

## Selected Publications

Transcriptional repression of *Plxnc1* by *Lmx1a* and *Lmx1b* directs topographic dopaminergic circuit formation

Chabrat A, Brisson G, Doucet-Beaupré H, Salesse C, Profes MS, Dovonou A, Akitegetse C, Charest J, Lemstra S, Cote D, Pasterkamp RJ, Abrudan M, Metzakopian E, Ang SL, **Lévesque M.**

Nature Communications, Accepted

*Lmx1a* and *Lmx1b* regulate mitochondrial functions and survival of adult midbrain dopaminergic neurons.

Doucet-Beaupré H, Gilbert C, Profes MS, Chabrat A, Pacelli C, Giguère N, Rioux V, Charest J, Deng Q, Laguna A, Ericson J, Perlmann T, Ang SL, Cicchetti F, Parent M, Trudeau LE, **Lévesque M.**

Proc Natl Acad Sci U S A. 2016 Jul 26;113(30):E4387-96. doi: 10.1073/pnas.1520387113. Epub 2016 Jul 12.

Cell fate determination, neuronal maintenance and disease state: The emerging role of transcription factors *Lmx1a* and *Lmx1b*. Doucet-Beaupré H, Ang SL, **Lévesque M.** FEBS Lett. 2015 Dec 21;589(24 Pt A):3727-38. doi: 10.1016/j.febslet.2015.10.020. Epub 2015 Oct 23.

RNA Isolation from Cell Specific Subpopulations Using Laser-capture Microdissection Combined with Rapid Immunolabeling.

Chabrat A, Doucet-Beaupré H, **Lévesque M.** J Vis Exp. 2015 Apr 11;(98). doi: 10.3791/52510.

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# Bonn Lecture Series in Neuroscience



## Transcriptional control of dopamine neuron development and neuroprotection: Implications in Parkinson's disease

**Martin Lévesque, Ph.D., Prof. adjoint**

Departement of psychiatrie and neurosciences  
Faculty of medicine , University of Laval

Friday, September 15<sup>th</sup> 2017, 13:00h  
Life & Brain, Seminar Room, Ground Floor

In this talk, I will present three interrelated stories about the multiple roles played by two transcription factors, named *Lmx1a* and *Lmx1b*, in the regulation of dopamine neurons development and survival. In the first part, I will show how these factors control the development of dopaminergic axon projections in the striatum. More specifically, I will present gene expression experiments leading to the discovery of a regulated gene, *Plxnc1*. I will then show how this axon guidance receptor controls dopaminergic axon projections in the forebrain. In the second part, I will present our recent finding about the function of *Lmx1a/b* the regulation of synaptic inputs on dopamine neurons and describe new mechanisms leading to hyperactivity in mice. Finally, I will present our recent studies showing the role of *Lmx1a/b* in dopamine neurons homeostasis and our recent data indicating that the modulation of these factors could protect dopamine neurons from degeneration in animal models of Parkinson's disease.