

## Doctoral candidate position

# Resistance and tolerance in persistent infections

Freie Universität Berlin, Germany

### Application deadline: 8th November 2021

The Evolution and Ecology of Insect Defences group at the Institute of Biology, Freie Universität (FU) Berlin, Germany, would like to invite applications for a German Research Foundation (DFG) funded doctoral candidate position (TV-L E13, 65%) for the research project: “**Resistance and tolerance in persistent infections**”. The position is fixed term and available for 3 years and it will start as soon as possible.

**Project background** – Our research lies in the field of eco-evo-immunology, focusing on host resistance and tolerance to infection (<https://armitagelab.com/>). A host can counteract an infection by directly reducing its pathogen load, i.e., resistance, or by reducing the harm that the infection does to its fitness, i.e., tolerance (reviewed in Kutzer & Armitage, doi: 10.1016/j.zool.2016.05.011). Given that resistance can be costly and involve autoimmune damage, a more resistant host is not always the fittest. Tolerance on the other hand, describes how well hosts are able to deal with the fitness costs of a given pathogen load. Resistance and tolerance are predicted to give contrasting perspectives on host-pathogen evolution and infectious diseases, therefore it is important to understand infection in the light of these two concepts. In our group we focus on resistance and tolerance to bacterial infections in insects. Such infections are dynamic and, similarly to the case in humans, can persist for up to a lifetime (Acuña Hidalgo et al, doi: 10.1101/2021.03.29.437521). The project will build upon our previous work and involve studying the interaction between the host (*Drosophila melanogaster*) and bacterial pathogens over the course of the infection process. The aims are to understand more about bacterial persistence, the host and pathogen responses during persistent infections, and resistance and tolerance along the trajectory of the infection process. Approaches will include e.g., genetic modification of bacteria, bacterial infection of flies, microscopy, proteomics of host responses to infection and host fitness analyses.

Berlin has a dynamic research environment, and the Freie Universität Berlin has a number of other researchers with an interest in insect infection biology, and with whom we intensively interact. Furthermore, there is the possibility to join a graduate programme in biodiversity, evolution and ecology. Please contact Sophie Armitage ([sophie.armitage@fu-berlin.de](mailto:sophie.armitage@fu-berlin.de)) with any questions or for further information about the project.

**Requirements** – A completed University Master’s degree in biology, microbiology or similar.

### Desirable

- We would very much appreciate applications from enthusiastic and highly motivated students
- with a background/strong interest in evolutionary ecology and infection biology
- Practical experience in molecular biology, microbiology, and microscopy
- Knowledge/practical experience of insect physiology (particularly *Drosophila melanogaster*)
- Good knowledge of statistics and experimental design
- Fluency in written and spoken English
- Good teamwork and communication skills
- Ability to work independently
- Experience: Completed projects/internships on topics relevant to the research area would be advantageous

**How to apply** – Applications should be written in English and include the following documents, ideally combined into one PDF file:

1. A one-page (maximum) letter of motivation with information on previous research experience and future goals.
2. Your CV, with publications listed if applicable. Please include the names of 2-3 potential contacts as references.
3. Abstract/brief summary of your MSc thesis.
4. Copies of your BSc and MSc certificates. Please indicate your expected end-date if you have not yet finished your MSc.

Please send the application as one single PDF document, to [sophie.armitage@fu-berlin.de](mailto:sophie.armitage@fu-berlin.de), with the following identifier in the subject field: “**PhD\_Res,Tol,Pers\_SA**”.

The deadline for applications is the **8th November 2021**. Interviews will take place as soon as possible after this date. We are an international group, and the working language is English.