

| le savoir vivant |

Master of Science (MSc) in Molecular Life Sciences
specialisation in

Microbiology



Unil

UNIL | Université de Lausanne

Faculté de biologie
et de médecine

www.unil.ch/ecoledebiologie/en

OBJECTIVES/ASSETS

Microbiology is a fascinating area of science, with many different aspects enabling excellent career prospects. Microbial sciences are very well represented in the Lausanne academic and hospital environment, including a National Centre of Competence in Research (NCCR) about microbiomes.

The objectives of the Master of Science (MSc) in Molecular Life Sciences (MLS) specialisation Microbiology are:

- To study through in-depth class work a wide range of advanced topics in microbial sciences, covering genetics and genomics, synthetic biology, plant and environmental microbiology, cellular microbiology, virology, microbial pathogenesis, bacteriology, fungal biology, yeast models, epidemiology and (clinical) diagnostics including drug resistance.
- To offer excellent opportunities for personal research topics in microbial sciences, notably in the fields mentioned above.
- To prepare you for careers in areas related to microbial sciences, such as diagnostics, biotechnology, academic or industry research, FAMH clinical microbiology, or environmental management and administration.
- To offer a stimulating environment to prepare you for fundamental and applied research.

CONTENT

The MLS specialisation in Microbiology shares two common activities with the other MLS students. This includes a unique experimental class during two semesters on (bacterial) genome sequencing, covering the latest sequencing technologies and hands-on bioinformatics for genome annotation, comparison and interpretation. It also includes a shared class on writing of a scientific review and research proposal.

The programme further offers a range of optional classes in concise block format (half-days) during two semesters, which cover specific major areas in modern microbiology research. Classes consist of literature reading and presentations, practicals, web-based study and paper discussions. A personalised curriculum can be assembled using additional optional classes from the other Master programmes, under the condition that a certain number of credits are chosen among microbiology classes. Class topics include: Bacterial Genomes and Genome Evolution, Microbiomes, Synthetic Biology, Immunology and Infectious Diseases, Advanced Microbial Genetics, Virus-Host Interactions, Fungal Virulence and Pathogenicity, Plant Interactions with Microbes and Insects, Anti-Infective Agents, Bacterial Virulence and Pathogenesis, Epidemiology of Human pathogens and Microbial Ecology, Chromosome Organisation and Dynamics, Microbes as Tools in Experimental Biology, Viral Pathogenesis and Emerging Viruses, Mechanisms and Principles of Yeast Cell Biology, Systems Microbiology.

Finally, the specialisation requires a First-step research project, which can be carried out in any area of the Master programme, and a Master project that must be conducted on an approved microbiology topic.

GENERAL INFORMATION

The Master of Science (MSc) in Molecular Life Sciences (MLS) amounts to 120 ECTS and is taught entirely in English. MLS students may obtain the Master without specialisation, or with a specialisation in Microbiology or Bioinformatics.

ADMISSION REQUIREMENTS

Candidates for the Master MLS must hold a Bachelor of Science (BSc) in Biology or in a field considered to be equivalent awarded by a Swiss university. Another degree awarded by a foreign university may be judged equivalent and give access to the Master's degree programme, with or without further conditions.

CONDITIONS FOR OBTAINING THE QUALIFICATIONS OF MASTER'S DEGREE WITH SPECIALISATION

www.unil.ch/eb-mls > Study programme > Regulations and directives

To obtain the Microbiology specialisation, you must choose and pass your Master research project within the field of the specialisation.

If you want to obtain the Master's degree with a specialisation, you must indicate your choice to the School of Biology when enrolling for your personal Master research project.

Director of the programme

Prof. Richard Benton

Responsible for the specialisation

Prof. Yolanda Schaerli

Further information

www.unil.ch/eb-mls > Specialisations > Microbiology