Parkinson Society Canada
Société Parkinson Canada

Principal Investigator/Program Director (Last, First, Middle):
Trudeau, Louis-Eric

BIOGRAPHICAL SKETCH

NAME: Trudeau, Louis-Eric **POSITION TITLE: Full professor of pharmacology**

EDUCATION/TRAINING:

INSTITUTION AND LOCATION	DEGREE	YEAR(s)	FIELD OF STUDY
Concordia University, Montréal	B.Sc.	1990	Psychology
Université de Paris VI	D.E.A.	1991	Neuroscience
Université de Montréal	Ph.D.	1994	Neuroscience
Iowa State University	Postdoc	1997	Neuroscience

SECTION A: Positions and honors

Positions:

1997-2002 Assistant professor, Department of Pharmacology, Université de Montréal
2002-2008 Associate professor, Department of Pharmacology, Université de Montréal
2008- Professor, Department of Pharmacology, Université de Montréal

Advisory committees and other appointments:

2000-2004 Co-director, Schizophrenia Axis, FRSQ Mental Health Network
2002-2005 Internal member, CIHR Neuroscience B evaluation committee
2004-2009 Treasurer, Canadian Association for Neuroscience
2009-2012 Treasurer, Society for Neuroscience, Montreal Chapter
2009-present Scientific Advisory Board, Parkinson Society Canada
2012-present Internal review committee member, Michael J Fox Foundation

Honors:

1990 J.W. Bridges medal awarded to the best graduating student in psychology, Concordia University
1990 Prize for the best graduating student of Concordia University, Science College
1990-1993 Science and Engineering "1967" graduate studies scholarship of the Natural Sciences and Engineering Research Council of Canada

1994-1996	Postdoctoral Fellowship from the Human Frontier Science Program (Long-term fellowship)
1995	Gold medal of the Governor General of Canada for the best Ph.D. thesis at Université de Montréal (1994-1995)
1997-2001	"Michael Smith" Scholar of the Medical Research Council of Canada.
1998-2000	EJLB Foundation Scholar.
2001-2003	NARSAD Young Investigator Award
2002-2005	Scholar (J-II level) of the Fonds de la Recherche en Santé du Québec.
2004	Bristol-Myers-Squibb Young Investigator Award, Canadian College of Neuropsychopharmacology
2004-2006	NARSAD Independent Investigator Award
2005-2009	Scholar (senior level) of the Fonds de la Recherche en Santé du Québec

SECTION B: Selected peer-reviewed publications

Peer-reviewed publications (out of 32 published between 2007 and 2012):

1. **Trudeau, L.-E.**, Gutierrez, R. (2007) On cotransmission and neurotransmitter phenotype plasticity. *Molecular Interventions* 7(3) : 138-146.
2. Huh CY, Danik M, Manseau F, **Trudeau L-E**, Williams S. (2008) Chronic exposure to nerve growth factor increases acetylcholine and glutamate release from cholinergic neurons of the rat medial septum and diagonal band of Broca via mechanisms mediated by p75NTR. *Journal of Neuroscience* 6;28(6):1404-9.
3. Fasano, C., Thibault, D., **Trudeau, L.-E.** (2008) Culture of postnatal mesencephalic dopamine neurons on an astrocyte monolayer. *Current Protocols in Neuroscience*, Chapter 3, Volume 44, Unit 3.21. Wyley Interscience, Hoboken, NJ, , pages 3.21.3-3.21.19.
4. Mendez, J.A., Bourque, M.-J., Bourdeau, M.L., Danik, M., Williams, S., Lacaille, J.-C., **Trudeau, L.-E.** (2008) Developmental and contact-dependent regulation of vesicular glutamate transporter expression in dopamine neurons. *Journal of Neuroscience*, 28(25): 6309-6318.
5. Dal Bo, G., Bérubé-Carrières, N., Mendez, J.A., Riad, M., Descarries, L., Lévesque, D., **Trudeau, L.-E.** (2008) The glutamatergic phenotype of mesencephalic dopamine neurons is enhanced following a neonatal 6-hydroxydopamine lesion. *Neuroscience*, 156(1): 59-70.
6. Sulzer D, **Trudeau L.-E**, Rayport S (2008) Postnatally derived ventral midbrain dopamine neuron cultures as a model system for studying neurotoxicity and Parkinson's disease. In Parkinson's Disease: Molecular and Therapeutic Insights from Model Systems. Nass R (Ed), Academic Press, Burlington, MA, pp. 491-504.
7. Fasano, C., Poirier, A., Desgroseillers, L., **Trudeau, L.-E.** (2008) Chronic activation of the D2 dopamine autoreceptor inhibits synaptogenesis in mesencephalic dopaminergic neurons in vitro. *Eur. J. Neurosci.* 28: 1480-1490.
8. Descarries, L., Bérubé-Carrière, N., Riad, M., Dal Bo, G., Mendez, J.A. **Trudeau, L.-É.** (2008) Glutamate in dopamine neurons: synaptic versus diffuse transmission. In: Communication and Integration in the Basal Ganglia, K. Fuxe, L.F. Agnati, F. Mora and R. Schwarcz Eds. *Brain Res. Rev*. 58: 290-302.

