

Conférence publique – Lundi 9 octobre 2017 – 14h00
Salle E 206 - UFR LSHS
UNIVERSITE PARIS 13 Sorbonne Paris Cité

How insects switch jobs? Behavioral polymorphisms and gene expression

Christophe Lucas

Institut de Recherche sur la Biologie de l'Insecte, CNRS, Université de Tours, France
christophe.lucas@univ-tours.fr

Complex behaviors emerged from interactions between genes and environment. Understanding how genes can modify or be modified by behaviors is of primary importance to study species adaptation to their habitats. In this talk I will review the link between a candidate gene expression and three complex behaviors: foraging, defense and dispersion. Several biological models were studied from solitary (flies) to eusocial insects (ants) through gregarious species (locusts).

Here I will present our investigation on the molecular underpinnings of caste specialization and plasticity in foraging and defense by studying the *foraging* (*for*) gene. The behavioral effects of *for* which encodes a cGMP dependent protein kinase (PKG) were first described in *Drosophila melanogaster*, where *for* allelic variation affects foraging behaviors. Our results show that the *foraging* gene controls defense and foraging activities and is negatively correlated to dispersion and aggressive behaviors in ants. It confirmed the evolutionary conservation of the *foraging* gene and its differential expressions according to castes in social insects or morphs like in locusts. It also opens up opportunities for the study of the colonization and foundation processes of insect pests. Together these results suggest that the *foraging* gene is a major player in regulating behavior responses to environmental changes.