



Position by institution 7

ESR No.

10

Host Institution:

Bruker Daltonik GmbH, Bremen

ESR enrolled at:

University of Amsterdam, Netherlands

Institute	Bruker Daltonik GmbH, Bremen
Lab	Department of bioanalytical development
Responsible person	Markus Kostrzewa
Job title	Early Stage Researcher: PhD thesis on improved diagnosis of yeast pathogens by MALDI-TOF MS proteomics
Job description	<p>Short description:</p> <ul style="list-style-type: none"> - Required degree: MSc in biology, biochemistry or equivalent - Preferred qualification and expertise: microbiology, molecular biology, knowledge in use of molecular-biological databases, biochemistry, advanced bioinformatics knowledge - Duration: 36 months - Language: English (essential), - Contact: Markus Kostrzewa, Tel.: +49 412 2205 1258; Mail: markus.kostrzewa@bruker.com <p>Bruker Daltonik GmbH: Bruker develops, manufactures and distributes a broad spectrum of systems for research and development, routine analyses and diagnostics. Being one of the world's leading analytical instrumentation companies and the manufacturer of the world's leading mass spectrometry based microorganism identification system, Bruker is strongly committed to further fully meet its customers' needs as well as to continue to develop state-of-the-art technologies and innovative solutions for today's analytical questions.</p> <p>PhD project Objectives: To elaborate on the MALDI-TOF diagnostics and detection of Candida species with increased sensitivity from clinical samples, such as blood, CSF, and urine by using new enrichment tools in collaboration with ESR13 (P10). Secondly, bio-informatics analysis of the full MALDI-TOF spectra will identify phenotype (e.g. species, resistant) characteristic peaks that may be used for subsequent targeted diagnosis in clinical samples. On resistant phenotypes ESR13 will collaborate with ESR4 (P2).</p> <p>Methodology: The aimed enrichment method will be based on llama antibodies to specifically bind and enrich yeast cells or cell content/biomolecules and thereby enrich them from clinical samples. Magnetic bead based technology is planned for the enrichment from liquid samples/suspensions, with a MALDI-TOF MS based read out. Diagnostic peaks for species and interesting traits, e.g. resistance, will be identified using detailed bioinformatics analysis. The ESR will closely interact with ESR 4 (P2), ESR8 (P5), ESR 11 (P8) and ESR 13 (P10).</p> <p>Expected Results: Establishment of a general protocol for enrichment of Candida yeast cells out of body fluids and subsequent MALDI-TOF analysis directly on clinical samples.</p> <p>Planned secondment(s): P2 KNAW (2 weeks; Y1; to interact with ESR4 on detection of resistant yeast); P10 QVQ (2 weeks; Y1 to learn about llama-based antibody technology); P8 IMU (2 weeks; Y2; to learn about diagnostics in a clinical setting).</p>