

CURRICULUM VITAE (10/2019)
LUDA DIATCHENKO

PERSONAL INFORMATION

Place of Birth Moscow, Russia

Citizenship United States

Home Address 4-1071 Av de L'Hotel-de-Ville
Montreal, Quebec, Canada H2X 3A7

Work Address 740 Dr. Penfield Avenue
Genome Building, Room 2201
Montreal, Quebec, Canada H3A 0G1
T: 514 398-2878, F: 514 398-8900

Email Address luda.diatchenko@mcgill.ca

ACADEMIC BACKGROUND

<u>Degree</u>	<u>Year</u>	<u>Field/Discipline</u>	<u>Institution</u>
PhD	1993	Molecular Biology	Russian State Medical University; National Cardiology Research Center, Moscow, Russia
MS	1990	Biochemistry	Russian State Medical University, Moscow, Russia
MD	1990	Medicine	Russian State Medical University, Moscow, Russia

PROFESSIONAL EXPERIENCE

2018-present Honorary Professor Jens Christian Skou, Aarhus University, Denmark

2016-present Adjunct Professor, Department of Anesthesiology, Duke University Medical Center.

2013-present Professor
Canadian Excellence Research Chair in Human Pain Genetics
Alan Edwards Centre for Research on Pain
Department of Anesthesia, Faculty of Medicine, Faculty of Dentistry
McGill University, Montreal, QC, Canada

2013 Professor
Center for Neurosensory Disorders

- Faculty of Dentistry, University of North Carolina, Chapel Hill, NC, USA
- 2012-2013 Associate Director
Center for Neurosensory Disorders
Faculty of Dentistry, University of North Carolina, Chapel Hill, NC, USA
- 2006-2013 Associate Professor
Center for Neurosensory Disorders
Faculty of Dentistry, University of North Carolina, Chapel Hill, NC, USA
- 2005-2016 Chief Scientific Officer
Algynomic, Inc
Chapel Hill, NC, USA
- 2002-2005 Research Associate Professor
Center for Neurosensory Disorders
Faculty of Dentistry, University of North Carolina, Chapel Hill, NC, USA
- 2002-2004 Director, Gene Discovery
Attogene Inc.
Morrisville, NC, USA
- 2000-2002 Visiting Research Assistant Professor
Center for Neurosensory Disorders University of North Carolina,
Chapel Hill, NC, USA
- 1994-2000 CLONTECH Laboratories
Palo Alto, CA, USA
- 1999-2000 Group Leader
- 1997-1999 Research Scientist II
- 1996-1997 Research Scientist I
- 1995 Associate Research Scientist
- 1994-1995 Postdoctoral Fellow

RESEARCH CONTRIBUTIONS

Citation conventions: In my research area the Senior Author is usually the last author; and, the First Author is the individual who conducted most of the work and/or wrote the paper. Other authors are listed in descending order of contribution. Trainees I have supervised are underlined.

(Note: Because of its Russian origin, my surname has no set English spelling and has undergone three generations of spelling variations, which is reflected in my publication list. All citations show the name as it appeared in the original publications.)

Published refereed contributions (last 5 years)

Book Edited

1. Genetics of Human Pain Perception: Basic to Translational Science. Eds. Belfer I, **Diatchenko L**, Oxford, UK 2014

Book Chapters

1. Beraldo Meloto C, Smith S, Maixner W, Seltzer Z, and **Diatchenko L**. Genetic Risk Factors for Orofacial Pain: Insights from Human Experimental Studies. In Sessle BJ (Ed.): *Orofacial Pain, Recent Advances in Assessment, Management, and Understanding of Mechanisms*. Washington, D.C.: 2014 IASP Press, Chapter 23, pp 455-480.
2. **Diatchenko L**, Smith SB, Maixner. Translating Genetic Knowledge into Clinical Practice for Musculoskeletal Pain Conditions. In. *Genetics of Human Pain Perception: Basic to Translational Science*. Eds. Belfer I, Diatchenko L. Oxford, UK 2014. Chapter 10, pp 147-159.
3. Kuo CL, **Diatchenko L**, Zaykin D. Discovering Multilocus Associations with Complex Pain Phenotypes. In. *Genetics of Human Pain Perception: Basic to Translational Science*. Eds. Belfer I, Diatchenko L. Oxford, UK 2014. Chapter 7, pp 99-113.

Before 2014, 11 additional book chapters.

Peer reviewed journal articles

1. Upadhyay U, Zhuang GZ, **Diatchenko L**, Parisien M, Kang Y, Sarantopoulos KD, Martin ER, Smith SB, Maixner W, Levitt RC. Profound analgesia is associated with a truncated peptide resulting from tissue specific alternative splicing of DRG CA8-204 regulated by an exon-level cis-eQTL PLoS Genet. 2019 Jun 14;15(6):e1008226. PMID: 31199789
2. Khoury S, Piltonen MH, Ton AT, Cole T, Samoshkin A, Smith SB, Belfer I, Slade GD, Fillingim RB, Greenspan JD, Ohrbach R, Maixner W, Neely GG, Serohijos AWR, **Diatchenko L**. A functional substitution in the L-aromatic amino acid decarboxylase enzyme worsens somatic symptoms via a serotonergic pathway. Ann Neurol. 2019 Jun 8. PMID 31177555.
3. Zhu C, Han Q, Samoshkin A, Convertino M, Linton A, Faison EM, Ji RR, **Diatchenko L**, Dokholyan NV. Stabilization of μ -opioid receptor facilitates its cellular translocation and signaling. Proteins. 2019 May 29. PMID: 31141214.
4. Bersellini Farinotti A., Wigerblad G., Nascimento D., Bas D.B, Morado Urbina C., Selva Nandakumar K., Sandor K., Xu B., Abdelmoaty S., Hunt M.A., Ängeby Möller K., Baharpoor A., Sinclair J., Jardemark K., Lanner J.T., Khmaladze I., Borm L.E., Zhang L., Wermeling F., Cragg M., Lengqvist J., Chabot-Doré A-J., **Diatchenko L.**, Belfer I., Collin M., Kultima K., Heyman B., Andrade Jimenez J.M., Codeluppi S., Holmdah R., Svensson C.I. Cartilage-binding antibodies induce pain through immune complex-mediated activation of neurons. *JEM* 06-13-2019, vol. 216 no. 8. PMID: 31196979.
5. Slade G. D., Rosen, J. D., Ohrbach, R., Greenspan, J. D., Fillingim, R. B., Parisien, M., Khoury, S., **Diatchenko, L.**, Maixner, W., Bair, E. Anatomical selectivity in overlap of chronic facial and bodily pain. *PAIN Reports*: May/June 2019 - Volume 4 - Issue 3 - p e729.
6. Parisien M, Samoshkin A, Tansley SN, Piltonen MH, Martin LJ, El-Hachem N, Dagostino C, Allegri M, Mogil JS, Khoutorsky A, **Diatchenko L**. Genetic pathway analysis reveals a major

- role for extracellular matrix organization in inflammatory and neuropathic pain. *Pain*. 2019 Apr;160(4):932-944. PMID: 30763288.
7. Piltonen M, Parisien M, Grégoire S, Chabot-Doré AJ, Jafarnejad SM, Bérubé P, Djambazian H, Sladek R, Geneau G, Willett P, Stone LS, Shabalina SA, **Diatchenko L**. Alternative Splicing of the Delta-Opioid Receptor Gene Suggests Existence of New Functional Isoforms. *Mol Neurobiol*. 2019 Apr;56(4):2855-2869 PMID: 30066306.
 8. Smith SB, Parisien M, Bair E, Belfer I, Chabot-Doré AJ, Gris P, Khoury S, Tansley S, Torosyan Y, Zaykin DV, Bernhardt O, de Oliveira Serrano P, Gracely RH, Jain D, Järvelin MR, Kaste LM, Kerr KF, Kocher T, Lähdesmäki R, Laniado N, Laurie CC, Laurie CA, Männikkö M, Meloto CB, Nackley AG, Nelson SC, Pesonen P, Ribeiro-Dasilva MC, Rizzatti-Barbosa CM, Sanders AE, Schwahn C, Sipilä K, Sofer T, Teumer A, Mogil JS, Fillingim RB, Greenspan JD, Ohrbach R, Slade GD, Maixner W, **Diatchenko L**. Genome-wide association reveals contribution of MRAS to painful temporomandibular disorder in males. *Pain*. 2019 Mar;160(3):579-591. PMID: 30431558; PMCID: PMC6377338.
 9. Borstov AV, Devor M, Kaunisto MA, Kalso E, Brufsky A, Kehlet H, Aasvang E, Bittner R, **Diatchenko L**, Belfer I. CACNG2 polymorphisms associate with chronic pain following mastectomy. *Pain*. 2019 Mar;160(3):561-568. PMID: 30371558; PMCID: PMC6377334.
 10. Karasik D, Zillikens MC, Hsu YH, Aghdassi A, Akesson K, Amin N, Barroso I, Bennett DA, Bertram L, Bochud M, Borecki IB, Broer L, Buchman AS, Byberg L, Campbell H, Campos-Obando N, Cauley JA, Cawthon PM, Chambers JC, Chen Z, Cho NH, Choi HJ, Chou WC, Cummings SR, de Groot LCPGM, De Jager PL, Demuth I, **Diatchenko L**, Econs MJ, Eiriksdottir G, Enneman AW, Eriksson J, Eriksson JG, Estrada K, Evans DS, Feitosa MF, Fu M, Gieger C, Grallert H, Gudnason V, Lenore LJ, Hayward C, Hofman A, Homuth G, Huffman KM, Husted LB, Illig T, Ingelsson E, Ittermann T, Jansson JO, Johnson T, Biffar R, Jordan JM, Jula A, Karlsson M, Khaw KT, Kilpeläinen TO, Klopp N, Kloth JSL, Koller DL, Kooner JS, Kraus WE, Kritchevsky S, Kutalik Z, Kuulasmaa T, Kuusisto J, Laakso M, Lahti J, Lang T, Langdahl BL, Lerch MM, Lewis JR, Lill C, Lind L, Lindgren C, Liu Y, Livshits G, Ljunggren Ö, Loos RJF, Lorentzon M, Luan J, Luben RN, Malkin I, McGuigan FE, Medina-Gomez C, Meitinger T, Melhus H, Mellström D, Michaëlsson K, Mitchell BD, Morris AP, Mosekilde L, Nethander M, Newman AB, O'Connell JR, Oostra BA, Orwoll ES, Palotie A, Peacock M, Perola M, Peters A, Prince RL, Psaty BM, Rääkkönen K, Ralston SH, Ripatti S, Rivadeneira F, Robbins JA, Rotter JI, Rudan I, Salomaa V, Satterfield S, Schipf S, Shin CS, Smith AV, Smith SB, Soranzo N, Spector TD, Stancáková A, Stefansson K, Steinhagen-Thiessen E, Stolk L, Streeten EA, Styrkarsdottir U, Swart KMA, Thompson P, Thomson CA, Thorleifsson G, Thorsteinsdottir U, Tikkanen E, Tranah GJ, Uitterlinden AG, van Duijn CM, van Schoor NM, Vandenput L, Vollenweider P, Völzke H, Wactawski-Wende J, Walker M, Wareham N, Waterworth D, Weedon MN, Wichmann HE, Widen E, Williams FMK, Wilson JF, Wright NC, Yerges-Armstrong LM, Yu L, Zhang W, Zhao JH, Zhou Y, Nielson CM, Harris TB, Demissie S, Kiel DP, Ohlsson C. Disentangling the genetics of lean mass. *Am J Clin Nutr*. 2019 Feb 1;109(2):276-287. PMID: 30721968; PMCID: PMC6500901.
 11. Zorina-Lichtenwalter K, Lichtenwalter RN, Zaykin DD, Parisien M, Gravel S, Bortsov A, **Diatchenko L**. A study in scarlet: MC1R as the main predictor of red hair and exemplar of the flip-flop effect. *Hum Mol Genet*. 2019 Jan 16. PMID: 30657907; PMCID: PMC6548228.

