



Département de psychiatrie
Centre de neurosciences psychiatriques
Site de Cery
CH-1008 Prilly - Lausanne

Centre de Neurosciences Psychiatriques

CNP SEMINAR

ANNOUNCEMENT

Friday, January 25, 2019, 14:00

"Perspectives in treating affective disorders: clocks and sleep"

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**Salle de colloque 1^{er} étage New CNP
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It is now well documented that astrocytes are involved in the regulation of neurotransmission and high brain functions such as memory, sleep, and emotionality. Astrocytes express proteins called connexins 43 (Cx43) that assemble to form gap-junction (GJ) between neighboring cells and contribute to astrocyte-astrocyte communication. Cx43 can also assemble into single hemichannels (HC) to promote the release of neuroactive molecules called gliotransmitters allowing astrocyte-neuron communication. Interestingly, studies support a distinct role of these functional entities (GJ vs HC) in the regulation of stress-related responses. Indeed, although a decreased activity of GJ was unveiled in animal models of stress [1] opposite results were yielded with HC [2]. In light of these non-conclusive results, we sought to determine the effects of constitutive or tissue specific downregulation of Cx43 on stress-related responses and neurochemical changes. To this end, we used an animal model of depression based on the chronic exposure of mice to corticosterone in the drinking water [3]. Our data suggest that blocking specifically Cx43 hemichannel in the hippocampus could be a new therapeutic strategy to attenuate the level of stress and thereby to promote antidepressant-like effects. Although currently available antidepressant drugs mainly display a neuronal tropism, we provide evidence that impacting on non-neuronal target could be an alternative therapeutic strategy to relieve depressive symptoms.

References:

[1] Sun, J.D., et al., 2012, *Neuropsychopharmacology*, **37**(5): p. 1305-20. [2] Orellana, J.A., et al., 2015, *Front Cell Neurosci*, **9**: p. 102.3.[3] Quesseveur, G., et al., 2015, *Front Cell Neurosci*, 2015, **9**: p. 490.

Author's references

- Richetin K et al., 2017. Differential alteration of hippocampal function and plasticity in females and males of the APPxPS1 mouse model of Alzheimer's disease. *Neurobiology of Aging*. doi: 10.1016/j.neurobiolaging.2017.05.025
- Quesseveur G et al., 2015.. Attenuated levels of hippocampal connexin 43 and its phosphorylation correlate with antidepressant- and anxiolytic-like activities in mice. *Frontiers in Cellular Neuroscience*; 9:490.
- Quesseveur G et al., 2013. David DJ. BDNF overexpression in hippocampal astrocytes elicits neurogenesis-dependent and independent anxiolytic like activity. *Translational Psychiatry*; Apr 30;3:e253.