

Erhard F, Baptista MAP, Krammer T, Hennig T, Lange M, Arampatzi P, Jürges CS, Theis FJ, Saliba A-E, Dölken L. scSLAM-seq reveals core features of transcription dynamics in single cells. *Nature.* 2019.571(7765):419–23.

Erhard F, Halenius A, Zimmermann C, L'Hernault A, Kowalewski DJ, Weekes MP, Stevanovic S, Zimmer R, Dölken L. Improved Ribo-seq enables identification of cryptic translation events. *Nature Methods.* 2018.15(5):363–6.

This is the English translation of a German job advertisement published by the University Regensburg at [https://www.uni-regensburg.de/assets/universitaet/stellenausschreibungen/fuer\\_Forschung\\_und\\_Lehre/23\\_053\\_FakI D\\_WissMADok\\_.pdf](https://www.uni-regensburg.de/assets/universitaet/stellenausschreibungen/fuer_Forschung_und_Lehre/23_053_FakI D_WissMADok_.pdf). Only the original German text is legally binding.

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