PhD position

Dissection of the molecular crosstalk between bacteria and fungi

The mission of the Institute of Microbiology at the ETH Zürich is to advance innovative research and teaching in microbiology and immunology. Microbial interactions are the unifying scheme and currently cover microbial communities and microbe interactions with eukaryotic hosts. The collaborative environment of the Institute of Microbiology has created a unique scientific fertilization ground unsurpassed in breadth, top-level expertise and visibility in the field of Microbiology and Immunology.

Group: Group of Dr. Markus Künzler

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Description: Multicellular fungi are exposed to numerous antagonists including competitors, parasites and predators. Compared to other multicellular eukaryotes, our knowledge about the defense mechanisms of multicellular fungi against their antagonists is scarce. In our research group, we use reductionistic and experimental approaches to identify and characterize these mechanisms at molecular level. Special emphasis is put on fungal defense mechanisms against fungivorous nematodes and bacterial competitors. Preliminary results of confrontation experiments of the model mushroom Coprinopsis cinerea with model bacteria suggest that this fungus is able to sense the presence of bacteria via molecules that are secreted by the bacteria. As a response to these signal molecules, the fungus appears to be able to specifically induce genes coding for antibacterial effector molecules. The goals of this project are (1) to identify the bacterial signal molecules and (2) to further characterize the fungal response to these molecules.

Comments: The project will be conducted in collaboration with the laboratories of Prof. Jörn Piel (Institute of Microbiology, ETH Zürich) and Prof. Andrew De Mello (Institute of Chemical and Bioengineering, ETH Zürich).

Time frame: As agreed (starting at latest February 2017)