12. Vlaeyen JWS, Maher CG, Wiech K, Van Zundert J, Meloto CB, **Diatchenko L**, Battié MC, Goossens M, Koes B, Linton SJ. Low back pain, *Nature Reviews Disease Primers*, 2018 Dec 13; 4(1):52. PMID: 30546064.
13. **Diatchenko L.**, The human pain genetics database: an interview with Luda Diatchenko. *Pain Manag.* 2018 Jul 1;8(4):259-261. PMID: 29869557.
14. Zhuang GZ, Upadhyay U, Tong X, Kang Y, Erasso DM, Fu ES, Sarantopoulos KD, Martin ER, Wiltshire T, **Diatchenko L**, Smith SB, Maixner W, Levitt RC. Human carbonic anhydrase-8 AAV8 gene therapy inhibits nerve growth factor signaling producing prolonged analgesia and anti-hyperalgesia in mice. *Gene Ther.* 2018 Jul; 25(4):297-311. PMID: 29789638; PMCID: PMC6063772.
15. Meloto CB, Benavides R, Lichtenwalter RN, Wen X, Tugarinov N, Zorina-Lichtenwalter K, Chabot-Doré AJ, Piltonen MH, Cattaneo S, Verma V, Klares R 3rd, Khoury S, Parisien M, **Diatchenko L**. Human pain genetics database: a resource dedicated to human pain genetics research. *Pain.* 2018 Apr;159(4):749-763. PMID: 29300278.
16. Zorina-Lichtenwalter K, Parisien M, **Diatchenko L**. Genetic studies of human neuropathic pain conditions: a review. *Pain.* 2018 Mar;159(3):583-594. PMID: 29240606; PMCID: PMC5828382.
17. Vsevolozhskaya OA, Kuo CL, Ruiz G, **Diatchenko L**, Zaykin DV. The more you test, the more you find: The smallest P-values become increasingly enriched with real findings as more tests are conducted. *Genet Epidemiol.* 2017 Dec; 41 (8): 726-743. PMID: 28913944.
18. Rosen SF, Ham B, Drouin S, Boachie N, Chabot-Dore AJ, Austin JS, **Diatchenko L**, Mogil JS. T Cell Mediation of Pregnancy Analgesia Affecting Chronic Pain in Mice. *J Neurosci.* 2017 Oct 11;37(41):9819-9827. PMID: 28877966; PMCID: [PMC6596598](#).
19. Martin LJ, Smith SB, Khoutorsky A, Magnussen CA, Samoshkin A, Sorge RE, Cho C, Yosefpour N, Sivaselvachandran S, Tohyama S, Cole T, Khuong TM, Mir E, Gibson DG, Wieskopf JS, Sotocinal SG, Austin JS, Meloto CB, Gitt JH, Gkogkas C, Sonenberg N, Greenspan JD, Fillingim RB, Ohrbach R, Slade GD, Knott C, Dubner R, Nackley AG, Ribeiro-da-Silva A, Neely GG, Maixner W, Zaykin DV, Mogil JS, **Diatchenko L**. Epiregulin and EGFR interactions are involved in pain processing. *J Clin Invest.* 2017 Sep 1;127(9):3353-3366. PMID: 28783046; PMCID: PMC5669538.
20. Zillikens MC, Demissie S, Hsu YH, Yerges-Armstrong LM, Chou WC, Stolk L, Livshits G, Broer L, Johnson T, Koller DL, Kotalik Z, Luan J, Malkin I, Ried JS, Smith AV, Thorleifsson G, Vandenput L, Hua Zhao J, Zhang W, Aghdassi A, Åkesson K, Amin N, Baier LJ, Barroso I, Bennett DA, Bertram L, Biffar R, Bochud M, Boehnke M, Borecki IB, Buchman AS, Byberg L, Campbell H, Campos Obanda N, Cauley JA, Cawthon PM, Cederberg H, Chen Z, Cho NH, Jin Choi H, Claussnitzer M, Collins F, Cummings SR, De Jager PL, Demuth I, Dhonukshe-Rutten RAM, **Diatchenko L**, Eiriksdottir G, Enneman AW, Erdos M, Eriksson JG, Eriksson J, Estrada K, Evans DS, Feitosa MF, Fu M, Garcia M, Gieger C, Girke T, Glazer NL, Grallert H, Grewal J, Han BG, Hanson RL, Hayward C, Hofman A, Hoffman EP, Homuth G, Hsueh WC, Hubal MJ, Hubbard A, Huffman KM, Husted LB, Illig T, Ingelsson E, Ittermann T, Jansson JO, Jordan JM, Jula A, Karlsson M, Khaw KT, Kilpeläinen TO, Klopp N, Kloth JSL, Koistinen HA, Kraus WE, Kritchevsky S, Kuulasmaa T, Kuusisto J, Laakso M, Lahti J, Lang T, Langdahl BL, Launer LJ, Lee JY, Lerch MM, Lewis JR, Lind L, Lindgren C, Liu Y, Liu T, Liu Y, Ljunggren Ö,

- Lorentzon M, Luben RN, Maixner W, McGuigan FE, Medina-Gomez C, Meitinger T, Melhus H, Mellström D, Melov S, Michaëlsson K, Mitchell BD, Morris AP, Mosekilde L, Newman A, Nielson CM, O'Connell JR, Oostra BA, Orwoll ES, Palotie A, Parker S, Peacock M, Perola M, Peters A, Polasek O, Prince RL, Rääkkönen K, Ralston SH, Ripatti S, Robbins JA, Rotter JI, Rudan I, Salomaa V, Satterfield S, Schadt EE, Schipf S, Scott L, Sehmi J, Shen J, Soo Shin C, Sigurdsson G, Smith S, Soranzo N, Stančáková A, Steinhagen-Thiessen E, Streeten EA, Styrkarsdóttir U, Swart KMA, Tan ST, Tarnopolsky MA, Thompson P, Thomson CA, Thorsteinsdóttir U, Tikkanen E, Tranah GJ, Tuomilehto J, van Schoor NM, Verma A, Vollenweider P, Völzke H, Wactawski-Wende J, Walker M, Weedon MN, Welch R, Wichmann HE, Widen E, Williams FMK, Wilson JF, Wright NC, Xie W, Yu L, Zhou Y, Chambers JC, Döring A, van Duijn CM, Econs MJ, Gudnason V, Kooner JS, Psaty BM, Spector TD, Stefansson K, Rivadeneira F, Uitterlinden AG, Wareham NJ, Ossowski V, Waterworth D, Loos RJJ, Karasik D, Harris TB, Ohlsson C, Kiel DP. Large meta-analysis of genome-wide association studies identifies five loci for lean body mass. *Nat Commun.* 2017 Jul 19;8(1):80. PMID: 28724990; PMCID: PMC5517526.
21. Peng C, Li L, Zhang MD, Gonzales CB, Parisien M, Belfer I, Usoskin D, Abdo H, Furlan A, Häring M, Lallemand F, Harkany T, **Diatchenko L**, Hökfelt T, Hjerling-Leffler J, Ernfors P. MiR-183 cluster scales mechanical pain sensitivity by regulating basal and neuropathic pain genes. *Science.* 2017 Jun 16;356(6343):1168-1171. PMID: 28572455.
 22. Parisien M, Khoury S, Chabot-Doré AJ, Sotocinal SG, Slade GD, Smith SB, Fillingim RB, Ohrbach R, Greenspan JD, Maixner W, Mogil JS, Belfer I, **Diatchenko L**. Effect of Human Genetic Variability on Gene Expression in Dorsal Root Ganglia and Association with Pain Phenotypes. *Cell Rep.* 2017 May 30;19(9):1940-1952. PMID: 28564610; PMCID: PMC5524461.
 23. Levitt RC, Zhuang GY, Kang Y, Erasso DM, Upadhyay U, Ozdemir M, Fu ES, Sarantopoulos KD, Smith SB, Maixner W, **Diatchenko L**, Martin ER, Wiltshire T. Car8 dorsal root ganglion expression and genetic regulation of analgesic responses are associated with a cis-eQTL in mice. *Mamm Genome.* 2017 Oct;28(9-10):407-415. PMID: 28547032; PMCID: PMC5693610.
 24. Liu N, Zhou KI, Parisien M, Dai Q, **Diatchenko L**, Pan T. N6-methyladenosine alters RNA structure to regulate binding of a low-complexity protein. *Nucleic Acids Res.* 2017 Jun 2;45(10):6051-6063. PMID: 28334903; PMCID: PMC5449601.
 25. Linnstaedt SD, Walker MG, Riker KD, Nyland JE, Hu J, Rossi C, Swor RA, Jones JS, **Diatchenko L**, Bortsov AV, Peak DA, McLean SA. Genetic variant rs3750625 in the 3'UTR of ADRA2A affects stress-dependent acute pain severity after trauma and alters a microRNA-34a regulatory site. *Pain.* 2017 Feb;158(2):230-239. PMID: 27805929; PMCID: PMC5239739.
 26. Sanders AE, Jain D, Sofer T, Kerr KF, Laurie CC, Shaffer JR, Marazita ML, Kaste LM, Slade GD, Fillingim RB, Ohrbach R, Maixner W, Kocher T, Bernhardt O, Teumer A, Schwahn C, Sipilä K, Lähdesmäki R, Männikkö M, Pesonen P, Järvelin M, Rizzatti-Barbosa CM, Meloto CB, Ribeiro-Dasilva M, **Diatchenko L**, Serrano P, Smith SB. GWAS Identifies New Loci for Painful Temporomandibular Disorder. *J Dent Res.* 2017 Mar;96(3):277-284. PMID: 28081371; PMCID: PMC5298397.
 27. Zorina-Lichtenwalter K, Meloto CB, Khoury S, **Diatchenko L**. Genetic predictors of human chronic pain conditions. *Neuroscience.* 2016 Dec 3;338:36-62. PMID: 27143481.

28. Slade GD, Ohrbach R, Greenspan JD, Fillingim RB, Bair E, Sanders AE, Dubner R, **Diatchenko L**, Meloto CB, Smith S, Maixner W. Painful Temporomandibular Disorder: Decade of Discovery from OPPERA Studies. *J Dent Res*. 2016 Sep;95(10):1084-92. PMID: 27339423; PMCID: PMC5004239.
29. Wang S, Joseph J, **Diatchenko L**, Ro JY, Chung MK. Agonist-dependence of functional properties for common nonsynonymous variants of human transient receptor potential vanilloid 1. *Pain*. 2016 Jul;157(7):1515-24. PMID: 26967694; PMCID: PMC5512168.
30. Bair E, Gaynor S, Slade GD, Ohrbach R, Fillingim RB, Greenspan JD, Dubner R, Smith SB, **Diatchenko L**, Maixner W. Identification of Clusters of Individuals Relevant to Temporomandibular Disorders and Other Chronic Pain Conditions: The OPPERA Study. *Pain*. 2016 Jun;157(6):1266-78. PMID: 26928952; PMCID: PMC4949303.
31. De Gregori M, **Diatchenko L**, Ingelmo PM, Napolioni V, Klepstad P, Belfer I, Molinaro V, Garbin G, Ranzani GN, Alberio G, Normanno M, Lovisari F, Somaini M, Govoni S, Mura E, Bugada D, Niebel T, Zorzetto M, De Gregori S, Molinaro M, Fanelli G, Allegri M. Human Genetic Variability Contributes to Postoperative Morphine Consumption. *J Pain*. 2016 May;17(5):628-36. PMID: 26902643.
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33. Zhou KI, Parisien M, Dai Q, Liu N, **Diatchenko L**, Sachleben JR, Pan T. N6-Methyladenosine Modification in a Long Noncoding RNA Hairpin Predisposes Its Conformation to Protein Binding. *J Mol Biol*. 2016 Feb 27; 428(5 Pt A):822-33. PMID: 26343757; PMCID: PMC4779075.
34. Samoshkin A, Convertino M, Viet CT, Wieskopf JS, Kambur O, Marcovitz J, Patel P, Stone LS, Kalso E, Mogil JS, Schmidt BL, Maixner W, Dokholyan NV, **Diatchenko L**. Structural and functional interactions between six-transmembrane μ -opioid receptors and β 2-adrenoreceptors modulate opioid signaling. *Sci Rep*. 2015 Dec 11;5:18198. PMID: 26657998; PMCID: PMC4676002.
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36. Convertino M, Samoshkin A, Viet CT, Gauthier J, Li Fraine SP, Sharif-Naeini R, Schmidt BL, Maixner W, **Diatchenko L**, Dokholyan NV. Differential regulation of 6- and 7-transmembrane helix variants of μ -opioid receptor in response to morphine stimulation. 2015. *PLoS One*. 10(11):e0142826. PMID: 26554831; PMCID: PMC4640872.
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- survey, and expert panel recommendations. *Pain*. 2015 Nov;156(11):2337-53. PMID: 26456674; PMCID: PMC4747983.
38. Martin LJ, Piltonen MH, Gauthier J, Convertino M, Acland EL, Dokholyan NV, Mogil JS, **Diatchenko L**, Maixner W. Differences in the antinociceptive effects and binding properties of propranolol and bupranolol enantiomers. *J Pain*. 2015 Dec;16(12):1321-33. PMID: 26456674.
 39. Hsu YH, Liu Y, Hannan MT, Maixner W, Smith SB, **Diatchenko L**, Golightly YM, Menz HB, Kraus VB, Doherty M, Wilson AG, Jordan JM. Genome-wide association meta-analyses to identify common genetic variants associated with hallux valgus in Caucasian and African Americans. *J Med Genet*. 2015 Nov;52(11):762-9. PMID: 26337638; PMCID: PMC4864963.
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 43. Segall SK, Shabalina SA, Meloto CB, Wen X, Cunningham D, Tarantino LM, Wiltshire T, Gauthier J, Tohyama S, Martin LJ, Mogil JS, **Diatchenko L**. Molecular genetic mechanisms of allelic specific regulation of murine Comt expression. *Pain*. 2015 Oct;156(10):1965-77. PMID: 26067582; PMCID: PMC4579042.
 44. Wieskopf JS, Mathur J, Limapichat W, Post MR, Al-Qazzaz M, Sorge RE, Martin LJ, Zaykin DV, Smith SB, Freitas K, Austin JS, Dai F, Zhang J, Marcovitz J, Tuttle AH, Slepian PM, Clarke S, Drenan RM, Janes J, Al Sharari S, Segall SK, Aasvang EK, Lai W, Bittner R, Richards CI, Slade GD, Kehlet H, Walker J, Maskos U, Changeux JP, Devor M, Maixner W, **Diatchenko L**, Belfer I, Dougherty DA, Su AI, Lummis SC, Imad Damaj M, Lester HA, Patapoutian A, Mogil JS. The nicotinic $\alpha 6$ subunit gene determines variability in chronic pain sensitivity via cross-inhibition of P2X2/3 receptors. *Sci Transl Med*. 2015 May 13;7(287):287ra72. PMID: 25972004; PMCID: PMC5018401.
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 46. Convertino M, Samoshkin A, Gauthier J, Gold MS, Maixner W, Dokholyan NV, **Diatchenko L**. μ -Opioid receptor 6-transmembrane isoform: A potential therapeutic target for new effective opioids. *Prog Neuropsychopharmacol Biol Psychiatry*. 2015 Oct 1;62:61-7. PMID: 25485963; PMCID: PMC4646084.

