



Position by institution 1

ESR No. 2
Host Institution: Center for Genomic Regulation, Barcelona
ESR enrolled at: Universitat Pompeu Fabra, Barcelona

Institute	Center for Genomic Regulation, Barcelona
Lab	Comparative Genomics Group
Responsible person	Toni Gabaldón, PhD
Job title	Early Stage Researcher: PhD thesis on Comparative transcriptomics of host-pathogen interactions
Job description	<p>Short description:</p> <ul style="list-style-type: none"> - Required degree: BSc (Hons) (e.g. U.K./Ireland), MSc in biology, biochemistry or equivalent - Preferred qualification and expertise: molecular biology, knowledge in use of molecular-biological databases, biochemistry, advanced bioinformatics knowledge - Duration: 36 months - Language: English (essential), - Contact: Toni Gabaldón, Tel.: +34 933160281; Mail: toni.gabaldon@crg.eu <p>The Comparative Genomics Group:</p> <p>The main research interest of our group is to understand the complex relationships between genome sequences and phenotypes and how these two features evolve across species. We generally use large-scale phylogenetics approaches that allow looking at the evolution of genomes from the perspective of all of their genes, and we apply these analyses to a variety of biological questions related the evolution and function of organelles, pathways, and protein families. We have a special interest in understanding processes related to human pathogenesis (emergence of infectious disease, and organelle-related genetic diseases).</p> <p>Through collaborations with experimental groups we apply comparative genomics to discover new mechanisms and genes involved in interesting processes, especially those of clinical relevance (see lines of research). Given that we work in an emerging field and we are exposed to new types and scales of data, we often have the need to develop novel bioinformatics tools to fill in existing gaps. We invite applications for an Early Stage Researcher position within the MSC Opathy network. Candidates with a MSc degree (or equivalent) in biological, biochemical sciences or in related disciplines are desired. In addition bioinformatics knowledge is of advantage for this position.</p> <p>PhD project</p> <p><u>Objectives:</u> To study the nature and progress of fungal infections, to analyze RNAseq data obtained from lab experiments and patient samples (obtained by ESR5,6,9,12), and to explore ways for the molecular characterization of the host-pathogen interaction using deep sequencing approaches. These procedures will be implemented in the OPATHY pipeline (WP4). A special focus will be devoted to analyze similarities and differences in the transcriptome dynamics across <i>Candida</i> species and strains.</p> <p><u>Methodology:</u> Next generation sequencing techniques and bioinformatics analyses will be used to compare transcriptomes of <i>Candida</i> species exposed to human macrophages with data obtained from patient samples. Diagnostic markers of infection will be selected (for validation in WP6).</p> <p><u>Expected Results:</u> Increased understanding how host-pathogen interactions vary during infection and across <i>Candida</i> species.</p> <p>Planned secondment(s): P4 BIOTECHVANA (1 month; Y1; implemented full-map pipeline); OP2 Illumina (1 month; Y2; learning RNAseq methodologies).</p>