



# Involvement of the G-protein-coupled dopamine/ecdysteroid receptor DopEcR in the behavioral response to sex pheromone in an insect

Submitted by Emmanuel Lemoine on Thu, 02/05/2015 - 14:29

Titre Involvement of the G-protein-coupled dopamine/ecdysteroid receptor DopEcR in the behavioral response to sex pheromone in an insect

Type de publication Article de revue

Auteur Abrieux, Antoine [1], Debernard, Stéphane [2], Maria, Annick [3], Gaertner, Cyril [4], Anton, Sylvia [5], Gadenne, Christophe [6], Duportets, Line [7]

Editeur Public Library of Science

Type Article scientifique dans une revue à comité de lecture

Année 2013

Langue Anglais

Date 2013

Numéro 9

Pagination e72785

Volume 8

Titre de la revue PLoS One

ISSN 1932-6203

Mots-clés Animals [8], Brain/drug effects/metabolism [9], Ecdysterone/pharmacology [10], Female [11], Male [12], Moths [13], Receptors, G-Protein-Coupled/metabolism [14], Receptors, Steroid/genetics/metabolism [15], Sex Attractants/pharmacology [16]

Résumé en anglais Most animals including insects rely on olfaction to find their mating partners. In moths, males are attracted by female-produced sex pheromones inducing stereotyped sexual behavior. The behaviorally relevant olfactory information is processed in the primary olfactory centre, the antennal lobe (AL). Evidence is now accumulating that modulation of sex-linked behavioral output occurs through neuronal plasticity via the action of hormones and/or catecholamines. A G-protein-coupled receptor (GPCR) binding to 20-hydroxyecdysone, the main insect steroid hormone, and dopamine, has been identified in *Drosophila* (DmDopEcR), and was suggested to modulate neuronal signaling. In the male moth *Agrotis ipsilon*, the behavioral and central nervous responses to pheromone are age-dependent. To further unveil the mechanisms of this olfactory plasticity, we searched for DopEcR and tested its potential role in the behavioral response to sex pheromone in *A. ipsilon* males. Our results show that *A. ipsilon* DopEcR (named AipsDopEcR) is predominantly expressed in the nervous system. The corresponding protein was detected immunohistochemically in the ALs and higher brain centers including the mushroom bodies. Moreover, AipsDopEcR expression increased with age. Using a strategy of RNA interference, we also show that silencing of AipsDopEcR inhibited the behavioral response to sex pheromone in wind tunnel experiments. Altogether our results indicate that this GPCR is involved in the expression of sexual behavior in the male moth, probably by modulating the central nervous processing of sex pheromone through the action of one or both of its ligands.

URL de la notice	<a href="http://okina.univ-angers.fr/publications/ua7565">http://okina.univ-angers.fr/publications/ua7565</a> [17]
DOI	10.1371/journal.pone.0072785 [18]
Lien vers le document	<a href="http://dx.doi.org/10.1371/journal.pone.0072785">http://dx.doi.org/10.1371/journal.pone.0072785</a> [18]
Titre abrégé	PloS one

---

## Liens

- [1] <http://okina.univ-angers.fr/a.abrieux/publications>
- [2] [http://okina.univ-angers.fr/publications?f\[author\]=11372](http://okina.univ-angers.fr/publications?f[author]=11372)
- [3] [http://okina.univ-angers.fr/publications?f\[author\]=11371](http://okina.univ-angers.fr/publications?f[author]=11371)
- [4] [http://okina.univ-angers.fr/publications?f\[author\]=11384](http://okina.univ-angers.fr/publications?f[author]=11384)
- [5] <http://okina.univ-angers.fr/sylvia.anton/publications>
- [6] <http://okina.univ-angers.fr/christophe.gadanne/publications>
- [7] [http://okina.univ-angers.fr/publications?f\[author\]=11368](http://okina.univ-angers.fr/publications?f[author]=11368)
- [8] [http://okina.univ-angers.fr/publications?f\[keyword\]=964](http://okina.univ-angers.fr/publications?f[keyword]=964)
- [9] [http://okina.univ-angers.fr/publications?f\[keyword\]=11443](http://okina.univ-angers.fr/publications?f[keyword]=11443)
- [10] [http://okina.univ-angers.fr/publications?f\[keyword\]=11444](http://okina.univ-angers.fr/publications?f[keyword]=11444)
- [11] [http://okina.univ-angers.fr/publications?f\[keyword\]=1075](http://okina.univ-angers.fr/publications?f[keyword]=1075)
- [12] [http://okina.univ-angers.fr/publications?f\[keyword\]=968](http://okina.univ-angers.fr/publications?f[keyword]=968)
- [13] [http://okina.univ-angers.fr/publications?f\[keyword\]=11445](http://okina.univ-angers.fr/publications?f[keyword]=11445)
- [14] [http://okina.univ-angers.fr/publications?f\[keyword\]=11446](http://okina.univ-angers.fr/publications?f[keyword]=11446)
- [15] [http://okina.univ-angers.fr/publications?f\[keyword\]=11447](http://okina.univ-angers.fr/publications?f[keyword]=11447)
- [16] [http://okina.univ-angers.fr/publications?f\[keyword\]=11448](http://okina.univ-angers.fr/publications?f[keyword]=11448)
- [17] <http://okina.univ-angers.fr/publications/ua7565>
- [18] <http://dx.doi.org/10.1371/journal.pone.0072785>

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