47. De Gregori M, **Diatchenko L**, Belfer I, Allegri M. OPRM1 receptor as new biomarker to help the prediction of post mastectomy pain and recurrence in breast cancer. *Minerva Anesthesiol.* 2015 Aug;81(8):894-900. PMID: 25300626.
48. Smith SB, Reenilä I., Männistö PT, Slade GD, Maixner W, **Diatchenko L**, Nackley AG. Epistasis Epistasis between polymorphisms in COMT, ESR1, and GCH1 influences COMT enzyme activity and pain. *Pain.* 2014 Nov;155(11):2390-9. PMID: 25218601; PMCID: PMC4253645.

Before 2014, 83 additional peer reviewed journal articles

Peer-Reviewed Editorials and Reviews

1. Zorina-Lichtenwalter K, Parisien M, **Diatchenko L**. Genetic studies of human neuropathic pain conditions: a review. *Pain.* 2018 Mar 159(3):583–594.
2. Slade GD, Ohrbach R, Greenspan JD, Fillingim RB, Bair E, Sanders AE, Dubner R, **Diatchenko L**, Meloto CB, Smith S, Maixner W. Painful Temporomandibular Disorder: Decade of Discovery from OPPERA Studies. *J Dent Res.* 2016 Sep;95(10):1084-92. Review
3. Zorina-Lichtenwalter K, Meloto CB, Khoury S, **Diatchenko LB**. Genetic predictors of human chronic pain conditions. *Neuroscience.* 2016 Apr 30. pii: S0306-4522(16)30126-9. Review
4. Convertino M, Samoshkin A, Gauthier J, Gold MS, Maixner W, Dokholyan NV, **Diatchenko L**. μ -Opioid receptor 6-transmembrane isoform: A potential therapeutic target for new effective opioids. *Prog Neuropsychopharmacol Biol Psychiatry.* 2015 Oct 1;62:61-7.
5. De Gregori M, **Diatchenko L**, Belfer I, Allegri M. OPRM1 receptor as new biomarker to help the prediction of post mastectomy pain and recurrence in breast cancer. *Minerva Anesthesiol.* 2015 Aug;81(8):894-900.
6. Belfer I, Young EE, **Diatchenko L**. Letting the Gene Out of the Bottle: OPRM1 Interaction Editorial view on: OPRM1 A118G gene variant and postoperative opioid requirement: a systematic review and meta-analysis. *Anesthesiology* 2014; 121:00-00
7. Huijnen IP, Rusu AC, Scholich S, Meloto C, **Diatchenko L**. Subgrouping of Low Back Pain Patients for Targeting Treatments: Evidence from Genetic, Psychological and Activity-related Behavioral Approaches. *Clin J Pain.* 2014 Mar 27.

Before 2014, 8 additional Peer-Reviewed Editorials and Reviews

Other refereed contributions (peer-reviewed, abstract for oral/poster presentation at conferences)

1. Goh J, Khoury S , Velly A, **Diatchenko L**, Martel MO. The role of tobacco smoking in the transition from acute to chronic pain. American Pain Society (APS) Annual Scientific Meeting. April 3-6, 2019.
2. Goh J, Khoury S , Velly A, **Diatchenko L**, Martel MO. The role of tobacco smoking in the transition from acute to chronic pain. Poster for 23rd Annual McGill Pain Day, Montreal. January 24th 2019
3. Zwaig J, Lichtenwalter R, Remz J, Diatchenko L, Meloto C.B. A preliminary qualitative and quantitative approach to chronic pain patients' willingness to communicate. Poster for 23rd Annual McGill Pain Day, Montreal. January 24, 2019.

4. Srinivas A., Ingelmo P., Vega Perez E., Pitt R., Gonzalez Cardenas V. H., Mohamed N., Sotocinal S. G., Mogil J. S., **Diatchenko L.**, Meloto CB.. Ketotifen fumarate to treat pain: it works for mice – does it work for humans? 23rd Annual McGill Pain Day, Montreal. January 24th 2019
5. Tugarinov N, Parisien M, Samoshkin A, Piltonen MH, Martin LJ, Dagostino C, Allegri M, Mogil J, Belfer I, **Diatchenko L**, Meloto CB . Animal and human evidence of a role for complement component C4 in pain resolution. Poster for 23rd Annual McGill Pain Day, McGill University, Montreal. January 24th, 2019.
6. Bortsov A, Chandra S., Bair E., Dubner R., Fillingim R. B., Greenspan J. D., Ohrbach R., Slade G. D., Maixner W., **Diatchenko L**. Chronic painful TMD shares polygenic risk factors with depression and anxiety. International Association for the Study of Pain (IASP) 17th World Congress on Pain, Boston, September 12-16, 2018.
7. Meloto C.B., Tugarinov N., Linton A., Parisien M., **Diatchenko L**. The expanded Human Pain Genetics Database (HPGDB): validation and functionality of genetic variants associated with human pain phenotypes. 17th World Congress on Pain (IASP), Boston, USA – September 2018.
8. Bersellini Farinotti A , Nascimento A, Wigerblad G, Bas DB, Morado Urbina C, Sandor K, Ängeby Möller K, Nandakumar KS, **Diatchenko L**, Chabot.Dore AJ, Belfer I, Codeluppi S, Holmdahl R, Svensson CI. Uncoupling Pain and Inflammation: Collagen type II antibodies induce pain via direct activation of neuronal Fc γ RI. International Association for the Study of Pain (IASP) 17th World Congress on Pain, Boston, September 12-16, 2018.
9. Khoury S, Parisien M, Bortsov A, Benavides R, **Diatchenko L**. Shared heritability between chronic pain conditions. International Association for the Study of Pain (IASP) 17th World Congress on Pain, Boston, September 12-16, 2018.
10. Verma V, Khoury S, Parisien M, Bortsov A, Benavides R, **Diatchenko L**. Immune System and Sex in Extent and Progress of Pain. International Association for the Study of Pain (IASP) 17th World Congress on Pain, Boston, September 12-16, 2018.
11. Benavides R, Cattaneo S, Verma V, Gilron I, **Diatchenko L**. Genetic markers in the prediction of pharmacologic response to Nortriptyline and Morphine in neuropathic pain, a secondary analysis study. International Association for the Study of Pain (IASP) 17th World Congress on Pain, Boston, September 12-16, 2018.
12. Meloto CB, Slade GD, Lichtenwalter RN, Bair E, Rathnayaka N, **Diatchenko L**, Dubner R, Greenspan JD, Maixner W, Fillingim RB, Ohrbach R. Clinical predictors of persistent TMD in people with first-onset TMD. International Association for the Study of Pain (IASP) 17th World Congress on Pain, Boston, September 12-16, 2018.
13. Tansley S, Parisien M, Samoshkin A, Piltonen M.H., Yousefpour N, Austin J.S., Martin L, Ribeiro-da-Silva A, Mogil J.S., **Diatchenko L**, Khoutorsky A. Extracellular matrix-mediated plasticity in neuropathic pain. International Association for the Study of Pain (IASP) 17th World Congress on Pain, Boston, September 12-16, 2018.
14. Tugarinov N, Parisien M, **Diatchenko L**, Meloto CB. Genetic Association Studies of Temporomandibular Disorder: A comprehensive review. Canadian Pain Society (CPS) 39th Annual Scientific Meeting, Montreal. May 22-25, 2018

15. Begley K, Buckley N, Davis K, **Diatchenko L**, Finley A, Salisbury G, Gilron I, Hudspith M, Iorio A, Latimer M, MacDermid J, Poulin P, Schneider C, Stevens B, Stinson J, Groves M. The chronic pain network. Canadian Pain Society (CPS) 39th Annual Scientific Meeting, Montreal. May 22-25, 2018.
16. Tansley S, Parisien M, Samoshkin A, Piltonen M.H., Yousefpour N, Austin J.S., Martin L, Ribeiro-da-Silva A, Mogil J.S., **Diatchenko L**, Khoutorsky A. Extracellular matrix-mediated plasticity in neuropathic pain. Canadian Pain Society (CPS) 39th Annual Scientific Meeting, Montreal. May 22-25, 2018.
17. Meloto C.B., Ingelmo P., Perez E.V., Pitt R., Cardenas V.H.G., Mohamed N., Sotocinal S.G., Mogil J.S., **Diatchenko L**. Stabilizing mast cells to treat pain: evidence from pre-clinical and clinical studies” – 39th Annual Scientific Meeting of the Canadian Pain Society (CPS), Montreal, Canada – May 2018
18. Khoury S, Wang Q, Parisien M, Bortsov A, McLean SA, Sofer T, Louie T, Kaunisto MA, Kalso EA, Belfer I, Slade GD, Smith SB, Fillingim RB, Ohrbach R, Greenspan JD, Neely G, Maixner W, **Diatchenko L**. Genome wide association study of sleep quality identifies a new association with Loci near MPP6. World Sleep 2017, Prague, Czech Republic. October 7-11, 2017.
19. Lichtenwalter RN., Zorina-Lichtenwalter K, **Diatchenko L**. Genotypic Data in Relational Databases: Efficient Storage and Rapid Retrieval. 21st European Conference on Advances in Databases and Information Systems (ADBIS 2017) Nicosia, Cyprus. September 24-27, 2017.
20. Zorina-Lichtenwalter K; Lichtenwalter, R.N.; Bortsov, A.; Slade, G.D.; Dubner, R.; Greenspan, J.D.; Ohrbach R.; Knott, C.; Weir, B.S.; Maixner, W.; Fillingim, R.B. ; **Diatchenko, L**. MC1R polymorphisms: of mice and (wo)men, red hair, and pain. The biennial European Federation of IASP Chapters scientific meeting, Copenhagen, Denmark. September 6-9, 2017
21. Meloto C, B. Cordero RA, Wen S, Tugarinov N, Klares III R, Cattaneo S, Zorina-Lichtenwalter K, Verma V, Chabot-Doré AJ, Piltonen M, Khoury S, Parisien M, Lichtenwalter R, **Diatchenko L**. Human Pain Genetics Database (HPGDB) development of a comprehensive repository for human pain genetics. Anesthesia Bromage Day, Montreal. May 25, 2017
22. Khoury S. A Genetic association study of somatic symptoms in a pain cohort identifies a polymorphism in the dopa-decarboxylase that reduces its enzymatic activity. Anesthesia Bromage Day, Montreal. May 25, 2017
23. Piltonen M, Khoury S, Samoshkin A., Fillingim RB, Greenspan JD, Ohrbach R, Slade GD, Smith SB, Maixner W, **Diatchenko L**. A genetic polymorphism in the dopa-decarboxylase gene associated with somatic symptoms in chronic pain reduces its enzymatic activity. Canadian Pain Society (CPS) 38th Annual Scientific Meeting, Halifax. May 23-26, 2017.
24. Zorina-Lichtenwalter K, Parisien M, Slade GD, Dubner R, Fillingim RB, Greenspan J, Ohrbach R, Knott C, Maixner W, Chung M, **Diatchenko L**. The role of TRPV1 single nucleotide polymorphisms in acute and chronic pain. Canadian Pain Society (CPS) 38th Annual Scientific Meeting, Halifax. May 23-26, 2017.
25. Millecamps M., Shi X.Q., Piltonen M., **Diatchenko L.**, Zhang J., Stone L.S. Changes in behavioral expressions of acute and chronic pain in aging mice are associated with altered supra-spinal plasticity in Pre-Frontal Cortex. Poster for 11th Annual Canadian Neuroscience Meeting, Montreal. May 28 – 31, 2017.

26. Lichtenwalter, K., Lichtenwalter, R.N., Parisien, M., Bortsov, A., Slade, G., Dubner, R., Fillingim, R., Greenspan, J., Ohrbach, R., Knott, C., Maixner, W., **Diatchenko, L.** Differential effects of the *MC1R* "red hair" SNPs on pain sensitivity and depression. Presented at 12th Annual Research Day, McGill University Faculty of Dentistry, Montreal. April 6, 2017.
27. Xing S, Chabot-Doré AJ, Piltonen M, Parisien M, Nix H, Khoutorsky A, Gaveriaux-Ruff C, **Diatchenko L.** Detection of delta opioid receptor isoforms resulting from alternative splicing in mouse spinal cords and brains. Poster for 12th Annual Research Day, McGill University Faculty of Dentistry, Montreal. April 6, 2017.
28. Meloto C.B., Slade GD, Lichtenwalter R, Bair E, Rathnayaka N, Dubner R, Greenspan J, Maixner W, Fillingim RB, **Diatchenko L,** Ohrbach R. Clinical Predictors of Transition from Acute to Persistent TMD. IADR, San Francisco, March 22-25 2017
29. Bair E, Gaynor S, Slade G, Ohrbach R, Fillingim R, Greenspan J, Dubner R, Smith S, **Diatchenko L,** Maixner W. Temporal Changes in Clusters of Individuals Relevant to Temporomandibular Disorders and Other Chronic Pain Conditions: The OPPERA Study. Poster for the International Association for the Study of Pain (IASP) 16th World Congress on Pain, Yokohama, Japan. September 29, 2016.
30. Smith S, Slade G, Bair E, Fillingim R, Greenspan J, Dubner R, Ohrbach R, Maixner W, **Diatchenko L.** Genome-Wide Survey of Genetic Determinants for Psychological Endophenotypes Related to Temporomandibular Disorders (TMD) in the OPPERA Study. Poster for the International Association for the Study of Pain (IASP) 16th World Congress on Pain, Yokohama, Japan. September 28, 2016.
31. Cattaneo S, Moore A, Schriker T, Carli F, **Diatchenko L.** Cardiovascular safety profile for analgesic use of beta-blockage in non-cardiac surgery. Poster for the International Association for the Study of Pain (IASP) 16th World Congress on Pain, Yokohama, Japan. September 30, 2016.
32. Meloto C.B., Bortsov A., Smith S., Parisien M., Bair E., Piltonen M.H., Slade G.D., Fillingim R.B., Greenspan J.D., Ohrbach R., Maixner W., Reenila I., Mannisto P.T., McLean S., **Diatchenko L.** Recent Expansions in the *COMT* and Pain Relationship Poster for the International Association for the Study of Pain (IASP) 16th World Congress on Pain, Yokohama, Japan. September 28, 2016.
33. Verma V, Bair E, Lichtenwalter R, Parisien M, Smith S.B, Fillingim R.B, Ohrbach R, **Diatchenko L.** Epiregulin gene polymorphism: potential biomarker for pain severity in temporomandibular disorders. Poster for the International Association for the Study of Pain (IASP) 16th World Congress on Pain, Yokohama, Japan. September 30, 2016.
34. Khoury S, Slade G. D, Smith S. B, Fillingim R. B, Ohrbach R, Greenspan J. D, Maixner W, **Diatchenko L.** A genome wide association study of sleep complaints in chronic pain patients: a potential mechanism of action. Poster for the International Association for the Study of Pain (IASP) 16th World Congress on Pain, Yokohama, Japan. September 29, 2016.
35. Khoury S, Barakatt M, Slade G. D, Smith S. B, Fillingim R. B, Ohrbach R, Greenspan J. D, Maixner W, Gravel S, **Diatchenko L.** Admixture mapping for pain sensitivity differences among races. Poster for the International Association for the Study of Pain (IASP) 16th World Congress on Pain, Yokohama, Japan. September 29, 2016.

