



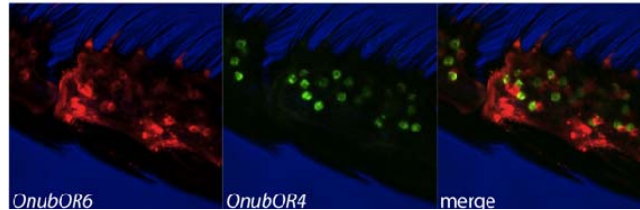
Master project in Versailles, France - 6 months, paid

Characterization of a candidate gene for pheromone differentiation in a moth

Moths possess a unique sexual communication system: females attract conspecific males by using species-specific sex pheromones. Due to this fine-tuning, the development of novel pheromone systems is an evolutionary mystery. This project will focus on the model insect species to understand the evolution of sexual communication: the European Corn Borer, *Ostrinia nubilalis* which consists of two sex pheromone strains. The gene underlying pheromone variation in females was identified (Lassance et al. 2010). However, the gene underlying preference in the males is not identified yet. We conducted many genetic analyses and have identified a specific locus at the Z-chromosome, which contains a highly interesting candidate gene that is involved in neurogenesis in other species. The aim of this project is to characterize this candidate gene, using *in situ* hybridizations and CRISPR/Cas9.

Technical skills/methods to learn:

- 1) *in situ* hybridization to localize the gene in the brain and/or the antennae, and to associate the gene with the olfactory receptors (ORs) that are involved in sex pheromone perception.
- 2) Functional characterization of the candidate gene, using targeted transgenesis with the CRISPR/Cas9 complex.



Antennal segment with double *in situ* hybridization of two olfactory receptor genes (OnubOR6 and 4)

We are looking for a highly motivated student with BSc degree in biology and experience in molecular biology. Experience on insects' manipulation and physiology are a plus. This project is a collaboration between the University of Amsterdam (Institute for Biodiversity and Evolutionary Dynamics, IBED), Netherlands and the Institute for Agricultural Research (INRA) in Versailles, France. Therefore, communication skills in English (oral and written) are necessary and knowledge of French is a plus. There will be a monthly salary of 550 euros, for every complete month worked, for 6 months maximum. The salary is paid by the Institute of Ecology and Environmental Sciences (iEES) - Paris, France, with the obligation for the student to administratively subscribe to the iEES (no subscription fees).

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