BIOLOGIE DES ORGANISMES ET DES POPULATIONS

M1 bop - 2012-2013
Proposition de stage

Encadrement :

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Titre du stage :

Impact of putative amino acid transporters on vision in Drosophila

Mots clés :

Drosophila, Glia, Amino acids, Vision, Transporters

Résumé (150 mots maximum) :

Drosophila photoreceptors are using histamine as neurotransmitter. After exocytosis histamine is taken up by glia. There it is inactivated by conjugation to beta-alanine. The inactivated neurotransmitter is shuttled back to photoreceptors. In the photoreceptors beta-alanine is separated from histamine and histamine can serve as neurotransmitter again. The transporters mediating uptake of histamine to glia and uptake of beta-alanine-histamine to photoreceptors are unknown.

The Drosophila genome encodes five putative SLC7 transporters. SLC7 transporters are exchanging amino acids and biogenic amines. Three of them are expressed in the visual system of Drosophila. The aim of this study will be to find out if SLC7 transporters are mediating histamine or beta-alanine-histamine uptake to glia or photoreceptors.

We will create mutants in which SLC7 transporters are not expressed in glia or photoreceptors by using RNAi. Using immunohistochemistry we will show that the expression of SLC7 transporter is down-regulated and that our RNAi experiment is working. Next we will see if mutant flies still respond to light by measuring phototaxis.

Deux références bibliographiques:

1. tan and ebony genes regulate a novel pathway for transmitter metabolism at fly photoreceptor terminals.

Borycz J, Borycz JA, Loubani M, Meinertzhagen IA.

2. A screen for neurotransmitter transporters expressed in the visual system of Drosophila melanogaster identifies three novel genes.

Romero-Calderón R, Shome RM, Simon AF, Daniels RW, DiAntonio A, Krantz DE.

Techniques mises en œuvre:

Genetics, Phototaxis test, Immunohistochemistry

Compétences particulières exigées:

Drosophila handling, Genetics, Behavior (are an advantage but not required)

I am English speaking and the training period will be in English as well (not the report). BUT: Don´t worry every student working with me in the past managed well to communicate and improved English during the training period.