9. Fawaz, C.S., Martel, P., Leo, D., **Trudeau, L.-E.** (2009) Presynaptic action of neurotensin on dopamine release through inhibition of D2 receptor function. *BMC Neuroscience* 10(1): 96 (open access article).
10. Bérubé-Carrière, N., Riad, M., Dal Bo G., Lévesque, D., **Trudeau, L.-E.**, Descarries, L. (2009) The dual dopamine-glutamate phenotype of growing mesencephalic neurons regresses in mature rat brain. *J. Comp. Neurol.* 517(6):873-91.
11. Thibault, D., Kortleven, C., Fasano, C., Dal Bo, G., **Trudeau, L.-E.** (2010) Découvertes récentes sur la fonction et la plasticité des voies dopaminergiques du cerveau. *Médecine/Sciences* 26 : 165-170.
12. Birgner C, Nordenankar K, Lundblad M, Mendez JA, Smith C, le Grevès M, Galter D, Olson L, Fredriksson A, **Trudeau L.-E**, Kullander K, Wallén-Mackenzie A. (2010) VGLUT2 in dopamine neurons is required for psychostimulant-induced behavioral activation. *Proc Natl Acad Sci U S A*. 107(1):389-94.
13. Fasano, C., Kortleven, C., **Trudeau, L.-E.** (2010) Chronic activation of the D2 autoreceptor inhibits both glutamate and dopamine synapse formation and alters the intrinsic properties of mesencephalic dopamine neurons in vitro. *European Journal of Neuroscience* 32: 1433-1441.
14. Thibault D, Albert, PR, Pineyro G and **Trudeau L-E** (2011) Neurotensin triggers D2 dopamine receptor desensitization through a PKC and beta-arrestin1-dependent mechanism. *Journal of Biological Chemistry* 286(11):9174-84 .
15. Fulton, S, Thibault., D., Mendez, J.A., Lahaie, N., Tirotta, E., Borrelli, E., Bouvier, M., Tempel, B, **Trudeau, L.-E.** (2011) Contribution of Kv1.1 and 1.2 voltage-gated potassium channels to D2 autoreceptor regulation of axonal dopamine overflow. *Journal of Biological Chemistry* 286(11):9360-72.
16. El Mestikawy, S., Wallen-Mackenzie, A., Fortin, G., Descarries, L., **Trudeau, L.-E.** (2011) From glutamate corelease to vesicular synergy: new perspectives on the functions of vesicular glutamate transporters. *Nature Reviews Neuroscience* 12(4):204-16.
17. Kortleven C, Fasano C, Kortleven C, Lacaille JC and **Trudeau, L-E** (2011) The endocannabinoid 2-Arachidonoylglycerol inhibits long-term potentiation of glutamatergic synapses onto ventral tegmental area dopamine neurons in mice. *European Journal of Neuroscience* 33(10):1751-60.
18. Mendez JA, Bourque MJ, Fasano C, Kortleven C, **Trudeau L-E**. (2011) Somatodendritic Dopamine Release Requires Synaptotagmin 4 and 7 and the Participation of Voltage-gated Calcium Channels. *Journal of Biological Chemistry* 286(27):23928-37.
19. Martel P, Leo D, Fulton S, Bérard M, **Trudeau LE**. (2011) Role of kv1 potassium channels in regulating dopamine release and presynaptic d2 receptor function. PLoS One. 6(5):e20402.
20. Alsiö J, Nordenankar K, Arvidsson E, Birgner C, Mahmoudi S, Halbout B, Smith C, Fortin GM, Olson L, Descarries L, **Trudeau LE**, Kullander K, Lévesque D, Wallén-Mackenzie A. (2011) Enhanced Sucrose and Cocaine Self-Administration and Cue-Induced Drug Seeking after Loss of VGLUT2 in Midbrain Dopamine Neurons in Mice. *Journal of Neuroscience* 31(35):12593-12603.
21. Bérubé-Carrière N, Guay G, Fortin GM, Kullander K, Olson L, Wallen-Mackenzie A, **Trudeau, L-E**, Descarries L. (2012) Ultrastructural characterization of the

