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[http://www.sfb1047.uni-wuerzburg.de/en/projects/project\\_a1\\_foerster/subproject1/](http://www.sfb1047.uni-wuerzburg.de/en/projects/project_a1_foerster/subproject1/)

Master Thesis Topic:

## “The circadian clock of flies species living at different altitudes”

### Background

In order to keep synchronized with the external world most living organisms have evolved endogenous clocks, which are necessary not only to track but also to anticipate periodical changes in environmental conditions. Among these changes are certainly those in day length throughout the year that are experienced by animals leaving at moderately high latitudes. From our previous and current work we know already that circadian endogenous clocks (with a 24 hours rhythms) play a major role in this kind of adaptations. On the other hand, animals that leave at low latitude like the equator won't experience any day length changes throughout the year, because the photoperiod is always close to 12 hours per day). Nevertheless, their behavioral activity needs to be plastic: They will still have to adjust to temperature changes, e.g between day and night or summer and winter, which will be harsher for animals that leave at top of a mountain than for animals that leave at lower altitudes.

### Aim of the work

We are now interested in understanding the role of the circadian clock also in this kind of adaptation and we want to use different wild-type strains of the fly *Zaprionus* which were collected at different altitudes on Mount Kilimanjaro, Tanzania.



The immediate questions we would like to answer are:

- 1) How do strains collected at different altitudes respond to temperature changes in the lab?
- 2) Do we observe obvious differences in the clock neuronal network when we compare these wild-type strains?

### Methods

The work will mostly rely on recordings and analysis of locomotor activity data of flies kept under different environmental conditions. At the same time it will be essential to investigate the clock neuronal network properties of the flies, especially of those that show interesting behaviors, and this will be done via immunochemistry and confocal microscopy.

[If you are interested in working on this project, contact us! \(email above\)](#)