36. Verma V, Bair E, Lichtenwalter R, Parisien M, Smith S.B, Fillingim R.B, Ohrbach R, **Diatchenko L**. Epidermal Growth Factor Receptors and Ligands, and Facial Pain Severity: A Candidate Genes Association Study. Poster for the Integrated Program in Neuroscience: Retreat, McGill University. September 15, 2016.
37. Meloto CB, Slade GD, Lichtenwalter R, Bair E, Rathnayaka N, Dubner R, Greenspan JD, Maixner W, Fillingim RB, **Diatchenko L**, Ohrbach R. Clinical characteristics of TMD at onset and predictors of persistence: preliminary results. Poster for the 8th TMJ Association Meeting, Bethesda, USA. September 11-13, 2016
38. Samoshkin A, Convertino M, Muralidharan A, Gris P, Klares III R, Mogil JS, Maixner W, Dokholyan NV, **Diatchenko L**. Development of Novel Compounds for 6TM- and 7TM- μ -opioid receptor isoforms. Poster for International Narcotics Research Conference, Bath, UK. July 10-14, 2016.
39. Piltonen M, Chabot-Doré A. J, Parisien M, **Diatchenko L**. Landscape of alternative splicing of delta-opioid receptor in human. Poster for International Narcotics Research Conference, Bath, UK. July 10-14, 2016.
40. Zorina-Lichtenwalter K; Lichtenwalter RN, Slade GD, Dubner R, Fillingim RB, Greenspan JD, Ohrbach R, Knott C, Weir BS, Maixner W, **Diatchenko LB**. Melanocortin 1 receptor and its role in pain sensitivity. Oral presentation at the Hot Topics Session. 37th Annual Canadian Pain Society meeting in Vancouver, Canada. May 24-27, 2016.
41. Zorina-Lichtenwalter K; Lichtenwalter RN, Slade GD, Dubner R, Fillingim RB, Greenspan JD, Ohrbach R, Knott C, Weir BS, Maixner W, **Diatchenko LB**. Deciphering the role of melanocortin 1 receptor in pain through single nucleotide polymorphisms. Poster: 37th Annual Canadian Pain Society meeting in Vancouver, Canada. May 24-27, 2016.
Submitted poster abstract selected for an oral presentation during the Hot Topics Sessions at the annual Canadian Pain Society meeting in Vancouver, Canada.
42. Kambur O, Samoshkin A, Kaunisto M, Wieskopf JS, Mogil JS, **Diatchenko L**, Kalso E. ADRB2, pain and opioids in mice and man. Poster: Scandinavian Association for the Study of Pain, Annual Meeting, Reykjavik, Iceland May 26-27 2016.
43. Samoshkin A, Kambur O, Wieskopf J. S, Mogil J. S, Kalso E, **Diatchenko L**. β 2-AR antagonist ICI 118,551 reduces OIH after chronic opioids administration in mice. Neuroscience 2015, Poster: Society for Neuroscience (SfN) 45th Annual Meeting, October 17-21, 2015, Chicago, IL, USA
44. Lichtenwalter KS, Lichtenwalter RN, Ase AR, Niu, M., Séguéla P, Komarova S, Slade GD, Dubner R, Fillingim RB, Greenspan JD, Ohrbach RK, Knott C, Weir BS, Maixner W, **Diatchenko LB**. The fine line between gain and loss: a genetic characterization of *P2RX7* and its relevance to pain. 36th Annual Scientific Meeting of the Canadian Pain Society. Charlottetown, PEI, Canada, May 2015.
Lichtenwalter KS's poster was chosen for Canadian Pain Society Newsletter Spotlight for the Spring Issue 2015.
45. Lichtenwalter KS, Lichtenwalter RN, Ase AR, Niu, M., Séguéla P, Komarova S, Slade GD, Dubner R, Fillingim RB, Greenspan JD, Ohrbach RK, Knott C, Weir BS, Maixner W, **Diatchenko LB**. *P2RX7* genetics at the crossroads of neuroimmune interactions. 9th Congress of the European Pain Federation EFIC. Vienna, Austria, Sept 2015

46. Piltonen M, Chabot-Doré AJ, Parisien M and **Diatchenko L**. Expression of a novel delta-opioid receptor isoform in human brain and a neuroblastoma cell line. Poster for: 9th Annual Canadian Neuroscience Meeting, Vancouver, Canada, May 2015
47. Piltonen M, Chabot-Doré AJ, Parisien M, Stone LS and **Diatchenko L**. Expression of an alternative delta-opioid receptor transcript in the mouse spinal cord. Poster for Society for Neuroscience, Chicago, USA, Oct 2015
48. Meloto CB, Segall SK, Smith S, Parisien M, Shabalina SA, Rizzatti-Barbosa CM, Gauthier J, Tsao D, Convertino M, Piltonen M, Slade G, Fillingim R, Greenspan J, Ohrbach R, Knott C, Maixner W, Zaykin D, Dokholyan N, Reenilä I, Männistö P, **Diatchenko L**. COMT gene locus: new functional variants. Poster for 7th Study In Multidisciplinary Pain Research (SIMPAN), Rome, Italy, Mar 2015
49. Miller V, Slade GG, Sanders AE, Fillingim, Greenspan J, Ohrbach R, Bair E, **Diatchenko L**, Maixner W. Chronic Temporomandibular Disorder and Smoking: the OPPERA Case Control Study. 93rd International Association for Dental Research –Boston Massachusetts, USA March 11-14, 2015.
50. Parisien M, Belfer I and **Diatchenko L**. Expression quantitative trait loci in human dorsal root ganglions. Poster: 5th Annual Canada Excellence Research Chairs Meeting, Waterloo, Canada, Apr 2015
51. Piltonen M, Chabot-Doré AJ, Parisien M and **Diatchenko L**. Identification of new delta-opioid receptor isoforms. 19th Annual McGill Pain Day, Montreal, Canada, Jan 2015
52. Parisien M, Belfer I and **Diatchenko L**. Expression quantitative trait loci in human dorsal root ganglions. 19th Annual McGill Pain Day, Montreal, Canada, Jan 2015
53. Meloto CB, Segall SK, Smith S, Parisien M, Shabalina SA, Rizzatti-Barbosa CM, Gauthier J, Tsao D, Convertino M, Piltonen M, Slade G, Fillingim R, Greenspan J, Ohrbach R, Knott C, Maixner W, Zaykin D, Dokholyan N, Reenilä I, Männistö P, **Diatchenko L**. COMT gene locus: new functional variants. 19th Annual McGill Pain Day, Montreal, Canada, Jan 2015
54. Khoury S, Cole T, Parisien M, Smith S, Neely G, Slade G, Fillingim R, Greenspan J, Ohrbach R, Maixner W, **Diatchenko L**. Genetic association study of somatic symptoms in a temporomandibular disorder pain cohort. 19th Annual McGill Pain Day, Montreal, Canada, Jan 2015
55. Lichtenwalter KS, Ase AR, Lichtenwalter RN, Séguéla P, Komarova S, Slade GD, Dubner R, Fillingim RB, Greenspan JD, Ohrbach RK, Knott C, Weir BS, Maixner W, **Diatchenko LB**. The foul in fair and the fair in foul: gaining and losing pain with SNPs in P2RX7. 19th Annual McGill Pain Day, Montreal, Canada, Jan 2015
56. Wen X, Lichtenwalter RN, **Diatchenko LB**, and Lichtenwalter K. The human pain genes database: an interactive web compendium of human pain-related genetic variants. 19th Annual McGill Pain Day, Montreal, Canada, Jan 2015
57. Lichtenwalter KS, Ase AR, Lichtenwalter RN, Séguéla P, Komarova S, Slade GD, Dubner R, Fillingim RB, Greenspan JD, Ohrbach RK, Knott C, Weir BS, Maixner W, **Diatchenko LB**. The role of P2RX7 genetic variants in pain processing examined through an annotated catalogue of non-synonymous SNPs. Quebec Network of Junior Pain Investigators, Montreal, Quebec 2014

58. Piltonen M, Parisien M, **Diatchenko L**. Identification of new opioid receptor isoforms. Quebec Network of Junior Pain Investigators, Montreal, Quebec, Nov 2014
59. Piltonen M, Parisien M, **Diatchenko L**. Identification of new opioid receptor variants. Society for Neuroscience, Washington DC, USA, Nov 2014
60. Meloto CB, Bortsov A, Helgeson E, Sotocinal SG, Bair E, Slade G, Dubner R, Fillingim R, Greenspan J, Ohrbach R, Knott C, Weir B, Maixner W, Mogil JS, McLean SA, **Diatchenko L**. Stress affect COMT haplotype dependent pain in a gender specific manner: a gene-sex-environment interaction. International Association for the Study of Pain 15th World Congress on Pain, Buenos Aires, Argentina 2014
61. Piltonen M, Martin LJ, Gauthier J, Maixner W, Mogil JS, **Diatchenko L**. S-bupranolol, an ADR- β 1/2/3 antagonist, produces analgesia without sedation. International Association for the Study of Pain 15th World Congress on Pain, Buenos Aires, Argentina 2014
62. Lichtenwalter RN, Wen X, **Diatchenko LB**, and Lichtenwalter K. The human pain genes database: an interactive web compendium of human pain-related genetic variants. International Association for the Study of Pain 15th World Congress on Pain, Buenos Aires, Argentina 2014
63. Samoshkin A, Viet C.T, Convertino M, Maixner W, Dokholyan N.V, Schmidt B, **Diatchenko L**. Structural and functional interaction between 6TM MOR isoform and β 2-adrenoceptors. International Association for the Study of Pain 15th World Congress on Pain, Buenos Aires, Argentina 2014
64. Lichtenwalter KS, Ase AR, Lichtenwalter RN, Séguéla P, Komarova S, Slade GD, Dubner R, Fillingim RB, Greenspan JD, Ohrbach RK, Knott C, Weir BS, Maixner W, **Diatchenko L**. Annotated catalogue of non-synonymous snps in p2rx7 with emphasis on gain-of-function effects. International Association for the Study of Pain 15th World Congress on Pain, Buenos Aires, Argentina 2014
65. Smith SB, Reenilä I, Männistö PT, Slade GD, Maixner W, **Diatchenko L**, Nackley AG. Genetic Interaction between COMPT and convergent molecular pathways influences COMPT enzyme activity, musculoskeletal pain, and mood. International Association for the Study of Pain 15th World Congress on Pain, Buenos Aires, Argentina 2014
66. Bortsov AV, Swift-Scanlan T, **Diatchenko L**, Swor RA, Peak DA, Jones JS, Rathlev NK, Lee DC, Domeier RM, Hendry PL, McLean SA. Differential methylation in the regulatory regions of multiple major histocompatibility complex (MHC) genes predicts the development of chronic widespread musculoskeletal pain after motor vehicle collision. International Association for the Study of Pain 15th World Congress on Pain, Buenos Aires, Argentina 2014
67. Martin L, Smith S, Khoutorsky A, Magnussen C, Sorge R, Mir E, Gibson D, Salter M, Sonenberg N, Ribeiro-da-Silva A, De Koninck Y, Maixner W, **Diatchenko L**, Mogil J. Epiregulin and epidermal growth factor receptor involvement in pain revealed via a reverse translational approach. International Association for the Study of Pain 15th World Congress on Pain, Buenos Aires, Argentina 2014
68. Samoshkin A, Viet C.T, Convertino M, Maixner W, Dokholyan N.V, Schmidt B, **Diatchenko L**. Structural and functional interaction between 6TM MOR isoform and β 2-adrenoceptors. 45th meeting of the International Narcotics Research Conference, Montreal, Quebec, Canada 2014
69. Bortsov A, Swift-Scanlan T, **Diatchenko L**, Swor R, Peak D, Jones J, Rathlev N, Lee D, Domeier R, Hendry P, McLean S. Variable DNA methylation in genes involved immune

response is a potential predictor of chronic widespread pain after motor vehicle collision. American Pain Society 33rd Annual Meeting Scientific Meeting, Tampa, Florida 2014

