

## Master thesis project



Antimicrobial resistance (AMR) is a critical global health issue, significantly impacting the management and control of Sexually Transmitted Infections (STIs). Studies have shown that antimicrobial-resistant *Neisseria (N.) gonorrhoeae* strains are becoming increasingly common, limiting treatment options and leading to therapeutic failures, especially with emerging resistance to key antibiotics like azithromycin and ceftriaxone. The evolution of *N. gonorrhoeae* into a superbug with resistance to recommended antimicrobials is a major global public health concern, necessitating concerted efforts in surveillance, research, and the development of novel therapeutic strategies to combat the challenges posed by resistant strains.

This Master Thesis aims at evaluating the antimicrobial susceptibility of *N. gonorrhoeae* strains obtained from clinical samples in the Zürich metropolitan area. **We are looking for a student interested in combining classic microbiology methods with state-of-the-art molecular techniques.** For this, we designed a combined approach of culture testing, mass spectrometry and whole-genome sequencing (WGS). Depending on the interest of the applicant, a selection of the following skills will be trained:

- Processing of clinical samples in a Bio-Safety Laboratory level 2 (BSL-2)
- Isolating and characterizing *N. gonorrhoeae* on plate cultures
- Performing antibiotic susceptibility testing to determine on-scale minimal inhibitory concentrations (MICs)
- Establishing novel peptide barcoding analysis by MALDI-TOF mass spectrometry
- Analysing *N. gonorrhoeae* isolates using whole-genome sequencing with Oxford Nanopore Technologies (ONT)

This master thesis is offered by Prof. Dr. Nicole Borel and Dr. Enrique Rayo at the Institute of Veterinary Pathology, Vetsuisse Faculty, University of Zurich (campus Tierspital). If interested, please contact via email ([nicole.borel@uzh.ch](mailto:nicole.borel@uzh.ch)).

For more information, please visit <https://www.vetpathology.uzh.ch/de/forschung.html>

