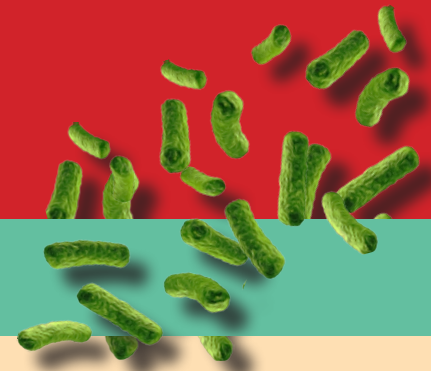


# MASTER THESIS POSITION

## Microbial Evolutionary Ecology

### Cooperation and virulence in a human pathogen

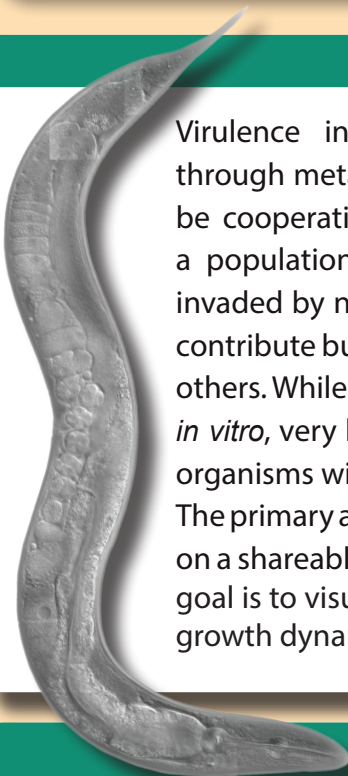


We are looking for a motivated Master student who will conduct a research project on the role of social interactions in bacterial infections. You will learn a variety of microbial techniques, how to work with a Biosafety Level 2 pathogen, and how to handle the widely used host organism *Caenorhabditis elegans*.

### Research Project

Virulence in bacterial infections is typically mediated through metabolites secreted into the host, where they can be cooperatively shared among bacteria. It is known that a population of metabolite producers can potentially be invaded by non-producing “cheating” cells, which no longer contribute but still benefit from the metabolites produced by others. While this phenomenon has been extensively studied *in vitro*, very little is known about what happens inside host organisms with regards to social cheating.

The primary aim of this project is to use fluorescence microscopy to test whether cheating based on a shareable metabolite can take place within the host nematode *C. elegans*. Specifically, the goal is to visualize and quantify bacteria *in vivo* during an infection, and to elucidate bacterial growth dynamics in multi-strain infections.



### Who are we?

We are a research group at UZH working on the interface between microbiology and evolutionary biology, and are primarily interested in social interactions in bacteria. Our working horse is the human pathogen *Pseudomonas aeruginosa*, which is notorious for infecting hospital patients and people with immune diseases. We are interested in how bacteria cooperate with each other, how they cause infections, and how these traits evolve. To answer our questions, we apply a mixture of methods from microbiology, molecular biology and evolutionary biology.

LOCATION: The Kümmerli lab is situated at Irchel Campus, on the L floor of building Y13.



### Contact Info

If you are interested in doing your Master thesis with us, please contact:

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### Link

Visit our group website:

<http://www.tinyurl.com/Kuemmerli>

