



27. Mai 2020

The **Department of Immunodynamics** investigates immunological mechanisms that underlie diseases such as persistent infections and cancer. We employ state of the art approaches, such as imaging mass spectrometry, bioinformatics and microscopy to understand the mechanisms that spatially regulate leukocyte migration and function. We develop interdisciplinary co-registration algorithms that combine multimodal imaging approaches, such as immunohistochemistry (IHC), matrix-assisted laser desorption/ionization mass spectrometry imaging (MALDI MSI) and liquid chromatography with tandem mass spectrometry (LC-MS/MS). Our overall aim is to study immunological landscapes to develop novel therapeutic approaches to treat diseases.

Further information about the research group and current research projects can be found on [www.immunodynamics.de](http://www.immunodynamics.de).

The research group **Immunodynamics** is integrated in the **Institute of Experimental Immunology and Imaging** and affiliated to the University Duisburg-Essen and the University Hospital Essen, Germany and is looking to employ a

### **Postdoctoral Researcher in Bioinformatics / Biomedicine**

to study immunological landscapes by microscopy and mass spectrometry imaging datasets (pay category 13 TV-L – limited contract)

The job is part of a third-party funded project and we are looking at a start month of August 2020. The contract is limited to 24 months with the aim to extend to an additional 24 months.

#### **The area of responsibility encompasses the following:**

- Establishment of multiplex microscopy staining with the codex technology
- Automated acquisition and analysis of microscopic datasets
- Analysis of mass spectrometric datasets (LC-MS/MS and MALDI-MSI)
- Establishment of bioinformatic algorithms for the co-registration of multimodal mass spectrometry and microscopy datasets
- Multivariate analyses and visualizations of high-dimensional datasets via PCA, t-sne, UMAP, and volcano plots
- Integrative evaluations via „*Pathway*“ and „*Enrichment*“ analysis
- Establishment of machine learning algorithms to identify discriminating molecules and patterns in mass spectrometry and microscopy datasets
- Establishment of the work group „*Multimodal Imaging*“ with supervision of students and PhD students
- Third-party fundraising and application for large instruments and equipment

#### **Your profile:**

- Postdoctoral researcher with expertise in the areas of Biomedicine, Mass Spectrometry, Bioinformatics, Microscopy and Systems Biology
- Desirable experience for employment:
  - Knowledge in the area of mass spectrometry (e.g. LC-MS/MS and MALDI-Imaging) and microscopy
  - Analysis of microscopy and mass spectrometry datasets
  - Analysis and visualization of high-dimensional datasets via PCA, t-sne, UMAP, volcano plots
  - Knowledge in Systems Biology or Biomedicine and Pathway Analyses
  - Experience in supervising PhD students and students

- Experience in teaching
  - Knowledge and successful track record of fundraising with third-party-institutions
  - Knowledge in machine-learning algorithms
  - Software / Languages / Tools: R, Python, Cytoscape, ScisLab, DAVID, String, GSEA
- You are working independently, self-responsibly and reliably.
  - You are flexible, committed and team minded.
  - You have a very good written and oral knowledge of English.

Severely disabled applicants with equal qualification will be given particular consideration.

The University Duisburg-Essen is striving to increase the share of women in the research environment. Applications of women are explicitly wanted. Women with equal competence, qualification and professional performance will be given particular consideration. The advertised position is generally suitable for part-time employees.

Please send your application including source reference, cover letter, CV and names of referees as part of your application to the following e-mail address:

[Application@immunodynamics.de](mailto:Application@immunodynamics.de)

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