Position by institution 3

ESR No. 5
Host Institution: University College Dublin, Conway Institute
ESR Enroled at: University College Dublin, Ireland

Institute	University College Dublin, Conway Institute
Lab	School Of Biomolecular & Biomed Science
Responsible person	Geraldine Butler
Job title	Early Stage Researcher: PhD thesis on analysis of interactions of *Candida parapsilosis complex*
Job description	Short description: - Required degree: BSc (Hons) (e.g. U.K./Ireland), MSc, or equivalent in genetics, biochemistry, microbiology or related subject - Preferred qualification and expertise: molecular biology, some laboratory experience, some bioinformatics knowledge - Duration: 36 months - Language: English (essential), - Contact: Geraldine Butler, Tel.: +353-1-7166885; Mail: gbutler@ucd.ie **The School of Biomolecular and Biomedical Science:** The Butler group consists of 2 post-doctoral researchers and 6 PhD students. We are based at the Conway Institute in University College Dublin (UCD). UCD is the largest university in Ireland, located on the 300-acre Belfield campus 5 km from the city centre. UCD Conway Institute brings together over 550 research staff from all over the University and its associated teaching hospitals. It is an interdisciplinary research centre, exploring fundamental mechanisms of chronic disease for novel diagnostic & therapeutic solutions. Research focuses on the molecular pathogenic mechanisms that underlie major chronic diseases, including infection and the immune response, diabetes, vascular diseases, cancer and neurodegeneration. The UCD Conway Institute offers core technologies that are the most comprehensive and advanced analysis platforms available for the life sciences and biomedical research in Ireland. These include genomics (e.g. next generation sequencing), proteomics, imaging, research pathology and flow cytometry. **PhD project** Objectives: To (i) establish in vitro and ex vivo commensal and infection models for C. parapsilosis; (ii) to dissect the different stages of infection; (iii) to characterize the fungal and host transcriptional profiles during infection by RNAseq; (iv) to identify stage-specific marker genes of C. parapsilosis infection; (v) to identify and characterize genes that are required for pathogenicity of C. parapsilosis. Methodology: ESR5 will monitor the interaction of C. parapsilosis with vaginal and intestinal epithelial, endothelial cells and blood cells in collaboration with ESR6. RNA-seq will be used to determine the stage-specific transcriptional profile of the pathogen and the host. Data analysis will be carried out in collaboration with ESR2 (P1). Expression of selected (infection-associated and species specific) genes will be verified by qRT-PCR. Candidate marker genes will be developed into prototype diagnostic tools. Candidate genes will be disrupted and their roles in infection analysed. Moreover, to identify genes crucial for pathogenicity, mutant strains from a collection of >200 C. parapsilosis knockout strains (available at P3) will be monitored in the established infection models. Expected Results: Identification of markers and transcriptional profiles common to fungal infection, and specific to *C. parapsilosis* infection. **Planned secondment(s):** It is likely that this project will begin in HKI, Jena; there is also a planned secondment to Illumina.