

Centre de Neurosciences Psychiatriques

CNP SEMINAR

ANNOUNCEMENT

Friday, April 16th, 2010 at 11h15

“Molecular anatomy of hypothalamic circuits”

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(in "Reception" building: first floor, above reception)

The hypothalamus is an evolutionarily ancient brain structure, which controls endocrine, homeostatic and autonomic functions. Although hypothalamic anatomy has been extensively studied during the 70's-90's of the last century, the intra- and extrahypothalamic connectivity of hypothalamic neurons and - as a consequence - the actions of hypothalamic neuropeptides within the brain are poorly understood and require new methodological approaches. We developed a technique to target oxytocin and vasopressin hypothalamic neurons in live rodents via recombinant adeno-associated virus (rAAV), carrying short evolutionarily conserved sequences of the respective promoters. The use of these rAAVs in combination with pseudotyped rabies virus (PRV) allowed us to identify new monosynaptic pathways within the hypothalamus as well as direct connections between magnocellular hypothalamic neurons and forebrain structures in the rat. Furthermore, we showed that the cell-type specific rAAVs are optimal for delivering various genes of interests into magnocellular hypothalamic neurons. Recently, we have started to combine this approach to express channelrhodopsin under the control of these promoters in order to modulate endogenous oxytocin and vasopressin release by optical stimulation.