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Postdoctoral and PhD position – Pathogen-phagocyte inter-kingdom signaling

Project description

The environmental bacterium *Legionella pneumophila* causes a severe pneumonia termed Legionnaires' disease in humans and forms a unique replication-permissive vacuole in free-living amoebae and macrophages (**Fig. 1**). Pathogen-host cell interactions are governed by more than 300 different secreted bacterial "effector" proteins as well as by a small signaling molecule called LAI-1 (*Legionella* autoinducer-1). LAI-1 promotes inter-bacterial communication (quorum sensing) as well as prokaryote-eukaryote trans-kingdom signaling.

The project funded by the Swiss National Science Foundation aims at elucidating *Legionella*-phagocyte trans-kingdom signaling through LAI-1. To study the production, secretion, delivery, cellular targets and mode of action of LAI-1, the successful applicants will use a broad range of techniques in the disciplines Microbiology (BSL-2 pathogens, infection analysis, bacterial genetics), Cell Biology (confocal fluorescence microscopy, flow cytometry, RNA interference) and Biochemistry (FPLC/HPLC, protein-ligand interactions, purification of *Legionella* vacuoles).

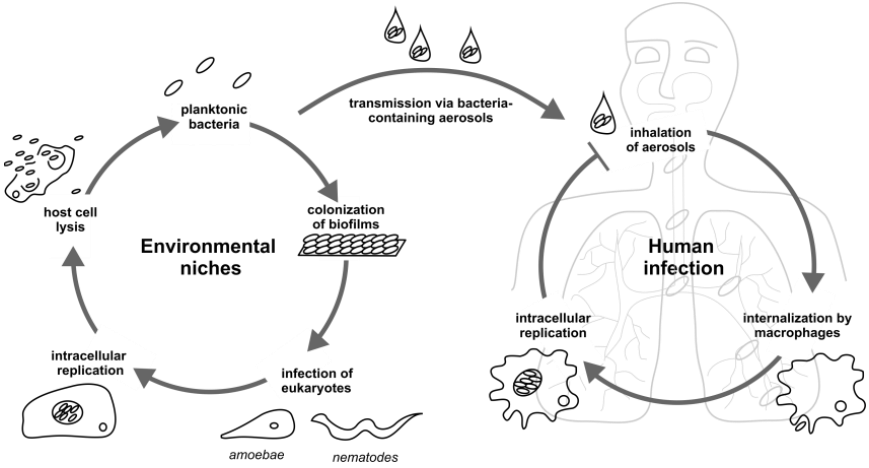

Fig. 1. *Legionella* species: environmental niches and human infection. In the environment, *Legionella* spp. persist as planktonic cells, colonize biofilms and replicate in protozoa within a unique "*Legionella*-containing vacuole" (LCV). Motile and virulent bacteria are released from these niches, and upon inhalation of *Legionella*-laden aerosols, the bacteria grow within LCVs in lung macrophages, thus causing Legionnaires' pneumonia.

Your profile

Highly motivated individuals with an interest and background in Microbiology, Cell Biology, Biochemistry or a related area are invited to apply. The positions are available at the Institute of Medical Microbiology, University of Zürich main campus, as of July 1st 2021, or upon mutual agreement. Please send your CV with a motivation letter and the contact details of 2 references as a single PDF file to Prof. Dr. Hubert Hilbi (hilbi@imm.uzh.ch). For further information please contact Hubert Hilbi and visit our website (https://www.imm.uzh.ch/de/research/experimental/Hilbi.html).