

# 2 PHD POSITIONS IN INTEGRATIVE BIOLOGY

**LEBOEUF LAB**



**UNIVERSITY OF  
FRIBOURG, CH**

*How do you build a social circulatory system?*

Our lab takes an integrative approach to understanding how socially exchanged fluids evolve and how they can be co-opted by evolution to influence physiology and behavior.

We use social insects as a model system because many (but not all!) social insects engage in the mouth-to-mouth fluid exchange behavior, trophallaxis. In species that do engage in this behavior, every individual in the colony is connected through this network of fluid exchange. The exchanged fluid is rich with proteins, hormones, RNA and small molecules (LeBoeuf et al. 2016 *eLife*). Some of these components, when fed to larvae by trophallaxis, can influence development!

This provides a means for how some social insect communities can collectively decide on the colony's developmental progression - by sending cues and signals over the social circulatory system.

## **PhD position: Evolution of social fluids**

Involving ample travel and international collaborations, this project will combine fieldwork, proteomics and bioinformatic, orthology and phylogenetic methods to understand how trophallaxis behavior, its concomitant social fluid, and the proteins found within it have evolved their roles in the colony's social circulatory system.

### **You**

The ideal candidate is collaborative, hard-working and passionate about evolution and behavior, with experience in coding/bioinformatics. A master's degree (or equivalent) is required prior to taking up the position.

### **Lab values**

Creativity, interdisciplinarity, collaboration, open source, open access, inclusiveness, team mentality.

### **Positions**

Start dates are flexible, maximum 4 years (3.5 fully-funded). These positions are funded by the Swiss National Science Foundation (salary matches guidelines, 47K CHF/yr).

### **Submission**

Applications (in English) should include a cover letter (on your background and motivation), CV, and the names and contact details of two references. Applications should be sent as a single pdf to [adrialeboeuf AT gmail DOT com](mailto:adrialeboeuf@gmail.com).

**DEADLINE: February 15th, 2019.** Applications will be reviewed until position is filled.

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## **PhD position: Collective control of development in social insects**

This project will combine fluorescence microscopy, quantitative video tracking of animal behavior, developmental biology, social networks, and machine learning to better understand how social insects crowdsource control of the colony's development using the social circulatory system.

### **You**

The ideal candidate is collaborative, hard-working and passionate about how social/biological systems can self-regulate. Ideally you have experience coding and have some maker/DIY skills. Image processing (e.g. opencv) and/or machine learning experience are a plus. A master's degree (or equivalent) is required prior to taking up the position.