

Supervisor :

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Project title :

Are parasite-induced behavioural alterations and host castration related or unrelated phenomena? A case study in amphipods infected with acanthocephalans

Keywords :

fecundity, *Gammarus pulex*, host manipulation, phenotypic engineering

Summary (150 words at the maximum):

Several parasites with complex life cycle are known to induce various phenotypic alterations in their intermediate hosts that appear to increase trophic transmission to final hosts. In addition, such parasites often induce total or partial castration in their intermediate hosts. So far, however, the two phenomena have been studied independently of each other. Here, we propose to investigate to what extent parasite-induced behavioural alterations and host castration are related or unrelated phenomena, using different host-parasite associations with contrasted behavioural alterations and different intensities of castration. Both naturally-infected and experimentally-infected individuals will be used. The project will consist in first testing for a relationship between the intensity of manipulation and that of parasitic castration in different host-parasite associations. In a second step, we will rely on phenotypic engineering to assess to what extent the neurobiological mechanisms underlying host-manipulation have an effect on host castration, and vice-versa.

Relevant literature (up to two references):

BOLLACHE, L., RIGAUD, T. & CEZILLY, F. (2002). Effects of two acanthocephalan parasites on the fecundity and pairing status of female *Gammarus pulex*. *Journal of Invertebrate Pathology*, 79: 102-110.

PERROT-MINNOT, M.-J. & CEZILLY, F. (2013). Investigating candidate neuromodulatory systems underlying parasitic manipulation: concepts, limitations and prospects. *Journal of Experimental Biology*, 216 (SI): 134-141.

Techniques involved in the project:

Field collection of samples, experimental infestations, dissection, morphometrics, behavioural assays

Desired skills and abilities:

Good command of English language (written and spoken), ability to work meticulously, interest in evolutionary parasitology and behavioural ecology