mesostriatal dopamine innervation in mice, including two mouse lines of conditional VGLUT2 knockout in dopamine neurons. *European Journal of Neuroscience*, 35(4):527-538.

22. Martinez-Fong D, Bannon MJ, **Trudeau L-E**, Gonzalez-Barrios JA, Arango-Rodriguez ML, Hernandez-Chan NG, Reyes-Corona D, Armendáriz-Borunda J Navarro-Quiroga I (2012) NTS-polyplex: A potential nanocarrier for neurotrophic therapy of Parkinson's disease. *Nanomedicine: Nanotechnology, Biology, and Medicine*, 8(7):1052-69.
23. Kortleven C, Bruneau LC, **Trudeau L-E**. (2012) Neurotensin inhibits glutamate-mediated synaptic inputs onto ventral tegmental area dopamine neurons through the release of the endocannabinoid 2-AG. *Neuropharmacology*, 63(6):983-91.
24. Fortin GM, Bourque MJ, Mendez JA, Leo D, Nordenankar K, Birgner C, Arvidsson E, Rymar VV, Bérubé-Carière N, Claveau AN, Descarries L, Sadikot AF, Wallen-Mackenzie A, **Trudeau L-E.** (2012) Glutamate corelease promotes growth and survival of midbrain dopamine neurons. *Journal of Neuroscience*, 32(48) : 17447-17492.
25. Hernandez-Blatazar D, Martinez-Fong D, **Trudeau L-E** (2012) Optimizing NTS-Polyplex as a tool for gene transfer to cultured dopamine neurons. *PLOS One* 7(12): e51341.
26. Fasano C, Bourque MJ, Lapointe G, Leo D, Haber M, Kortleven C, Desgroseillers L, Murai K, **Trudeau L-E** (2013) Dopamine facilitates dendritic spine formation by cultured striatal medium spiny neurons through both D1 and D2 dopamine receptors. *Neuropharmacology* 67: 432-443.

SECTION C: Ongoing or completed (during the last three years) research projects.

Ongoing research projects:

1. Cell Biology and Function of Glutamate Cotransmission in Mesencephalic Dopamine Neurons. CIHR operating grant, 2010-2015, 170 997$ per year.
2. Biology of Glutamate Transmission in Serotonin Neurons, NSERC discovery grant, 2010-2014, 52 000$/year.
3. Evaluating Axon Arbour Size as a Vulnerability Factor in Parkinson's Disease (L-E Trudeau), 2012-2013, 45 000 $ for one year, Parkinson Society Canada

Completed research projects:

1. Cannabis Addiciton and Psychosis, CIHR Catalyst program (Rompré, P-P, Lévesque, D., Trudeau, L-E (co-PI), 2011-2012, 99 956$ for one year.
2. Regulation of terminal and somatodendritic dopamine release. CIHR operating grant, 2004-2009, 155 013$ per year.
3. Mitochondrial dysfunction and neuronal demise: insights from Parkinson's disease genes. Brain Repair Program, Neuroscience Canada, 2007-2010, 500 000$ per year (for 6 investigators; Trudeau, Park, Fon, McBride, Schlossmacher, Rao).
4. Increased dopamine transporter function as an early phenotype of PD, prior to dopamine neuron cell death. Michael J Fox Foundation for Parkinson's Research, 2010-2011, 75 000$.