70. Smith SB, Reenila I, Mannisto PT, Slade GD, Maixner W, **Diatchenko L**, Nackley AG. Genetic interaction between COMT and convergent molecular pathways influences COMT enzyme activity, musculoskeletal pain, and mood. International Association for the Study of Pain 15th World Congress on Pain, Buenos Aires, Argentina 2014
71. Samoshkin A, Viet C.T, Convertino M, Maixner W, Dokholyan N.V, Schmidt B, **Diatchenko L**. Structural and functional interaction between 6TM MOR isoform and β 2-adrenoceptors. 6th Study in Multidisciplinary Pain Research (SIMPAN) International Meeting, Rome, Italy 2014
72. Meloto CB, Bair E, Slade GD, Maixner W, **Diatchenko L**. Stress affects COMT haplotype dependent pain in a gender specific manner: a gene-sex-environment interaction. 6th Study in Multidisciplinary Pain research (SIMPAN), Rome, Italy, 2014
73. Meloto CB, Segall SK, Tsao D, Gauthier J, Convertino M, Reenila I, Mannisto P, **Diatchenko L**. Stress affects COMT haplotype dependent pain in a gender specific manner: a gene-sex-environment interaction, 18th Annual McGill Pain Day, Montreal, Canada, 2014

Before 2014, 61 additional other refereed contributions

Non-refereed contributions

1. “*Oral Health in America—Advances and Challenges: A Report of the Surgeon General*”, National Institutes of Health, HHS, USA. 2019
2. “Advancing Therapeutic Development for Pain and Opioid Use Disorders through Public-Private Partnerships: Proceedings of a Workshop”, National Academies of Science, Engendering and Medicine, Health and Medicine Division, Board on Health Sciences Policy, USA. 2018

Before 2014, 2 additional non-refereed contributions

Creative outputs

1. 2019-September-5 “The secrets of how genetic variation affects perception of pain.” Health Europa <https://www.healtheuropa.eu/the-secrets-of-how-genetic-variation-affects-perception-ofpain/93189/>
2. 2018-June-05 “The human pain genetics database: an interview with Luda Diatchenko” Pain Management from Future Medicine Ltd
3. 2018-Mar-13 “Ms. Scientist” Interview and filming with Dr. Luda Diatchenko. Documentary about women and science for CBC
4. 2016-July-13 “Genetics: An incomplete mosaic” Interview with Dr. Luda Diatchenko. Nature Outlook Article, written by Eryn Brown. Nature 535, S12–S13, http://www.nature.com/nature/journal/v535/n7611_supp/full/535S12a.html
5. 2016-April-28 “What Does Genetics Tell Us About Chronic Pain?” Interview with Dr. Luda Diatchenko. Online publication at Relief News written by Michele Solis. <http://relief.news/genetics-tell-us-chronic-pain/>
6. 2015-Feb-25 Cutting Edge 2015: Development of Personalized Treatments for Chronic Pain – Luda Diatchenko. Podcast:

<http://podcasts.mcgill.ca/health-2/cutting-edge-2015-development-of-personalized-treatments-for-chronic-pain/>

7. 2015 Sigma Camp Faculty 2015, Teaching Human Genetics at a science summer camp for 12-16 years old students. Stony Brook University, Brookhaven National Lab and Harvard Medical School.
8. 2015 In Her Own Words: Stories from Distinguished Research Careers, Panel Discussion at New Music Building, Tanna Schulich Hall, Montreal, Quebec, April 15, 2015
9. 2015 The Cutting Edge Lectures in Science, Redpath Museum Auditorium of McGill University, Invited Presentation: “Development of Personalized Treatments for Chronic Pain” Feb, Montreal, Quebec.
10. 2014 October 7 McGill Tribune Article and Interview with Luda Diatchenko “McGill chooses newest CERC recipient”
11. 2014-Sept-30 Interview for Upcoming Headway Magazine, Winter Edition, McGill University

RESEARCH SUPPORT

Active

2019/11-2023/10

National Institutes of Health (NIH) - National Institute on Drug Abuse (NIDA)
Data Center for the Acute to Chronic Pain Biosignatures
Co-PI: Diatchenko L.
McGill subaward: \$ 75.000 USD

2019/07-2020/06

McGill University - McGill initiative in Computational Medicine – ResearchMatch
Genomewide Mega-Analysis of High Quality Phenotyped Cohorts of Temporomandibular Disorders
PI: L. Diatchenko
Total award: \$ 50.000

2019/03-2020/02

The Alan Edward Center for Research on Pain – Quebec Pain Research Network
Program: pain and AI related research
Validating a predictive signature for chronic pain
Co-PI: L. Diatchenko
Total award \$ 40.000

2019/02-2023/03

Canadian Institutes of Health Research (CIHR) Grant # 81528
DNA Methylation and Mediation of Risk Factors for Chronic Facial Pain
Principal applicant and Leading PI: L. Diatchenko
Total award \$ 1,498,617

2016/04-2022/03

Canadian Institutes of Health Research (CIHR) program Strategy for Patient Oriented Research (SPOR) Grant # SCA145102
Chronic Pain Network (Strategy for Patient–Oriented Research (SPOR) Networks in Chronic Disease)
Principal Applicants: L. Diatchenko
Leading PI: Dr. Norman Buckley
Total award: \$20,000,000.00 CAD
McGill subaward: \$2,402,640 CAD

2014/10-2019/09

US Dept of Defense/Technion (Technion # 2021883) Grant # SP0027788
“Why does acute post whiplash injury pain transform into chronic pain? Multi-modal assessment of risk factors and predictors of pain chronification”
Co-PI L. Diatchenko
Leading PI: Prof David Yarnitsky
McGill subaward cost: \$ 131,386 USD

2014/08-2019/07

NIH/NIDCR University of Maryland. Grant # 1R01DE023846-01
“Genetic and post-translational modifications of TRPV1 in craniofacial pain”
Co-PI: L. Diatchenko
Leading PI: Dr. Chung
Total cost: \$410,839
McGill subaward cost: \$ 215,313

2013/09-2020/08

Canada Excellence Research Chair (CERC) in Personalized Pain Medicine
Grant # CERC09
PI: L Diatchenko

CIHR	\$ 9,997,343
Pfizer	\$ 1,925,000
McGill Institutional Funds	\$ 157,026
Alan Edward Centre for Research on Pain	\$840,000
Canadian Foundation for Innovation	\$1,962,822

2013-2020

NIH/NIDCR Grant #K12DE022793 “Biomedical Researcher Development Program in TMJD and Orofacial Pain. Multi-PI grant,
Co-PI: L Diatchenko,
Program Director: W Maixner.
Total estimated cost: \$374,293

Completed

2018/10-2019/05

Mitacs Globalink Research Award- Abroad

“A study of overlap and causality between chronic pain and depression” awarded to PhD student Katerina Zorina-Lichtenwalter. Host supervisor and Institution: Professor Tao Li, Sichuan University, China.
Total award: \$ 6,000 CAD

2017/09-2018/08

Alan Edwards Centre for Research on Pain.
Catherine Bushnell Fellowship in Chronic Pain Research awarded to post-doctoral fellow, Dr. Carolina Beraldo Meloto
Total award: \$50,000 CAD

2016/11-2017/08

Genome Canada Competition: Genome Canada 2017 Large-Scale Applied Research Project (LSARP) competition: Genomics and Precision Health
Total award: \$5,000 CAD

2016/9-2017/08

Alan Edwards Centre for Research on Pain.
Catherine Bushnell Fellowship in Chronic Pain Research awarded to post-doctoral fellow, Dr. Carolina Beraldo Meloto
Total award: \$40,000 CAD

2016/01-2017/05

Proove Bioscience, Inc. Grant #
“Exploration of the role of COMPT genotypes in pain perception and pain management”
PI: L. Diatchenko
Total award: \$ 40,000 CAD

2016/9-2017/06

NIH/University of Chicago. Grant # RM1HG008935
“Center for dynamic RNA epitranscriptomes”
Co-PI: L. Diatchenko
Leading PI: Prof Tao Pan
Total cost: \$ 40,000 USD (McGill Subaward)

2014/08-2017/07

NIH Grant # R01DE022903
“CA8 Variants: New Mechanisms Underlying Transitions to Persistent Pain Syndromes”
Lead PI/PD: R.C. Levitt
PI: E.R. Martin
Consultant: L. Diatchenko
Total cost: \$541,227

2013/09-2017/07

NIH/NIDCR Grant # U01DE017018/UNC

- “Genetic & Psychosocial Influences on Transition to Chronic TMD and Related Pain”
 PI: Maixner, Slade
 Co-PI, Scientific Leader of the Neurogenomics Core and
 PI of McGill University subcontract: L Diatchenko
 Total Funding: \$16,314,046
 McGill subaward cost: \$461,573
- 2013-2014 Center for Inherited Disease Research (CIDR) High throughput genotyping and sequencing resource access. Grant # 1X01HG007586-01
 “Genome Wide Association Study of Chronic TMD: Discovery Phase”.
 Leading PI: L Diatchenko
 No cost grant
- 2013-2015 NIH/NINDS Grant # P01 NS045685-061A
 “Complex Persistent Pain Conditions: Common and Unique Pathways of Vulnerability.”
 Consultant: L Diatchenko
 PI: W Maixner
 Total Award: \$1,221,031.
- 2012-2017 NIH Grant # R01DE022903
 “CA8 Variants: New Mechanisms Underlying Transitions to Persistent Pain Syndromes”
 Consultant: L. Diatchenko
 Lead PI/PD: R.C. Levitt
 PI: E.R. Martin
 Total cost: \$541,227
- 2012-2014 NIH Grant # R01DE022903
 “CA8 Variants: New Mechanisms Underlying Transitions to Persistent Pain Syndromes”
 Algenomics Investigator: L. Diatchenko
 Lead PI/PD: R.C. Levitt
 PI: E.R. Martin
 Total cost: \$541,227
- 2012-2013 NIH/NIDCR Grant # K12DE022793
 “Biomedical Researcher Development Program in TMJD and Orofacial Pain. Multi-
 PI: L Diatchenko, 3 % effort.
 Program Director: W Maixner.
 Total estimated cost: \$374,293.
- 2012-2014 NIH/NIDA Grant # 1R41DA032293-01
 “Development of a Novel Class for Opioid Drugs”
 PI: L Diatchenko, 10% effort.
 Total Award: \$656,967.

- 2012-2014 NIH/NIDCR Grant # 1R03DE022595-010
 “Effects of cumulative stress and change in pain regulation on risk of chronic TMD.”
 Co-Investigator: L. Diatchenko, 2.5% effort.
 PI: GD Slade
 Total Award: \$100,000.
- 2010-2013 NIH/NINDS Grant # P01 NS045685-061A
 “Complex Persistent Pain Conditions: Common and Unique Pathways of Vulnerability.”
 Co-Investigator: L. Diatchenko, 12% effort.
 PI: W Maixner
 Total Award: \$1,221,031.
- 2011-2016 NIDCR/NIH Grant # T90DE021986
 “Training Program for the Next Generation of Oral Health Researchers (NextGen).”
 Investigator: L Diatchenko, no cost to the grant.
 PI: JD Beck,
 Total Award: \$306,513.
- 1999-2014 NIH Grant # T32 GM08719
 “Medical Scientist Training Program (MSTP).”
 Investigator: L Diatchenko, no cost to the grant.
 PI: E Orringer;
 Total Award: \$439,958.
- 2012-2013 NIDCR Grant # 1R34DE022088-01A1
 “Effect of COMT genetic polymorphism on response to propranolol therapy in TMD.”
 Investigator: L Diatchenko, 3% effort.
 Co-PI: I Tchivileva, GD Slade;
 Total Award: \$238,744.
- 2009-2013 NIH/NIDDK Grant # 2-R01-DK031369-21A1
 “Psychophysiology of Irritable Bowel Syndrome.”
 Co-PI: L Diatchenko, 10% effort.
 PI: W Whitehead;
 Total Award: \$615,796.
- 2008-2013 NIH/NICHD Grant # 5R01HD054767-04
 “Longitudinal population-based study of vulvodynia.”
 Consultant: L Diatchenko.
 PI: BD Reed
 Total Award: \$2,500,000.
- 2010-2013 NIH/NIAMS Grant # R01 AR060492-01
 “Genetics of Foot Disorders.”
 Co-Investigator: L Diatchenko, 10% effort.
 PI: J Jordan & M Hannan

Total Award: \$1,968,606.

