In the computational virology lab (Institute for Virology and Immunobiology, University of Würzburg) we are recruiting a

PhD student (f/m/d)
in Bioinformatics

The position is funded by the DFG project "Characterization of cryptic peptides presented by MHC-I" for three years and is available immediately (January 2022). The salary is according to TV-L E13 (100%).

Project

Cytotoxic T cells recognize their targets via peptides presented by major histocompatibility complex class I (MHC-I) molecules on the surface of infected or cancer cells. We and others have shown that, in addition to conventional peptides derived from known proteins, so-called cryptic peptides that are translated from open reading frames not encoding for known proteins can make up >10% of MHC-I immunopeptidomes. We made this important discovery based on two computational approaches ("PRICE", "Peptide-PRISM") developed in our lab. In this project, we will gain deeper insights into the mechanisms of cryptic peptide translation and their presentation via MHC-I. We will accomplish this by:

- Improving our PRICE approach for the analysis of Ribosome profiling data
- Applying it to a large collection of publicly available data as well as data generated specifically for this project
- In-depth, integrative analysis of data on translation (Ribo-seq) and MHC-I presentation (mass spectrometry)

Candidate Profile

The candidate should hold a master's degree in bioinformatics, informatics, statistics, or a related field, and have a strong interest in performing research combining method development and actual data analysis. Programming experience (preferably Java and R) and knowledge of statistical methods are required. Previous experience in handling big biological data sets is preferred. We expect good communication skills, the ability to work in a team and willingness to work scientifically and independently.

We offer

Our young and international team of dedicated scientists performs cutting-edge research at the interface between theoretical and applied Bioinformatics. Enrollment in the Würzburg Graduate School of Life Sciences offers career development and a structured course system for PhD candidates. The University of Würzburg aims to increase the percentage of women and therefore we explicitly ask female applicants to send us their applications. In case of equal qualification, we will employ preferably disabled applicants.

We look forward to receiving your application including a letter of motivation, your CV, abstracts of Bachelor / Master theses, contact information of two academic references, and relevant certificates (as one PDF file) per email until February 16th, 2022. Please send it to:

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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.