



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

Centre de Neurosciences Psychiatriques

CNP SEMINAR

ANNOUNCEMENT

Friday, March 3, 2017, 11:00 a.m.

“Role of the insula in impulse control disorders”

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The insula is a heterogeneous integrative cortical region, which receives both environmental and internal information in order to generate both a cohesive interoceptive representation of the world and subjective awareness. Maladaptive interoceptive control over behaviour and associated impaired insight have been suggested to play a major role in impulsive/compulsive disorders, such as addiction or obsessive compulsive disorders (OCD). However, the nature of the mechanisms that are altered in Impulsive/compulsive disorders, such as the nature of the impulse itself or the executive inhibitory system, remains unknown. Similarly, the contribution of functional alterations of the insula to the development vs maintenance of impulsive or compulsive behaviours remain to be established.

Combining causal manipulations of the anterior insula with refined behavioural models of impulse control deficits in the rat, we investigated the contribution of the anterior insular cortex (AIC) to behavioural factors of vulnerability to compulsivity, such as impulsivity or decision making. We also assessed the differential functional contribution of the AIC to the development and long term maintenance of compulsive behaviours reminiscent of Obsessive Compulsive Disorder or drug addiction.

The data that will be presented overall demonstrate that the AIC causally contributes to inter-individual vulnerability to impulsive-compulsive behaviour in rats. Bilateral AIC lesions attenuated both the development and the expression of schedule-induced polydipsia while differentially influenced the development and maintenance of the loss of control over cocaine intake in rats given extended access to the drug. The latter observation suggests that the nature of the contribution of cocaine-associated interoceptive mechanisms changes over the course of escalation.

A theoretical framework will be presented that suggests a role of the insula in the control of both the quantitative and qualitative nature of interoceptive representation in impulsive-compulsive behaviours.

Selected publications

1. Rotgé JY, Cocker P, Daniel ML, Belin-Rauscent A, Everitt BJ, Belin D (2017). Bidirectional regulation over the development and expression of loss of control over cocaine intake by the anterior insula. Submitted to Psychopharmacology
2. Belin-Rauscent A; Daniel ML, Puaud M, Jupp B, Sawiak SJ, Howett D, McKenzie C, Caprioli D, Besson M, Robbins TW, Everitt BJ, Dalley JW & Belin D (2015) From impulses to maladaptive actions: the insula is a neurobiological gate for the development of compulsive disorders. Molecular Psychiatry, Advanced Online Publication, doi:10.1038/mp.2015.140