



## Brief sensory experience differentially affects the volume of olfactory brain centres in a moth

Submitted by Olivier List on Mon, 10/19/2015 - 10:27

Titre	Brief sensory experience differentially affects the volume of olfactory brain centres in a moth
Type de publication	Article de revue
Auteur	Anton, Sylvia [1], Chabaud, Marie-Ange [2], Schmidt-Büsser, Daniela [3], Gadenne, Bruno [4], Iqbal, Javaid [5], Juchaux, Marjorie [6], List, Olivier [7], Gaertner, Cyril [8], Devaud, Jean-Marc [9]
Pays	Allemagne
Editeur	Springer
Ville	Berlin
Type	Article scientifique dans une revue à comité de lecture
Année	2016
Langue	Anglais
Date	Avril 2016
Numéro	1
Pagination	59-65
Volume	364
Titre de la revue	Cell and Tissue Research
ISSN	1432-0878
Mots-clés	antennal lobe [10], Multimodal interaction [11], Mushroom body [12], phéromone [13], Sensory experience [14], <i>Spodoptera littoralis</i> [15]
Résumé en anglais	<p>Experience modifies behaviour in animals so that they adapt to their environment. In male noctuid moths, <i>Spodoptera littoralis</i>, brief pre-exposure to various behaviourally relevant sensory signals modifies subsequent behaviour towards the same or different sensory modalities. Correlated with a behavioural increase in responses of male moths to the female-emitted sex pheromone after pre-exposure to olfactory, acoustic or gustatory stimuli, an increase in sensitivity of olfactory neurons within the primary olfactory centre, the antennal lobe, is found for olfactory and acoustic stimuli, but not for gustatory stimuli. Here, we investigated whether anatomical changes occurring in the antennal lobes and in the mushroom bodies (the secondary olfactory centres) possibly correlated with the changes observed in behaviour and in olfactory neuron physiology. Our results showed that significant volume changes occurred in glomeruli (olfactory units) responsive to sex pheromone following exposure to both pheromone and predator sounds. The volume of the mushroom body input region (calyx) also increased significantly after pheromone and predator sound treatment. However, we found no changes in the volume of antennal lobe glomeruli or of the mushroom body calyx after pre-exposure to sucrose. These findings show a relationship of antennal lobe sensitivity changes to the pheromone with changes in the volume of the related glomeruli and the output area of antennal lobe projection neurons elicited by sensory cues causing a behavioural change. Behavioural changes observed after sucrose pre-exposure must originate from changes in higher integration centres in the brain.</p>

URL de la notice <http://okina.univ-angers.fr/publications/ua14121> [16]  
DOI [10.1007/s00441-015-2299-0](https://doi.org/10.1007/s00441-015-2299-0) [17]  
Lien vers le document <http://link.springer.com/article/10.1007%2Fs00441-015-2299-0> [18]  
Titre abrégé Cell Tissue Res

---

## Liens

- [1] <http://okina.univ-angers.fr/sylvia.anton/publications>
- [2] [http://okina.univ-angers.fr/publications?f\[author\]=23999](http://okina.univ-angers.fr/publications?f[author]=23999)
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=24000](http://okina.univ-angers.fr/publications?f[author]=24000)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=24001](http://okina.univ-angers.fr/publications?f[author]=24001)
- [5] [http://okina.univ-angers.fr/publications?f\[author\]=24002](http://okina.univ-angers.fr/publications?f[author]=24002)
- [6] [http://okina.univ-angers.fr/publications?f\[author\]=7709](http://okina.univ-angers.fr/publications?f[author]=7709)
- [7] <http://okina.univ-angers.fr/olivier.list/publications>
- [8] [http://okina.univ-angers.fr/publications?f\[author\]=11384](http://okina.univ-angers.fr/publications?f[author]=11384)
- [9] [http://okina.univ-angers.fr/publications?f\[author\]=11377](http://okina.univ-angers.fr/publications?f[author]=11377)
- [10] [http://okina.univ-angers.fr/publications?f\[keyword\]=18648](http://okina.univ-angers.fr/publications?f[keyword]=18648)
- [11] [http://okina.univ-angers.fr/publications?f\[keyword\]=20347](http://okina.univ-angers.fr/publications?f[keyword]=20347)
- [12] [http://okina.univ-angers.fr/publications?f\[keyword\]=20346](http://okina.univ-angers.fr/publications?f[keyword]=20346)
- [13] [http://okina.univ-angers.fr/publications?f\[keyword\]=18686](http://okina.univ-angers.fr/publications?f[keyword]=18686)
- [14] [http://okina.univ-angers.fr/publications?f\[keyword\]=20345](http://okina.univ-angers.fr/publications?f[keyword]=20345)
- [15] [http://okina.univ-angers.fr/publications?f\[keyword\]=20348](http://okina.univ-angers.fr/publications?f[keyword]=20348)
- [16] <http://okina.univ-angers.fr/publications/ua14121>
- [17] <http://dx.doi.org/10.1007/s00441-015-2299-0>
- [18] <http://link.springer.com/article/10.1007%2Fs00441-015-2299-0>

Publié sur *Okina* (<http://okina.univ-angers.fr>)