



18. Juni 2020

The **Department of Immunodynamics** investigates immunological mechanisms that underlie diseases such as persistent infections and cancer. An important state of the art technique to unravel the tissue landscapes in infections and cancer are microscopy and imaging mass spectrometry. Using these techniques, we aim to understand the mechanisms that spatially regulate leukocyte migration and function in infections and cancer. We employ interdisciplinary co-registration algorithms that combine matrix-assisted laser desorption/ionization mass spectrometry imaging (MALDI MSI), liquid chromatography with tandem mass spectrometry (LC- MS/MS) and microscopy 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.

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

PhD in Bioinformatics / Biomedicine

to analyze **microscopy and mass spectrometry imaging** datasets (pay category 13 TV-L – limited contract, part time 50%)

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 36 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 datasets
- Multivariate analysis and visualizations of high-dimensional datasets via PCA, t-sne and UMAP
- Systems Biology 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
- Contribution to third-party fundraising

Your profile:

- PhD student with interest to focus in the areas of Biomedicine, Mass Spectrometry, Bioinformatics, Microscopy and Systems Biology

Desirable experience:

- Knowledge in the area of mass spectrometry (e.g. LC-MS/MS and MALDI-Imaging) and microscopy
- Analysis of microscopy and mass spectrometry datasets
- Knowledge in Systems Biology or Biomedicine and Pathway/Enrichment analyses
- Analysis and visualization of high-dimensional datasets via PCA, t-sne and UMAP
- 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

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