

Doctoral position at University Côte d'Azur: Fungal Cell Biology

Light-dependent regulation of cell polarity in a fungal pathogen

The fungus *Candida albicans* is normally a harmless commensal that is found on mucosal surfaces of the gastrointestinal and urogenital tract in most healthy individuals. This commensal organism can cause superficial as well as life-threatening systemic infections in response to alterations of its environment, and is particularly aggressive in immuno-compromised individuals. As an opportunistic pathogen it can colonize and infect different body sites and is responsible for one of the most predominant fungal nosocomial infections. The ability of this fungus to switch from an ovoid form to a filamentous form is critical for its pathogenicity, in particularly its ability to invade and penetrate into host tissues and evade and burst out of host immune cells.



The recent advent of light-dependent approaches to control protein subcellular localization has made possible the specific alteration of growth, circumventing classical genetic and chemical perturbations. We have optimized such a light-dependent protein targeting system for *C. albicans*, which gives us exquisite control of growth in this



organism. In addition, new variants of these systems have been established which facilitate their use and response time. Furthermore, a number of new, spectrally distinct fluorescent proteins, which we have optimized for use in *C. albicans*, now make it possible to follow different cellular processes simultaneously during light-dependent perturbation of growth and cell polarity. The goal of this project is to use such a light-dependent protein targeting to probe filamentous growth as well as invasive filamentous growth in a human fungal pathogen. The project will use a combination of molecular biology, microbiology and live cell microscopy to probe filamentous growth and morphogenesis in this fungal human pathogen.

We are seeking highly motivated candidates with a background in Cell Biology and interest in live cell imaging. Experience in Microbiology would be a plus.

Interested candidates can contact R. Arkowitz (arkowitz@unice.fr) by June 1st

- 1) M Bassilana, C Puerner & RA Arkowitz. *Curr. Opin. Cell Biol.* 2020 **62**:150-158.
- 2) PM Silva, C Puerner, A Seminara, M Bassilana & RA Arkowitz. *Cell Rep.* 2019 **28**:2231–2245.
- 3) RA Arkowitz & M Bassilana. *F1000 Res.* 2019 8.
- 4) A Weiner, F Orange, S Lacas-Gervais, K Rechav, V Ghugtyal, M Bassilana & RA Arkowitz. *Cell Microbiol.* 2019 21: e12963
- 5) H Labbaoui, S Bogliolo, V Ghugtyal, NV Solis, SG Filler, RA Arkowitz & M Bassilana. *Plos Pathog.* 2017 13: e1006205

