**Position by institution 5**

**ESR No.** 8
**Host Institution:** University of Aberdeen, United Kingdom
**ESR enrolled at:** University of Aberdeen, United Kingdom

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| Institute | University of Aberdeen, United Kingdom |
| Lab | Aberdeen Fungal Group, Institute of Medical Sciences |
| Responsible person | Carol Munro, PhD |
| Job title | Early Stage Researcher: PhD thesis on Candida Proteomic responses to antifungals |
| Job description | Short description:<br>- Required degree: MSc in microbiology, biochemistry or equivalent<br>- Preferred qualification and expertise: molecular biology, microbiology, fungal biology<br>- Duration: 36 months<br>- Language: English (essential),<br>- Contact: Carol Munro, Tel.: +44 1224437485; Mail: c.a.munro@abdn.ac.uk<br><br>**Aberdeen Fungal Group :**<br>The group's interests are focussed on understanding the pathogenicity of the most common life-threatening fungal agent Candida albicans in order to design better therapies to combat invasive fungal infections. I am particularly interested in the fungal wall as it is central to pathogen-host interactions and is an attractive target for novel therapies. Using a combination of transcript profiling and glycoproteomics my research group are studying the role and regulation of Candida albicans cell surface proteins, especially novel predicted GPI-anchored proteins. We are studying how the cell surface is remodelled in response to the environment including exposure to antifungal drugs and growth in vivo and the signalling pathways that govern cell wall remodelling.<br><br>**PhD project**<br>Objectives: Proteomics-based analyses of clinical isolates of the four major pathogenic Candida species with varied drug susceptibilities to identify proteins that are differentially expressed in response to antifungal drugs or in drug resistant isolates (from P2). Development and validation of specific antibodies as diagnostic resistance markers.<br><br>Methodology: A combination of MALDI-TOF, LC-MS mass spectrometry and Differential in Gel Electrophoresis (DIGE) proteomics approaches will be applied by ESR8 to identify global changes in different classes of proteins (cytoplasmic, membrane, wall and secreted). A phage display antibody library will be screened (with ESR13, P13) to select antibodies specific for the most promising proteins identified. ESR8 will validate the utility of the antibodies for enrichment of diagnostic resistance markers with ESR10 (P10) using in vitro cultures and in vivo infection models.<br><br>Expected Results: Identification of antifungal resistance biomarkers in main pathogenic Candida species. Isolation of llama VHH antibodies against selected candidate biomarkers. Assessment of antibodies for enrichment of biomarkers. Validation of biomarkers to detect antifungal resistance in vitro and in infection models.<br><br>**Planned secondment(s):**<br>P13 QVQ (2 months; Y1; for antibody screening); P6 HKI (1 month, Y2; to test antibodies in host interaction assays); P10 BRUKER (2 weeks; Y3; for proteomic evaluation of diagnostic resistance markers). |