



Internship/Bachelor or Master thesis in Microbiology

Diagnostics department, Institute of Medical Microbiology, UZH

The **diagnostics department** of the **Institute of Medical Microbiology (IMM) at the University of Zurich** is looking for a motivated student for a project in the research field of **bacteriophage therapy**.

We perform **translational research** to develop new methods to detect or to treat bacterial infections to improve patient care and for prevention of spreading antimicrobial resistance. Bacteriophages (phages) can be used to treat bacterial infections. Phages are viruses that infect very specifically bacteria, which can cause a lytic cycle in bacteria. A therapy with specific phages can reduce the bacterial load or ideally eliminate the bacterial infection. The IMM likes to establish a standardized pipeline for phage susceptibility testing. In this context, we offer and supervise **projects of different duration and scope**.

We use state-of-the-art methods in our diagnostic lab (MALDI-ToF-based rapid identification of bacteria, automated antimicrobial susceptibility testing, genome sequencing, etc.) and work closely with the research groups of the IMM, with which we have diverse ongoing collaborations. With our clinical partners we have access to clinical samples and patient data, if needed.

Goals: The major goal is to **establish a standardized pipeline for phage susceptibility testing**. Such a pipeline should consist of around 10 phages that are tested continuously against selected bacterial pathogens from routine diagnostic. The tests should include susceptibility testing (antibiogram) of the pathogen, plaque and growth kinetic assays with the phages as well as synergy testing between antibiotics and phages. This project can be divided into smaller sub-projects, e.g. the development of standard laboratory work protocols, the characterization of existing or external phages or the identification and characterization of new phages from sewage plants.

Methods: Phages will be isolated from sewage water using selected bacterial hosts. Single phage plaques are further isolated from top-agar plates with bacterial lawn, multiplied and finally characterized by plaque and growth kinetic assays. The antibiotic susceptibility profile ("resistance testing") of the bacteria is determined by Kirby-Bauer disc diffusion method. A potential synergy between antibiotics and phages is tested by kill kinetic assays.

What we offer:

You will have the opportunity to conduct research in a professional environment with state-of-the-art equipment (MALDI-ToF MS, sequencing systems, etc.). You will have close contact to experienced medical microbiologists and technicians of the diagnostic lab. Payment is not provided.

Your profile

We are searching for a motivated student in the field of biology, microbiology, biomedicine, health sciences, or a related field. Preferably, you have some wet lab experience. However, engaged bachelor students are welcome to apply. Your personal skills should include excellent organizational skills, ability to work independently with high level of self-motivation and interest in medical microbiology and applied research questions.

Are you interested?

To apply, please send us your application to Dr. Hendrik Koliwer (hkoliwer@imm.uzh.ch).