MSc thesis/intership

# Involvement of *doublesex* in regulating mating behaviour in Nasonia vitripennis?

**Group:** Laboratory of Entomology
**Thesis:** 24-36 credits
**Supervisor:** Eveline Verhulst
**Starting date:** from now on, flexible

**Description:** The extreme sexual dimorphisms sometimes observed in insects can have an enormous impact on the life-history one of the sexes. For example, in *Nasonia vitripennis*, males have small wings and cannot fly, while males of the closely related species *N. giraulti* have large wings and do fly. In both species, females have long wings and can fly. This species- and sex-specific difference is regulated by *doublesex*, which is the final conserved gene in all insects sex determination cascades. In addition, in a few insects *doublesex* has been shown to be involved in sex specific behaviour in conjunction with *fruitless*. *Doublesex* is a transcription factor and is spliced in sex-specific transcripts leading to male- or female-specific proteins. Only in a few insects, the regulation of *doublesex* on downstream target genes is studied, and only a handful of downstream targets are known. Many sex-specific traits are also species-specific, especially mating behaviour, indicating that *doublesex* is not only a central factor in regulating many life history traits, but is also key in speciation events.

**Figure 1 *Nasonia vitripennis* male and female copulating.**

Thus far, we have only studied the effect of *doublesex* RNA intereference on phenotypic characteristics in *Nasonia vitripennis*, but nothing is known about the effect of *doublesex* knockdown on mating behaviour.

**Used skills:** The experimental work will include breeding and observing parasitic wasps; microinjections; RNA interference; behavioural assays.

**Requirements:** Fundamental and Applied Biology of Insects (ENT-30806) and either Molecular and Evolutionary Ecology (GEN-20306) or Molecular Aspects of Biointeractions (PHP-30806).

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