

The **Systems Medicine of Diabetes group** at the **Institute of Computational Biology** is looking for a

## **PhD Student in 'Pathway analysis methods for multi-omics data'**

### **Job Description:**

Large-scale multi-omics datasets are now readily available, covering measurements on genomics, epigenomics, transcriptomics, proteomics, metabolomics and further technologies. Methods for integrating these datasets with known biological pathways from public databases, however, are still rare. This project will cover the development and application of pathway analysis methods in the context of multi-omics data. For example, pathway enrichment methods are well-established for single omics technologies such as transcriptomics. However, the combination of pathway enrichment results from more than one omics level, e.g. transcriptomics and proteomic, is far from trivial. During this PhD thesis, we will develop novel computational frameworks that allow for an integration of statistical results from such heterogeneous datasets. We will focus on diabetes-related multi-omics datasets, both from mouse experiments and human cohorts. For the mouse models, we will focus on a multi-omics multi-organ study investigating the effects of the microbiome on metabolic phenotypes. The human part involves data from a type 1 diabetes birth cohort, for which we have multiple omics layers already available and ready to use.

### **Your Qualifications:**

You are a curious, independent and creative person with a strong interest in the statistical analysis of biological data. You should hold a university degree in computational biology, biostatistics, physics or an equivalent field and have good communication skills, knowledge in coding (e.g. R or Matlab) and be fluent in written and spoken English. An affinity for the biological interpretation of achieved results and being comfortable at interacting with colleagues in an interdisciplinary setting are highly advantageous.

### **Our Offer:**

- working in an innovative, well-equipped and scientifically stimulating surrounding
- being part of the HELENA graduate school, which offers interdisciplinary seminars and training courses
- Initial short-term employment contract for three years with a standard public service salary (TV EntgO Bund EG 13 50%+15%).

### **Further information about the group:**

<http://www.sysdiab.de>

**contact:** Dr. Jan Krumsiek, [jan.krumsiek@helmholtz-muenchen.de](mailto:jan.krumsiek@helmholtz-muenchen.de)

We are looking forward to receiving your comprehensive online application.

<https://fragebogen.candibase.de/helmholtz/mainform.php?param=de6c98775a20e28001fcde0fd615e573&&vs=1&comp=0&lang=en>