

**Abstract: 913**

**B050 - Decrease in SV2A expression in the hippocampus involves changes in cognition and anxiety-like features**

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The Synaptic Vesicle Protein 2A (SV2A) is a presynaptic transmembrane protein whose link with the epilepsy has been reported in multiple articles. However, the behavioral consequences of the decrease in its expression remain still unclear. The purpose of our research is to better understand the role of this protein through the evaluation of cKO (Grik4 +/-, SV2A lox/lox) mice of both sexes, which present a specific decrease in the hippocampus. After a first evaluation of the SV2A levels in the hippocampus with the *in vitro* [<sup>18</sup>F]UCB-H autoradiography, differences in brain metabolism were assessed with [<sup>18</sup>F]FDG in mPET and *ex vivo* autoradiography. Finally, the phenotype of cKO mice was analyzed with a behavioral battery test. Our results showed a strong reduction of SV2A expression in the whole hippocampus of cKO mice, with regard to the WT mice, not accompanied by statistically significant differences in brain metabolism between groups, either *in vivo* or *ex vivo*. No statistically significant differences were found in spontaneous locomotor activity nor in fear-linked memory. However, cKO males showed significantly more anxiety than WT (less percent of entries in open arms) and females presented spatial memory deficits measured in the Barnes Maze (less time spent in quadrant during the test). These results could explain the comorbidity between anxiety, memory impairment and epilepsy present both in animal models and in humans, suggesting an important role of SV2A in the symptomatology of other neurodegenerative diseases, such as the Alzheimer's disease, or in anxiety-related pathologies.