

Internship or Thesis for a Master's Student

High-throughput screening of bacterial motility in the context of human health

The Grognot Lab (RWTH Aachen, Germany) is offering a position for an internship at M.Sc. level with flexible dates within the January-September 2026 period. The project is centred on advancing and using a method to screen bacterial swimming motility in a high-throughput fashion.

The Lab.

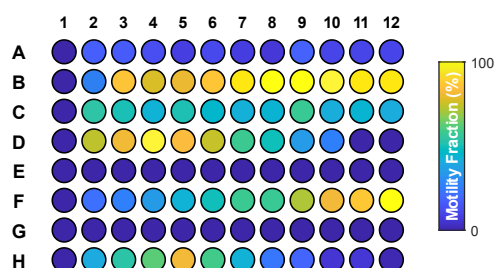
We are an interdisciplinary lab at the University Hospital of RWTH in beautiful [Aachen](#). Our research focuses on the biophysics of host-microbe interactions, using and extending quantitative methods to assess how microbes navigate the host environment.

[More information here.](#)

The Project.

The ability to swim can improve bacteria's performances in spreading, finding food, surviving, finding local niches, etc... In our gut, the rise in expression of flagella has been linked to inflammatory conditions (e.g. in IBD) and/or improved infectivity of enteric pathogens. Therefore, understanding which conditions trigger or tame bacterial motility seem of foremost interest to human health and more widely to bacterial ecology in any system.

Yet we are sorely lacking an in-vitro tool to directly screen the motility of bacteria under a wide range of conditions. We therefore aim to:



(1) develop an easy-to-use high-throughput method to 2D-track any bacterial population under various chemical conditions;

(2) propose a first screening of bacterial motility effectors, to understand what makes bacteria start to (or continue to) swim during gut inflammation and/or infection.

We already have preliminary results and are seeking somebody to bring this project to a full bloom. This mainly entails improving the first version of the assay, providing a rigorous characterization of its possibilities and limits (notably by comparing performances with a low-sample-throughput but high-precision 3D-tracking technique present in the lab), and proposing its application to a variety of bacterial species and health-related motility triggers after relevant bibliography search. You will be under the direct supervision of the PhD student that developed the first version of the assay.

Your Profile.

We are seeking a student with a multidisciplinary profile, combining experience or knowledge in at least 2 of the following:

- Biological science and microbiology
- Active soft matter
- Coding (MATLAB, but other languages are also seen as an asset)
- Microscopy techniques and/or Optics
- Quantitative methods development and assessment

We are open to a diversity of profile, from biomedical engineering students to microbiologists, granted that you have a strong interest in quantitative analysis of biological phenomena. Interest in continuing the project as a PhD project in our lab is a plus, albeit not a requirement. A good knowledge of English is required, equivalent to at least a C1 level. Applicants must have citizenship from a European country or valid legal immigration status in Germany.

The Application Documents and Timeline.

We will receive applications until the position is filled: do not wait to send yours!

Please submit to Pr. Marianne Grognot (mgrognot@ukaachen.de) the following:

- A detailed CV
- Semester transcripts
- A succinct letter of motivation (which can be the body of the email), including a clear explanation of your match to the project.

You will be contacted within 2 weeks of submitting your application if we wish to go forward and offer an online interview with the whole team. You are welcome to contact us informally with any question relating to this offer.