- 2009-2010 NC TraCS Grant # NC TraCS Large Pilot
“Characterizing the Role of a Newly Identified u1OR Isoform in Opioid-induced Behavioral Phenotypes.”
Co-Investigator: L Diatchenko, no cost to the grant.
PI: AG Nackley
Total Award: \$50,000.
- 2009-2010 NC TraCS Grant # 10KR30904
“Hair Cortisol as a Biomarker of Chronic HPA Axis Response to Stress.”
Co-Investigator: L Diatchenko, no cost to the grant.
PI: A Sanders
Total Award: \$9,270.
- 2008-2012 NIH/NIAMS Grant # 1R01AR056328
“Genetic predictors of acute and chronic musculoskeletal pain after minor MVC.”
Co-PI: L Diatchenko, 5% effort.
PI: S McLean
Total Award: \$2,551,312.
- 2008-2011 NIH/NIDCR Grant # 5F32DE019057-03
“Contribution of ADRA1A polymorphism to persistent pain states.”
Mentor: L Diatchenko, no cost to the grant.
PI: S Smith
Total Award: \$150,416.
- 2006-2009 NIH/NICHHD Grant # K12 HD052191
“Multidisciplinary Clinical Research Career Development Award.”
Mentor: L Diatchenko, 5% effort.
PI: E Orringer
Total Award: \$75,000.
- 2005-2012 NIDCR/NIH Grant # T32DE017245
“Clinical Research Training in Oral Diseases for Future Clinicians.”
Investigator: L Diatchenko, no cost to the grant.
PI: JD Beck
Total Award: \$347,731.
- 2005-2012 NIH/NIDCR Grant # 1U01DE05007
“Risk Factors for Onset and Persistence of TMD.” (OPPERA I)
Director, Biogenetics Core: L Diatchenko, 50% effort.
PI: W Maixner;
Total Award: \$ 19,115,271.
- 2005-2011 NIH/ NIDCR/NICHHD/NINDS Grant # R01DE016558
“COMT and β AR Polymorphism and Development of Painful TMD.”

PI: L Diatchenko, 40% effort.
Total Award: \$1,802,000.

2005-2010 NIH/NICHHD Grant # K12 HD052191
“Multidisciplinary Clinical Research Career.”
Investigator: L Diatchenko, no cost to the grant.
PI: E Orringer
Total Award: \$1,539,474.

2005-2010 NIH Grant # T32 DE 017245
“Medical Scientist Training Program (MSTP).”
Investigator: L Diatchenko, no cost to the grant.
PI: JD Beck
Total Award: \$433,599.

2005-2010 NIH Grant # T32 AR007414
“Medical Scientist Training Program (MSTP)”
Investigator: L Diatchenko, no cost to the grant.
PI: J Jordan
Total Award: \$298,748.

2003-2005 NIH/NCI Grant # 1R43CA101271-01
“Profiling of Signal Transduction Pathways in Cancer.”
PI: L Diatchenko, 50% effort.
Total Award: \$146,750.

2003-2005 NIH/NCI/NIEHS/NIGMS/NIMH/NIDCD/NIAAA Grant # 1R43CA101636-01
“Novel Biosensors for Toxicological Applications.”
PI: L Diatchenko, 50% effort.
Total Award: \$321,374.

LEADERSHIP

EDITORIAL POSITIONS

2016-present Member, Editorial Board, Scientific Reports

2016-present Member, Editorial Board, Journal of Neurobiology of Pain

ORGANIZATION OF CONFERENCES

2019 Member, Scientific Organizing Committee, symposium “*Advances in Pain.*” New York Academy of Sciences and the journal *Science Translational Medicine*

2018-2019 Member, Consortium of Multidisciplinary Pain Researchers and Clinicians (CIMPARC) Organizing and Executive Committee

2017-2019 Chair, Scientific Program Committee, American Pain Society

2014-2018 Member, Study in Multidisciplinary Pain Research (SIMPARG) organizing and Executive Committee

- 2014 Member, Scientific Committee, World Forum for Spine Research, Xi'an, China
- 2014 Chair, Poster Session Committee, Study in Multidisciplinary Pain Research (SIMPAN) conference
- 2013-2016 Member, Study in Multidisciplinary Pain Research (SIMPAN) Scientific Committee
- 2013 President, Opioids Medical Workshop. Evidence Based Prediction for Opioid Use: Bench and Clinic, SIMPAN Meeting, 2013.
- 2012-2016 Member, Scientific Program Committee, International Association for the Study of Pain (IASP)
- 2012 Organizer, International Association for the Study of Pain (IASP), Research Symposium "The Genetics of Pain: Science, Medicine, and Drug Development," Miami Beach, FL.

ACTIVITIES IN PROFESSIONAL AND SCIENTIFIC ORGANIZATIONS/SOCIETIES

- 2019 Member, UK Biobank Pain Research Consortium
- 2019 Member, Scientific Review Group: ZNS1 SRB-H 08, EPPIC-Net: Objective review of Pain Therapeutics for the EPPIC-Network
- 2019 Director, Genetics & Genomics analysis technical platform, QPRN Scientific committee
- 2019 Member, College of Reviewers (College), Canada. Canadian Institutes of Health Research (CIHR).
- 2019 Member, Commission "Surgeon General's Report on Oral Health: *Oral Health in America—Advances and Challenges: A Report of the Surgeon General*", National Institutes of Health, HHS, USA.
- 2019-present Member, International Association for the Study of Pain (IASP) Fellowships, Grants, and Awards Committee
- 2018 Participant and Reviewer, "Advancing Therapeutic Development for Pain and Opioid Use Disorders through Public-Private Partnerships: Proceedings of a Workshop", National Academies of Science, Engineering and Medicine, Health and Medicine Division, Board on Health Sciences Policy
- 2017-present Member, Temporomandibular Joint Disorders (TMJ), Patient RoundTable Working Group (DRAFT), join Food and Drug Administration (FDA)-National Institute of Health (NIH) -TMJ patient association strategic initiative
- 2016-present Member, Chronic Pain Network –Strategy for Patient-Oriented Research (SPOR) for Chronic Pain, Executive Committee
- 2016-present Research Investigator, Canada First Research Excellence Fund (CFREF) initiative, "Healthy Brains for Healthy Lives" (HBHL) (McGill University)
- 2016 Member, CIHR Canadian Pain Research Summit, Sheraton Centre Hotel in Toronto, Ontario. September 18 – 20
- 2015 Member, North American Saliva Bank
- 2015-present Member of the Quebec Pain Research Network
- 2014-present Member, Canada Excellence Research Chairs Summits.
- 2014 Member, Consensus Phenotyping Committee, Neuropathic pain phenotyping by international consensus (NeuroPPIC), Versailles, France

- 2011 Member, Nomination Committee, American Pain Society
- 2010 Founder, Special Interest Group (SIG) in Genetic and Pain, International Association for the Study of Pain (IASP)
- 2009-2011 Chair, Special Interest Group (SIG) in Genetic and Pain, American Pain Society (APS)
- 2010-2014 Chair, Special Interest Group (SIG) in Genetic and Pain, International Association for the Study of Pain (IASP)

PRESENTATIONS AND/OR PARTICIPATION BY INVITATION (LAST 5 YEARS)

Local, Montreal, Quebec (since 2014):

- 2017 Alan Edwards Pain Management Unit Rounds. Invited Presentation: "Genome-wide approaches for searching for a pain gene: contribution of immune system" Montreal General Hospital.
- 2016 Experimental Therapeutics and Metabolism Program seminar series. Invited Presentation: "Translational Studies in the Genomic Era: Expansion of mu-Opioid Receptor Gene Locus". Research Institute of the McGill University Health Centre.
- 2015 Rendez-Vous Génome Québec 2015. Invited Presentation: "The Search for Pain Genes in Humans".
- 2015 Alan Edwards Centre for Research on Pain Journal Club Presentation and Discussion: "Contribution of Somatization to Development of the Pain States".
- 2014 Pain Rounds, Alan Edwards Pain Management Unit, McGill University Health Centre: Invited Presentation: "Human genetics for pain drug target development"
- 2014 Department of Anatomy and Cell Biology, McGill University, Invited Presentation: "Translational Studies in the Genomic Era: Persistent Pain Condition"
- 2014 Board of Governors, McGill University, Invited Presentation" Translational Studies in the Genomic Era: Persistent Pain Conditions"
- 2014 Shiner's Hospital, McGill University Health Centre, Invited Presentation: "Translational Studies in the Genomic Era: Persistent Pain Condition"
- 2014 Killam Seminar Series, Montreal Neurological Institute, McGill University Health Centre, Invited Presentation: "Translational Studies in the Genomic Era: Persistent Pain Condition"
- 2014 Pharmacology and Therapeutics Department, Faculty of Medicine, McGill University, Invited Presentation: "Translational Studies in the Genomic Era: Persistent Pain Condition"
- 2014 International Narcotics Research Conference, Invited Presentation: "Expansion of mu-opioid receptor gene locus: new functional variants"

Before 2014, 2 additional invited oral presentations in Montreal

While at University of North Carolina (2005-2011) 8 additional local invited oral presentations.

National & International:

- 2019 Supportive Care Research Rounds, Princess Margaret Cancer Centre, University of Toronto. Title: Contribution of Epidermal Growth Factor Receptor to pain states. Toronto, Canada, November 11, 2019.
- 2019 11th Congress of the European Pain Federation EFIC – Pain in Europe XI. Symposium Presenter. Title: Molecular pathophysiology of overlapping pain conditions: the lesson from UK Biobank. Valencia, Spain, September 4-7, 2019
- 2019 11th Congress of the European Pain Federation EFIC – Pain in Europe XI. **Plenary presentation.** Title: The role of genetics in pain. Valencia, Spain, September 4-7, 2019
- 2019 Canadian Society of Pharmacology and Therapeutics Conference. **Keynote speaker.** Title: Understanding chronic pain through genomics and transcriptomics: focus on inflammation. Calgary, Canada, June 12–14, 2019
- 2019 The 25th Canadian Connective Tissue Conference. Invited Speaker. Title: Understanding chronic pain through genomics and transcriptomics. Montreal, Canada, May 29- 31, 2019
- 2019 IARS, AUA and SOCCA Annual Meetings. Host Program Speaker. Title: Genetics of Pain. Montreal, Canada, May 16-20, 2019
- 2019 The Oxford Neuroscience seminars, Speaker, Title:” Understanding chronic pain through genomics and transcriptomics”. Oxford, United Kingdom, March 26, 2019
- 2019 American Academy of Pain Medicine (AAPM) Meeting. Title Molecular pathophysiology of overlapping pain conditions: the lesson from UK Biobank. March 6-10, 2019, Denver, USA
- 2019 Meet the Experts 10 YEARS AHEAD FROM SIMPAR TO CIMPARC An interactive think-tank looking into the future of pain research and management. Title: Molecular pathophysiology of overlapping pain conditions: the lesson from UK Biobank – Baveno, Italy, March 14-15, 2019.
- 2019 University of Toronto Centre for the Study of Pain (UTCSP) Annual General Meeting. Keynote speaker. Title: Human Pain Genetics for translational research. Toronto, Canada, February 28, 2019
- 2019 Chronic Pain Network. Chadian Consensus on Pain Biomarkers. Invited Presentation: “Understanding chronic pain through genomics and transcriptomics” Hamilton, Ontario, February 5, 2019
- 2018 Workshop Discovery and Validation of Biomarkers to Develop Non-Addictive Therapeutics for Pain Title: Epidermal growth factor receptor as a pain target: lesson from human associations studies. Washington, USA, November 14-15, 2018
- 2018 International Biotechnology Symposium 2018. Invited presentation. Title: Expanding clinical and research horizons in Human Pain Genetics. Montreal, Canada, August 12-16, 2018
- 2018 World Congress on Pain from the International Association for the Study of Pain. Topical Workshop – Genetics and Pain SIG Sponsored. Translating “omic” data into chronic pain therapeutics. Title: Human DRG Integrative Genomics: Insights into functional variants impacting gene expression important to translational “omics” into novel pain therapies. Boston, USA, September 12 - 16, 2018
- 2018 World Congress on Pain from the International Association for the Study of Pain. Topical Workshop: Novel mechanistic insight for chronic orofacial pains from multimodal assessment: insights from behavior, musculature, and genetic studies workshop. Title: New pathways of vulnerability learned from genome wide approaches in orofacial pain disorders. Boston, USA, September 12 - 16, 2018

- 2018 World Congress on Pain from the International Association for the Study of Pain. IASP Satellite meeting: The Genetics of Neuropathic Pain and its Comorbidities”. In “The genetics of complex pain disorders” Title: “Human pain genetics” Bar Harbor, USA, September 10-11, 2018
- 2018 International Conference in Splicing – SPLICING 2018. Invited Presentation: “Alternative Splicing of Four Opioid Receptor Genes Family Suggests an Existence of New Conserved Functional Receptor Isoforms with Unique Structure of mu Opioid Receptor MOR” Costa da Caparica, Portugal, July 16-19, 2018
- 2018 SPOR Chronic Pain Network Annual Meeting. Invited Presentation: “The Quebec Low-Back Pain Study and the GENE-PAR Project: a Unique Initiative” Hamilton, Ontario, April 24, 2018
- 2018 National Institute on Drug Abuse meeting. Invited Presentation: “Introductions and description of biobanks and electronic medical records: Potential for examining duration of opioid use and respiratory depression in opioid naïve surgical patients” North Bethesda, Maryland, USA January 23, 2018
- 2017 Precision Medicine Approach to Pain: A Symposium, Invited Presentation: “In a Search for a Pain Gene”, The Jackson Laboratory for Genomic Medicine, Farmington, CT November 30, 2017
- 2017 National Academy of Sciences, NeuroForum Workshop on “Advancing Therapeutic Development for Pain and Opioid Use Disorders through Public-Private Partnership”, Invited Presentation: “Novel Methods for Identifying Targets for Pain: Genomics/Genetic Approaches”, Washington DC, USA October 11-12 2017
- 2017 NeP Academy Symposium, Invited Presentation: “How can genetic studies help our understanding of neuropathic pain?” Pfizer, Japan September 24, 2017
- 2017 CERC Summit 2017, Invited Presentation: “Progress and highlights of the CANADA EXCELLENCE RESEARCH CHAIR (CERC) IN HUMAN PAIN GENETICS program” Dalhousie University, Halifax August 17 and 18, 2017
- 2017 Eli Lilly for Translational Research Alliances, Invited Presentation: “New Drugs Developments”, Duke University, Durham, USA August 27, 2017
- 2017 US Department of Defense grant on mTBI. Laboratory of Clinical Neurophysiology, Rambam Health Care Campus, Technion Faculty of Medicine, Haifa, Israel June 21, 2017
- 2017 The 6th International Congress on Neuropathic Pain (NeuPSIG 2017), Invited presentation (Keynote speaker), held in Gothenburg, Sweden from June 15-18, 2017
- 2017 9th Annual Scientific meeting, Study in Multidisciplinary Pain Research (SIMPAN) Conference, Florence, Italy March 29 to April 1, 2017
- 2017 Brain Awareness Week, Department of Human Anatomy and Cell Science, “In a search for human pain genes”. Winnipeg, University of Manitoba. Invited presentation (featured speaker). March 13-19, 2017
- 2016 Persistent Post-Surgical Pain Meeting, a Model for the Study of Chronic Pain at McMaster University. Invited presentation: “Post-Operative pain Registry: Prospective of Geneticist”. Hamilton, Ontario. November 12, 2016
- 2016 Proove MAB Meeting, Invited presentation: “Pain Genetics, State of Affairs”. Proove Biosciences, Inc. Irvine, CA. November 4, 2016
- 2016 United Arab Emirates (UAE) 6th National Genetic Diseases Conference, Keynote Guest Speaker: “Molecular genetics of pain”. UAE, World Trade Center Dubai, October 21-22, 2016.

