

TELL ME WHAT YOU SMELL AND YOUR PROTEIN I WILL GUESS

C. Quero¹, P. Acín¹, M. Carrascal², J. Abián² and A. Guerrero¹

¹Department of Biological Chemistry and Molecular Modeling, IQAC-CSIC, Jordi Girona 18-26, 08034-Barcelona, Spain;

²CSIC/UAB Proteomics Laboratory, Department of Experimental Pathology, IIBB-CSIC, IDIBAPS. Edifici M-UAB 08193 Bellaterra, Barcelona, Spain

Pheromone detection plays an important role in Lepidoptera reproduction success. Most species with night habits possess developed antennae able to detect minimal amounts of odorants. On the other hand, diurnal species have specialized in using visual and tactile cues besides chemical perception. In any case odorants detection is mediated by proteins localized in the antennal sensillar lymph. Among these mediators, pheromone binding proteins (PBPs) are involved in the interaction with pheromone molecules, including their transport through the aqueous lumen to the dendritic olfactory receptors.

In this communication we present a proteomic study of antennal extracts from five species with different daylight habits: Three moth species, *Spodoptera littoralis*, *Spodoptera exigua* and *Sesamia nonagrioides*, important pests in Spain with night habits, the butterfly *Pieris brassicae* and the day flying moth *Paysandisia archon*. The study of the PBPs region (Mr 10-20 KDa, pI 4-7) of the extracts was carried out using 2-DE followed by mass spectrometry (MALDI-TOF MS, nESI-ITMS/MS and LC-MS/MS)

The analyses have shown a very different protein expression of this particular region depending on the daylight habits. In the three nocturnal species, males use the pheromone released by females for mating, different proteins related to pheromone transport have been identified. These proteins are preferentially expressed in males than in females. However, in the two diurnal species, that use visual cues for female location, there is almost a complete absence of proteins in this specific region. None of the identified proteins corresponded to a PBP and only two of them had a function related with olfaction.