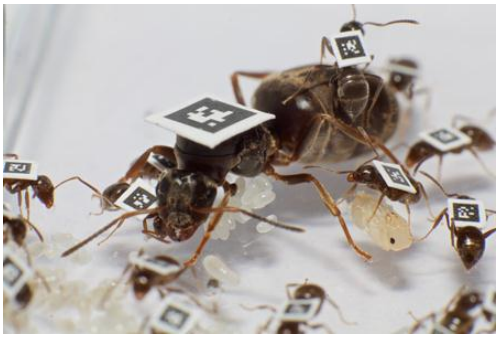
Post-doc position in microbiology
at the University of Fribourg (Switzerland)

A 3-year post-doc position is available in the research group of Professor Nathalie Stroeymeyt in the Department of Biology, University of Fribourg, to study the **role of caste-specific microbiota in the disease defences of ant colonies**.

Background



Group living offers favourable conditions for the spread of infectious diseases, because high population densities and frequent social contacts facilitate pathogen transmission. To mitigate that risk, social animals have evolved a variety of defence mechanisms to prevent the entry and propagation of pathogens within the group, ranging from a raised investment in personal immunity to highly coordinated collective sanitary actions ('social immunity'). Recent studies have shown that social groups can also adopt organizational features, such as the subdivision into well-separated subgroups, which reduce epidemic risk through transmission bottleneck effects. However, the importance of organizational immunity features in disease risk management by real animal groups is still poorly understood. Our research adopts an empirical approach based on the experimental manipulations of garden ant colonies (*Lasius niger*) to (i) quantify the effect of social organization on disease transmission and test key predictions from network epidemiology, and (ii) evaluate the relative of importance of personal immunity, collective sanitary actions and organizational features under different environmental conditions and at different stages of development (for more detail see https://stroeymeyt-lab.ch/research).

The project

The goal of this project will be to study the role of caste-specific microbiota in the disease defences of ant colonies. The candidate will use DNA barcoding, gene expression analysis, physiological assays, microbiota manipulations and behavioural observations to (i) characterise the microbiota of ant workers depending on their caste, and (ii) test whether ants that perform risky tasks (e.g. foragers) have a microbiota which decreases their susceptibility to disease compared to ants that perform safe tasks (e.g. nurses), thus reducing the risk of epidemics at the colony-level. The candidate will also be involved in collaborations with other team members to characterise the immune response of ant workers to diverse fungal and bacterial pathogens.

Desired profile

We are looking for candidates with a strong background in molecular biology and/or microbiology, solid experience in lab work and analysis of sequencing data (e.g. DNA barcoding, quantification of gene expression), and a willingness to perform experiments involving live ants. A prior knowledge of insect immunity would be a plus. Candidates must be creative, motivated and passionate about science, have excellent oral and written communication skills, and be at ease working both independently and as part of a team. A PhD will be required prior to taking up the position.

The position

The position will be part of an overall project team consisting of two PhD students and two post-doctoral researchers (https://stroeymeyt-lab.ch/open-positions/) and will be fully funded for three years by an ERC Starting Grant. The salary will be set according to the guidelines of the University of Fribourg (c. 75'000 CHF per year).

Location

The Department of Biology at the University of Fribourg is a highly dynamic, international and interdisciplinary environment, spanning a wide range of research in evolution and ecology, behaviour, population genomics, and bioinformatics, developmental genetics, neurobiology, biochemistry and proteomics, across 27 groups (https://www3.unifr.ch/bio/en/).

Expected starting date

The starting date is flexible; the earliest possible start will be May 1st, 2019.

How to apply

Please send your application by email to Nathalie.Stroeymeyt@gmail.com. Your application should consist of a single merged pdf file including: (i) a full CV and publication list, (ii) a 1-2 page research statement describing your main research interests and your relevant skillsets, how they developed, and how they relate to the proposed research project, (iii) the names and contact details of at least two referees, and (iv) copies of (or links to) your publications and/or your PhD thesis (if available). Evaluation of candidates will begin on **February 15th, 2019**, and continue until the position is filled.

References

Stroeymeyt *et al.* (2014). Organisational immunity in social insects. ***Current Opinion in Insect Science*** 5, 1.
Stroeymeyt *et al.* (2018). Social network plasticity decreases disease transmission in a eusocial insect. ***Science*** 362, 941.