Print this Page for Your Records Close Window

Control/Tracking Number: 2019-S-11790-SfN
Activity: Scientific Abstract
Current Date/Time: 5/2/2019 9:34:39 AM

Evaluation of neuroligin and fmr1 mRNA expression and memory and locomotion capacity in a sensory-deprivation rearing protocol in Drosophila melanogaster.

AUTHOR BLOCK: *E. VIVEROS ARAQUE[1], Y. CARRERA SUAREZ[1], L. BECERRA HERNANDEZ[2], J. RENGIFO GOMEZ[1];

[1]Natural Sci., Univ. Icesi, Cali, Colombia; [2]Basic health sciences, Pontificia Univ. Javeriana, Cali, Colombia

Abstract:
Consolidation and remodeling of synapses during the postnatal development stage strengthens the appropriate connections and eliminates wrong or unnecessary ones. These processes known as maturation and synaptic pruning, respectively, are highly dependent on sensory activity and responsible for neuronal plasticity. The development of the nervous system in Fragile X syndrome (FXS) presents abnormalities in these processes. This genetic disorder is the leading cause of hereditary mental disability, and the major genetic cause known in Autism Spectrum Disorders (ASDs). Both pathologies exhibit defective synapses that result in behavioral and learning disorders. The production of the FMRP (fragile X mental retardation protein) is eliminated in FXS. FMRP, a protein that binds and regulates the translation mRNA, plays an important role in the elimination of immature synapses. On the other hand, the Neuroligin protein, mutated in some ASDs, helps in the formation of the synaptic cleft and the maturation of neural connections. This project explores, through the molecular technique RT-PCR and behavioral assays Negative Geotaxis test and Aversive Phototaxic Suppression test, the comportment of Neuroligin and FMR1 mRNA expression as well as memory and locomotion capacity during the process of activity dependent synaptic pruning in a wildtype strain of *Drosophila melanogaster*, reared in a control protocol with normal levels of sensorial stimulation or in a sensory-deprivation rearing protocol with restriction of light, auditory, spatial and social stimuli. We found that, in the sensory-deprivation treatment, the Nlg*1* gene (present in excitatory synapses) is down-regulated and that Nlg2 (present in inhibitory synapses) and FMR1 genes are up-regulated. Also, the locomotor activity and learning capacity of the flies are reduced in this treatment, providing evidence of the importance of sensory input during nervous system development and also as an important player in the etiology of neuronal developmental disorders.
:

Presentation Preference (Complete): Poster Only
Linking Group (Complete): None selected

Theme and Topic (Complete): A.06.b. Synapse maturation and remodeling
Nanosymposium Information (Complete):
Keyword (Complete): Activity-dependent plasticity ; neuronal development ; The Fragile X mental retardation protein
Support (Complete):
Support: Yes
Grant/Other Support: : The Women in World Neurosciences (WWN) Collaborative Research Network Program (CRNP) Award 2014, financed by IBRO/SfN
Grant/Other Support: : Universidad Icesi intramural research grant (2014-2019)

Special Requests (Complete):
Would you be interested in being considered for a dynamic poster?: No, I am not interested in presenting a Dynamic Poster
Is the submitting author of this abstract also a senior author?: No
Is the presenting author of this abstract a high school or undergraduate student?: None
Religious Conflict?: No Religious Conflict
Additional Conflict?: No
Do you think the research described in your abstract tells a research story of a new finding or notable progress that is ready to share with the media? Press activities for the annual meeting will begin in September 2019.: No

Status: Finalized