- 2016 Department of Physiology and Pharmacology, Karolinska Institute, Invited Presentation: “Integrated Genome-Wide Analyses Reveals Immune Contribution to Human Chronic Pain Conditions”. Stockholm, Sweden. October 12-13, 2016
- 2016 16th World Congress on Pain, Invited Presentation for Topical Workshop: “Novel Tools for Pain Drug Discovery: Insights from Human Sensory Neurons Research”. Title: Expression quantitative trait loci in human dorsal root ganglions provide insights into pathophysiology of pain states. Pacifico Convention Center, Yokohama, Japan. September 30, 2016
- 2016 16th World Congress on Pain, Invited Presentation for Topical Workshop: “Identification of the Objective Biomarker for Quantifying Pain: Validated Tools, Genetic Architecture, and Neuroimaging”. Title: Human Chronic Pain Conditions: Genetic Architecture and Pathways of Vulnerabilities. Pacifico Convention Center, Yokohama, Japan. September 27, 2016
- 2016 16th World Congress on Pain, Invited Presentation. “Can Genetics Guide Us to More Successful Drug Developments?” Purdue Pharma Canada, Scientific Advisory Board Pacifico Convention Center, Yokohama, Japan. September 26, 2016
- 2016 8th Scientific Meeting of The TMJ (Temporomandibular joint) Association, *How Can Precision Medicine Be Applied to Temporomandibular Disorders and its Comorbidities?* Invited Presentation: “Human chronic pain conditions: Genome-wide analysis and pathways of vulnerabilities”. September 11-13, 2016, at the Federation of American Societies of Experimental Biology (FASEB) in Bethesda, Maryland.
- 2016 Duke University, Department of Anesthesiology. Invited Presentation: “Human Pain Genetics and the Translational Clock” Durham, NC, USA, August 17, 2016
- 2016 Institute of Bioorganic Chemistry of the Russian Academy of Sciences. Invited Presentation “Human Chronic Pain Conditions: Genetic Architecture and Pathways of Vulnerabilities” Moscow, Russia May 17, 2016
- 2016 8th Annual Scientific meeting, Study in Multidisciplinary Pain Research (SIMPAN) Conference, Invited Presentation at Neuropathic Pain Symposium: “Basic – Genetics and Neuropathic Pain”. Rome, Italy April 8, 2016
- 2016 8th Annual Scientific meeting, Study in Multidisciplinary Pain Research (SIMPAN) Conference, Moderator at the “Discogenic Pain” Symposium. Rome, Italy April 9, 2016
- 2016 32nd Annual Meeting, the American Academy of Pain Medicine, Invited Presentation for physicians treating pain. Session Title: Clinical Pearls in Pain Medicine “The Genetics of Pain Perception”, Palm Springs, CA February 21, 2016
- 2015 7th Annual Scientific meeting, Study in Multidisciplinary Pain Research SIMPAR Conference, Invited Presentation at Symposium: Pharmacogenetics and Pain: A new approach to pain therapy. “Genetics and Pain: Where we are where we have to go”. Rome, Italy. March 26, 2015
- 2015 7th Annual Scientific meeting, Study in Multidisciplinary Pain Research SIMPAR Conference, Invited Presentation at Symposium: The Role of Stress in Acute Pain. “OPRM1 and COMT in clinical pathway. What geneticists teach to clinicians” Rome, Italy. March 27, 2015
- 2015 7th Annual Scientific meeting, Study in Multidisciplinary Pain Research SIMPAR Conference, Invited Presentation at Symposium: Low Back Pain. “Subgrouping of Low Back Pain Patients for Targeting Treatments: Evidence from Genetic, Psychological and Activity-related Behavioral Approaches” Rome, Italy. March 27, 2015
- 2015 7th Annual Scientific meeting, Study in Multidisciplinary Pain Research SIMPAR Conference, Invited Presentation at Plenary Session, Future Insights That Soon Will Change

- Our Clinical Practice “Genetics and Pain: new clinical approaches” Rome, Italy. March 28, 2015
- 2015 11th Annual Scientific meeting, French Pain Network, Invited Plenary Lecturer “Human Pain Genetics: Association Study Results from OPPERA Cohort” Strasbourg, France. March 20, 2015
- 2015 New York University, Invited Presentation ““EGFR as a Critical Regulator of Pain: Association Study Results from OPPERA Cohort” March 5, 2015
- 2014 15th World Congress on Pain, International Association for the Study of Pain, Topical Workshop “Does sex matter? Sex x gene interactions in human pain”, Invited Presentation: “COMT sex-specific effects on pain in mice and humans” Buenos Aires, Argentina
- 2014 15th World Congress on Pain, International Association for the Study of Pain, Topical Workshop “Pain Gene Replication: It’s the Real Deal”, Invited Presentation: “What Replication of Heritable Factors Tell Us about Persistent Pain in TMD”, Buenos Aires, Argentina
- 2014 15th World Congress on Pain, International Association for the Study of Pain, Refresher Course “Pain Genes: A Course for Non-Geneticists”, Invited Presentation: “The Search for Pain Genes in Humans” Buenos Aires, Argentina
- 2014 Hotchkiss Brain Institute, Invited Presentation: “Human Genetics for Pain Drug Target Development” Calgary, Canada
- 2014 World Forum for Spine Research, Invited Presentation: “Development new pain targets in the genomic era” Xi’an, China
- 2014 Session Chairman for Oral Presentations at World Forum for Spine Research, Xi’an, China
- 2014 American Pain Society, Invited Presentation at Basic Science Research Dinner: “Promises and Challenges of Bioinformatic Approaches in Pain Research” Tampa, Florida
- 2014 American Pain Society, Invited Presentation: “Does Sex Matter? Sex X Gene Interactions in Human Pain and Analgesia” Tampa, Florida
- 2014 CERC Annual Meeting, Invited Presentation: “CERC in Human Pain Genetics” Quebec City, Quebec
- 2014 SIMPAR Conference, Invited Presentation at Meet the Expert sessions: “Drug target identification in the genomic era” and “Gene pathway analysis of complex pain conditions” Rome, Italy
- 2014 Session Chairman: “Opioid system and pain”. SIMPAR conference, Rome, Italy
- 2014 Canadian Pain Society Annual Meeting, Invited Presentation and Chair: "Does Sex Matter? Sex X Gene Interactions in Human Pain". Quebec City, Quebec
- 2014 CLONTECH Inc, Invited Presentation: “Translational Studies in the Genomic Era: Persistent Pain Conditions”. Mountain View, CA, US

Before 2014, 54 additional presentations

ADVISORY BOARDS

- 2016 Member, Scientific Advisory Board, *Purdue Pharma*, 575 Granite Ct, Pickering, ON L1W 3W8
- 2014-2017 Member, Medical Advisory Board, *Proove Biosciences Inc*, 26 Technology Dr., Irvine, CA 92618, USA
- 2004-2016 Member, Executive Advisory Board, *Algnomics Inc*, 208 N Columbia St # 300, Chapel Hill, NC 27514, USA

2002-2005 Member, Executive Advisory Board, *Attagene Inc*, 7030 Kit Creek Rd, Morrisville, NC 27560, USA

CONSULTING

2019 Consultant, *Eli Lilly*, Lilly House, Priestley Rd, Basingstoke RG24 9NL, UK
2016 Consultant, *Purdue Pharma*, 575 Granite Ct, Pickering, ON L1W 3W8
2015-2017 Consultant, *Proove Biosciences Inc*, 26 Technology Dr., Irvine, CA 92618, USA
2004-2016 Consultant, *Algynomics Inc*, 208 N Columbia St # 300, Chapel Hill, NC 27514, USA
2002-2004 Consultant, *Attagene Inc*, 7030 Kit Creek Rd, Morrisville, NC 27560, USA
2001 Consultant, *Rubicon Genomics*, 4743 Venture Dr, Ann Arbor, MI 48108, USA

TRAINING AND SUPERVISORY EXPERIENCE

Educational Lectures for Continuing Education

2016 The North American Pain School (NAPS), An educational initiative of International Association for Study of PAIN IASP. Title: Genetic tools to study human complex traits Montebello, QC, Canada June 26 - 30th, 2016
2016 32nd Annual Meeting, the American Academy of Pain Medicine, Invited Presentation for physicians treating pain. Session Title: Clinical Pearls in Pain Medicine “The Genetics of Pain Perception”, Palm Springs, CA February 21, 2016
2015 11th Annual Scientific meeting, French Pain Network, Invited Lecturer, Refresher course for students “The Search for Pain Genes in Humans”, Strasbourg, France. March 19, 2015
2014 15th World Congress on Pain, International Association for the Study of Pain, Topical Workshop “Does sex matter? Sex x gene interactions in human pain”, Invited Presentation: “COMT sex-specific effects on pain in mice and humans” Buenos Aires, Argentina
2014 15th World Congress on Pain, International Association for the Study of Pain, Topical Workshop “Pain Gene Replication: It’s the Real Deal”, Invited Presentation: “What Replication of Heritable Factors Tell Us about Persistent Pain in TMD”, Buenos Aires, Argentina
2014 15th World Congress on Pain, International Association for the Study of Pain, Refresher Course “Pain Genes: A Course for Non-Geneticists”, Invited Presentation: “The Search for Pain Genes in Humans” Buenos Aires, Argentina
2014 American Pain Society, Invited Presentation at Basic Science Research Dinner: “Promises and Challenges of Bioinformatic Approaches in Pain Research” Tampa, Florida
2014 SIMPAR Conference, Invited Presentation at Meet the Expert sessions: “Drug target identification in the genomic era” and “Gene pathway analysis of complex pain conditions” Rome, Italy
2014 Session Chairman: “Opioid system and pain”. SIMPAR conference, Rome, Italy
2013 5th Meeting on Study in Multidisciplinary Pain Research (SIMPAR). Invited Presentation:” Elucidation of mu-Opioid Gene Structure: How Genetics Can Help Predict Responses to Opioids.” Pavia, Italy.

- 2012 International Association for the Study of Pain (IASP), Research Symposium “The Genetics of Pain: Science, Medicine, and Drug Development,” Gene Pathway Analysis for Unraveling Complex Pain Conditions. Miami Beach, FL.
- 2010 International Association for the Study of Pain. 13th World Congress on Pain. Refresher Course (RC 11): “Pain genes for unraveling pain: A course for non-geneticists.” Montréal, Québec, Canada.
- 2010 American Pain Society Annual Meeting. Symposium Moderator: “From Molecule to Disease: The Molecular Dynamics of inflammatory Pain.” Baltimore, MD.
- 2010 American Pain Society Annual Meeting. Workshop Symposium: “Assessment of Biopsychosocial and Genetic Risk Factors for Chronic Orofacial Pain: The OPPERA Study.” Topic: “Pathway Analysis.” Baltimore, MD.
- 2009 American Pain Society Annual Meeting. Panel Discussion: “Anti-analgesic effects of mu-opioids: molecular mechanisms and clinical considerations.” Title: “Expansion of the Human mu-Opioid receptor Gene Structure: Novel Functional Variants.” San Diego, CA.
- 2008 International Society for Study of Pain 12th World Congress. “Association studies in experimental pain and TMD” in “Genetic Association Studies in Human Pain” Workshop. Glasgow, Scotland, UK.
- 2007 American Pain Society Annual Meeting. Panel Discussion: “Beyond the messenger: translational regulation as a novel target for pain management.” Title: “COMT Modulation of Pain Sensitivity: Molecular Genetic Mechanism.” Washington, DC.
- 2006 American Pain Society Annual Meeting. Panel Discussion: “Predicting Acute and Chronic Pain: Genetic, Psychological, and Neural Factors.” Topic: “Genetic markers of variability in pain sensitivity and development of chronic pain conditions.” San Antonio, TX.

