Institute: Institute of Environmental Sciences

**Topic :** Sexual differences in ontogenentic traits (growth rate and duration) and their effects on other life history traits in decorated cricket, *Gryllodes sigillatus*

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**Background information**

Sexual dimorphism is widespread in nature and is thought to be present in the evolutionary history from the very beginning of sexual reproduction. In spite of its apparent ubiquity and phylogenetic universality, we still know very little about genetic correlations between life history traits within females and males as well as genetic correlations between sexes.

Life history traits: growth rate, development time, body size, fecundity, lifespan affect values of the two most important fitness traits: survival and reproduction. In turn, the two shape Darwinian fitness. Sexes differ in Darwinian fitness and thus in the remaining life history traits, possibly as an outcome of different selection forces acting on each sex: selection on fertility in case of females and sexual selection in case of males.

**The main question to be addressed in the project**

An influence of ontogenetic traits on the level of sexual dimorphism in the other traits and immunological response (as a trait connected to an individual condition). Genetic correlation between studied traits and between females and males in shared traits.

**Information on the methods/description of work**

Study species, *Gryllodes sigillatus*, is hemimetabolous insect species with a well-known biology. Reproductive effort of males will be estimated by measuring the amount of time spent calling and size of nuptial gift. All models (life-history, biochemical and behavioral traits) will be subsequently analyzed within the animal model framework.

**Additional information (e.g Special requirements from the student)**

Knowledge on animal biochemistry and physiology as well as on insect biology.

**Place/name of potential foreign collaborator** – optional

**References (3)**

Drayton, J.M. *et al.* (2012) Sexual signaling and immune function in the black field cricket *Teleogryllus commodus*. *PLoS One* 7, e39631

Fairbairn, J.P. *et al.* (2007) *Sex, size, and gender roles evolutionary studies of sexual size dimorphism*, Oxford University Press

Gershman, S.N. and Sakaluk, S.K. (2010) Mate quality and novelty influence post-copulatory female choice in decorated crickets, *Gryllodes sigillatus*. *Ethology* 116, 1113–1117