Exciting ERC-funded Postdoc Opportunities, The role of Metabolism in Antimicrobial resistance and tolerance.

Why are fungal infections an increasing problem, and what can we do against fungal pathogens becoming resistant and tolerant against the existing antimicrobials? In this exciting postdoc opportunity, you will seek answers to fungal AMR by using approaches of functional genomics, proteomics or systems biology, and we will focus on cellular metabolism. This advert is thus attractive for prospective Postdocs with a background in Biochemistry, Genetics, Molecular Biology, Systems Biology or Computational Biology, and Proteomics.

Project description: Resilience to antimicrobials is an increasing global problem. One underexplored area are fungal infections, where strains such as the prominent human pathogen *Candida albicans* often become tolerant rather than resistant, leading to treatment failures.

We are seeking two highly motivated postdoctoral scientists to join our ERC-funded Synergy Project "Fungal Tolerance". In this project, we aim to unravel the mechanisms by which fungal pathogens like *Candida albicans* and *Candida auris* develop drug tolerance, by modulating their metabolism. Our work focuses on studying a comprehensive library of pathogenic yeast isolates, exposing them to various antifungal drugs, and mapping their cellular response mechanisms using methods of proteomics, functional genomics and systems biology. The project can also be approached from a more technical perspective. Our lab has been active in the development of our mass spectrometry-based proteomic methods, and we rendered them better applicable to large experiments. We will use these techniques to map the molecular processes involved in the adaptation of the fungal pathogens to the drugs used to treat them.

Our cutting-edge research project, which is conducted in collaboration with Judith Berman at Tel Aviv University, and Martin Vingron at the Max Planck Institute for Molecular Genetics, has the potential to transform our understanding of fungal pathogenesis and pave the way for new therapeutic strategies.

Research environment: **The Ralser lab is part of the Institute of Biochemistry at Charité - Universitätsmedizin Berlin, Germany.** Located in the heart of Berlin, Charité is one of Europe's largest and most research-intensive medical universities. The candidates will have access to cutting edge technologies, and be trained within an interdisciplinary research team consisting of biologists, data analysts, and analytical chemists with strong support from experienced technical staff. In our group, we are particularly interested in gaining a functional understanding of microbial and human metabolism, its regulation and dynamics, and its impact on disease. Ultimately, our goal is to use this knowledge to create innovative therapies and diagnostics. We mainly work with microbes, *in vitro* cell cultures, and human biofluids such as serum. We have a strong focus on mass spectrometry-based proteomics, which we routinely integrate with genomics data and phenotypic assays using various approaches of computational biology. The data-driven approaches are further complemented through molecular biology methods such as gain- or loss-of function assays.

Your profile:

Essential:

- PhD in the natural sciences
- Available projects are of multidisciplinary character, and are thus ideal for candidates with a background in either Proteomics, Metabolomics, Bioinformatics or Computational Biology and/or Yeast Microbiology
- Strong analytical and problem-solving abilities
- Excellent communication and teamwork skills
- Proven track record of publishing in peer-reviewed journals
- The ability to work independently and collaboratively in a multidisciplinary team
- Strong work ethic

Desired skills:

This project can be studied from different angles. Depending on the chosen direction, different qualifications will be considered a plus

For wet lab scientists:

- Proficiency in either, functional genomics, molecular and protein biochemistry techniques
- Experience in microbiology, especially in yeast microbiology
- Proficiency in biological data analysis or a strong motivation to obtain the required skills (e.g. basic scripting and programming)

For computational biologists:

- Hands-on experience in the analysis of large biological datasets
- Experience in scientific programming

For Analytical Scientists:

- Proficiency in liquid chromatography, proteomics or metabolomics, and the analysis of respective raw data

Contact. Please submit your interest preferably in one document, your CV, a cover letter,

and contact information for references to "bewerbungen-biochemie@charite.de", or use the respective web form https://charite.hrpuls.de/de/job-offer-list/bewerbung/Postdoctoral-Scientists-Institute-Biochemistry-DM.112.24-3374.html

For any inquiries, please visit our web page, https://ralser.group/, or contact Markus Ralser (markus.ralser@charite.de)