



# Functional role of PDGFRb, a striatopallidal specific gene, in motor and motivational behavior

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Basal ganglia are a set of interconnected nuclei involved in motor control and motivation. The striatum is the main input of basal ganglia and is mainly composed of medium spiny neurons, subdivided into striatopallidal (STP) and striatonigral (STN) neurons. STP and STN neurons give rise respectively to the indirect and the direct pathways of basal ganglia, with opposite effects at both motor and motivational levels. Cellular mechanisms involving these pathways in disorders such as Huntington's and Parkinson's diseases and addiction, are still poorly understood.

Our laboratory has previously identified gene expression profiles of STN and STP neurons using microarray (Ena, 2013). Our project consists in the study of STP or STN specific genes function in locomotor control and addiction behavior. To this end, specific repression of genes of interest in STP or STN pathway is generated using floxed mice or shRNA interference mediated by lentivirus. Phenotypic analysis is then achieved through behavioral tests to assess the effect of gene deletion. Moreover, different experimental strategies based on molecular biology and electrophysiology are used to determine molecular mechanisms responsible for observed phenotypes.

We first focused on PDGFRb because of its enrichment in STP neurons and its potential function in striatal neurons according to the literature. STP specific expression of PDGFRb has been validated, and the activation pathway of PDGFRb in STP neurons has been investigated in primary striatal cultures. We are now generating mouse model repressing PDGFRb in striatal neurons to study PDGFRb deletion effects in vivo.

## References

Ena, S. L., De Backer, J. F., Schiffmann, S. N., de Kerchove d'Exaerde, A. (2013). FACS array profiling identifies Ecto-5' nucleotidase as a striatopallidal neuron-specific gene involved in striatal-dependent learning. *J Neurosci* 33, 8794-809, DOI:10.1523/JNEUROSCI.2989-12.2013

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