Course Participation

- 2016-current Lecturer
Dentistry 412: Orofacial Pain Lecture.
Undergraduate course, McGill University, Faculty of Dentistry
- 2016 Lab Tour for R1 anesthesia residents.
- 2015-current Lecturer and Section Editor in Pain Genetics
Current Topics in Neurosciences NEUR602
Graduate Course, McGill University, Department of Neurology & Neurosurgery
- 2015 Lecturer
Human Behaviour – INDS 212
Undergraduate Medical Course, McGill University, Faculty of Medicine
Title: Temporomandibular Pain and Genetic and Environmental factors
- 2014 Lecturer
Human Behaviour – INDS 212
Undergraduate Medical Course, McGill University, Faculty of Medicine
Title: Translational Research in the Genomic Era: Study on Temporomandibular Joint Disorders (TMJD)
- 2010–2013 Course Director
Oral Biology Pain Lecture Series (OB 723 and OB732)
Curriculum in Oral Biology, UNC, NC

2005–2009 Co-Instructor
Oral Biology Pain Lecture Series (OB 723 and OB732)
Curriculum in Oral Biology, UNC, NC
3 lecture hours

Advisor for Student Research Trainees

2018-present Jeremy Zwaig, Undergraduate Student, McGill University
2018-present Julian Smith-Voudouris, Undergraduate Student, McGill University
2016-2018 Alexander Linton, Pharmacology Undergraduate Student, McGill University
Honor's project: Identification of novel mu opioid receptor ligands with analgesic properties
2016-2019 Nicol Tugarinov, Undergraduate Student, McGill University
2016-2017 Masha Verner, Undergraduate Student, Concordia University
2015-2017 Richie Klares III, Undergraduate Student, McGill University
Honor's project: Blood cell fractionation method for the detection of immune cell Subpopulations in fibromyalgia patients and healthy controls.
2015-2016 Julia Segal, Undergraduate Student, McGill University
2015 Hayden Nix, Undergraduate Student, McGill University
2015 Amrit Sampalli, Undergraduate Student, McGill University
2014-2016 Shawn Wen, Undergraduate Student, McGill University
2011-2012 Hee-Jin Park, Undergraduate Student, UNC
2007–2008 John Peirson Undergraduate Student, UNC
2007–2009 Philip Cheng Undergraduate Student, UNC
2007 Shaina Wahl, Undergraduate Student, Summer Research Experience program, UNC
2007 Anina Tollet, Dental Student, Summer Research Experience program, UNC
2006–2009 Mathew Conrad, Undergraduate Student, UNC
2006 Dylan Maixner, Undergraduate Student, Summer Research Experience program, Appalachian State University
2005–2006 Kathryn Sara Satterfield, Pre-Medical Student, UNC
2005–2006 Taifa Peaks, Pre-Dental Student, UNC
2003–2006 Swetha Sama, Pre-Dental Student, UNC
2003–2004 Jason Fason, Pre-Medical Student, UNC
2003–2004 Ben Lambert, Pre-Dental Student, UNC
2002–2003 Julie Clarke, Undergraduate Student, UNC

Graduate Teaching

2017-2019 Graduate Research Advisor
Jeremy Goh, MSc Program, Experimental Medicine, McGill University
Association between sleep disturbances and substance use, among chronic pain patients through the UK Biobank
2017-2018 Graduate Research Advisor
Sonali Uttam, MSc Program, Experimental Medicine, McGill University
Genome-wide translational regulation profiling of chronic pain
2015-present Graduate Research Advisor
Vivek Verma, PhD Program, Neurobiology curriculum, McGill University

- “*Prospective Cohort Study to Confirm Role of Epithelial Growth Factor Receptor Inhibitors as Analgesics in Cancer Patients, and to Explore potential biomarkers associated with the Analgesic Response*”
 Vivek Verma was awarded the 2019 ISAC Travel Award for attendance at CYTO 2019 - ISAC’s 34th International Congress, Vancouver, June 22-26, 2019 (USD 400)
- 2014-2017 Graduate Research Advisor
 Stefano Cattaneo, MSc Program, Experimental Medicine, McGill University
Genotype dependent variation within COMT gene locus in post-surgical opioid-induced analgesia
Stefano Cattaneo (Masters Trainee) was awarded the Young Against Pain (YAP) award for best project at the conference organized by the Study In Multidisciplinary Pain Research (SIMPAN 2016)
Stefano Cattaneo (Masters Trainee) was awarded a travel grant \$1,250.00 from the Department of Experimental Medicine, McGill University to attend the International Association for the Study of Pain (IASP) 16th World Congress on Pain, Yokohama, Japan. September 26-30, 2016. Awarded July 28, 2016
- 2014-2015 Graduate Research Advisor
 Lianne Plein, Intern MSc Program, Anesthesia, McGill University
Assessment of enzymatic activity of COMT homologs
- 2014-2015 Graduate Research Advisor
 Vivek Verma; MS Program, School of Dentistry, McGill University
Measuring of human white blood cells in human chronic pain cohorts
- 2013-2019 Graduate Research Advisor
 Katerina Lichtenwalter; PhD Program, Neurobiology curriculum, McGill University
Functional molecular genetic analysis of the Association Studies results of human chronic pain conditions
Katerina Lichtenwalter’s (PhD Trainee) was awarded a travel grant \$1000 from the Quebec Pain Research Network (QPRN) to attend the Canadian Pain Society Meeting May 24-27, 2016.
Katerina Lichtenwalter’s (PhD Trainee) was awarded a travel grant \$500 from GREAT (Graduate Research Enhancement and Travel) to attend the Canadian Pain Society Meeting May 23-26, 2017.
- 2012 Graduate Rotation Advisor
 Courtney Winkle, BS, Curriculum in Neurobiology, UNC
The effects of COMT inhibition and swim stress on pain behavior in mast cell-deficient mice.
- 2011 Graduate Rotation Advisor
 Danielle Louise Cunningham, School of Dentistry, UNC
Regulation of mouse comt mRNA level by miRNAs.
- 2011–2012 Graduate Research Advisor
 Carol Meloto, DDS; PhD Program, UNC
Characterization of new truncated isoform of human COMT
- 2010 Graduate Rotation Advisor
 Elliott Robinson, MD, PhD Program, UNC
Contribution of 6TM Mu Opioid Isoform to Alcohol Addictions.
- 2010–2011 Graduate Research Advisor
 Naim Rashid, PhD Program, Department of Biostatistics, UNC

- Genetic contribution of COMT and ADRB2 into TMJD and Intermediate Phenotypes.*
- 2008–2011 Graduate Thesis Advisor
Douglas Tsao, PhD Program, Department of Chemistry, UNC
Elucidation of pain sensitivity variance via structural studies of Catechol-O-Methyltransferase.
Recipient of the 2011 Turner Award for basic science research presented at the NC-AADR Research in Review Day. Abstract title: “Disruptive mRNA Folding Increases Translational Efficiency.” D Tsao, L Diatchenko, J Gauthier, NV Dokholyan, SA Shabalina.
Current Position: MacCord Mason PLLC, patent law firm
- 2008–2010 Graduate Thesis Advisor
Samantha Segall, PhD Program, Department of Genetics, UNC
Comt1 and Pain Perception in Common Inbred Strains of Mice.
- 2007 Graduate Rotation Advisor
Jason Goldsmith, MD, PhD Program, UNC
Fragile X mental retardation 1 (FXR1) dependent regulation of Catechol-O-Methyl Transferase (COMT) expression.
- 2004–2008 Graduate Thesis Advisor
Tom Higgins, MS, School of Dentistry, UNC
Molecular mechanism of association between adrenergic receptor beta 2 (ADRB2) gene locus and pain-related phenotypes.
- 2004–2007 Graduate Thesis Advisor
Jason Lambert, DDS, MS, School of Dentistry, UNC
Effects of Minor SNPs on Enzymatic Activity Regulated by Common Human Haplotypes of the Catechol-O-methyltransferase Gene
- 2006 Graduate Thesis Advisor
Aram Avanesian, MS, NC State University
Bioinformatics tools for analysis expressed sequences.
- 2004–2005 Graduate Thesis Advisor
Christine Downey, School of Dentistry, UNC
Molecular mechanism of association between interleukin 1 (IL1) gene locus and pain-related phenotypes.
- 2002 Graduate Rotation Advisor
Juangli Guo, DDS, PhD program, School of Dentistry, UNC
Suppression Subtractive Hybridization for analysis gene expression during osteoblasts differentiation.

Post-doctoral Fellows Mentored

- 2014-2018 Anne-Julie Chabot-Dore (PhD), McGill University
Molecular pharmacology of delta opioid receptors
- 2014-2019 Samar Khoury (PhD), McGill University
Genetic association study between sleep, somatization and thermal sensitivity in TMD and other chronic pain conditions
1. 16th Kresimir Research Award for Outstanding Research Trainee. “Genome-wide association study and meta-analysis identify NPY and MPP6 as novel genes in sleep

quality” Department of Anesthesia, McGill University, Montreal, Quebec, Canada (May 31, 2018)

- 2013–2018 Carolina Meloto (DDS, PhD), McGill University
Characterization of a new COMT isoform associated with TMD
1. Catherine Bushnell Fellowship- Second year- in Chronic Pain Research, The Louise and Alan Edwards Foundation, Montreal, Quebec, Canada (2016-2018)
 2. Dr. Carol Meloto was awarded a travel grant of \$1000 USD to present a poster at the 8th Scientific Meeting of The TMJ (Temporomandibular joint) Association, *How Can Precision Medicine Be Applied to Temporomandibular Disorders and its Comorbidities?*, to be held September 11-13, 2016, at the Federation of American Societies of Experimental Biology (FASEB) in Bethesda, Maryland. Project Title: Clinical characteristics of TMD at onset and predictors of persistence: preliminary results (Aug. 10, 2016)
 3. 14th Kresimir Krnjevic Research Award for Outstanding Research Trainee, Department of Anesthesia, McGill University, Montreal, Quebec, Canada (2016)
 4. Best Young Researcher at the 7th SIMPAR (Study in Multidisciplinary Pain Research). Rome, Italy (2015).
- 2017-2018 Arjun Muralidharan (PhD), McGill University
Study the role of telomeres in chronic pain
- 2013–2017 Marjo Piltonen (PhD), McGill University
Diversity of delta-opioid receptor: Characterization of novel truncated receptor isoforms
- 2014-2016 Rodrigo Benavides (MD), McGill University
Genotype dependent variation in post-surgical opioid-induced analgesia
- 2015-2016 Yerkebulan Talzhanov (PhD), McGill University
Association Studies of Human Cohort with Chronic Pain Conditions
- 2012–2014 Alexander Samoshkin (PhD), McGill University
Development of a Novel Class for Opioid Drugs.
- 2010–2013 Samantha Segall (PhD), UNC
Comt1 and Pain Perception in Common Inbred Strains of Mice.
- 2007–2009 Pavel Gris (MD, PhD), UNC
Molecular biology of MOR1 receptor contribution to pain.
- 2006–2011 Shad Smith (PhD), UNC
Pain Genetics and Molecular Biology of Pain.
- 2003–2007 Inna Tchivileva (MD), UNC
Pain Genetics and Molecular Biology of Pain.
- 2003–2006 Andrea Nackley (Ph.D), UNC
Molecular contribution of COMT into pain states.
- 1998–2000 Sejal Desai (PhD), CLONTECH Inc
Analysis of differential gene expression analysis.

Young Faculty Mentored

- 2019-present Etienne Vachon-Presseau, McGill University
2019-present Audrey Grant, Assistant Professor, McGill University
2018-present Carol Beraldo Meloto, Assistant Professor, McGill University
2017-present Marc O. Martel, Assistant Professor, McGill University

- 2017-present Mathieu Roy, Assistant Professor, McGill University
 2017-present Arkady Khoutorsky, Assistant Professor, McGill University
 2014–2017 Alexander Samoshkin (PhD), McGill University
Development of a Novel Class for Opioid Drugs.
 2011–present Shad Smith (PhD), UNC
Pain Genetics and Molecular Biology of Pain.

Research Associate and Research Assistant Supervision

- 2019-present Samar Khoury, Research Associate, McGill University
 2018- 2018 Carolina Meloto, Research Associate, McGill University
Managing clinical genetic studies focused on orofacial pain conditions, responsible for developing, testing, and managing studies using RedCap and screening research volunteers for orofacial pain conditions utilizing the DC/TMD
 2018- 2019 Marjo Piltonen, Research Associate, McGill University
Perform HPLC analysis of monoamines and their metabolites in human and animal samples, also as requested by collaborators
 2017- 2018 Nancy Levesque, Research Associate, McGill University
Identification of genetic markers involved in different pain conditions and their effect on analgesic treatments
 2017- 2018 Nehme El-Hachem, Research Assistant, McGill University
Association Studies of Human Cohort with Chronic Pain Conditions. The project will consist of analyzing RNA-Seq data from blood samples from people who had low back pain, where some persisted between two time points, while others recovered
 2016- present Gillian Drury, Research Assistant, McGill University
Participate in the execution of the project entitled “Blood cell fractionation method for the detection of immune cell subpopulations in fibromyalgia patients and healthy controls”. Participate in experiments involving blood fractionation, magnetic labeling and cell separation
 2015- 2018 Pavel Gris, Research Associate, McGill University
Independently manage clinical research projects that aim to identify common genetic polymorphisms associated with variation in human pain perception and the development of chronic pain conditions
 2014- present Marc Parisien, Research Associate, McGill University
Provide the analysis of massive data sets & contribute to on-going efforts to dissect the genetic basis of complex traits in humans & model organisms on pain perception and risk of development of chronic pain conditions
 2014- present Ryan Lichtenwalter, Research Assistant, McGill University
Participation in research projects as needed in the capacity of data scientist. Design, construction and management of highly sensitive data storage and security infrastructure. Design, implementation and management of databases for the lab's research output. Development of algorithms for analysis of genetic data sets.

Thesis, Dissertation and Candidacy Exam Committee

- 2016-present Member, Ph.D. Supervisory Committee, McGill University, Department of Psychiatry, Faculty of Medicine. Thesis title: Analgesic Effects of MT2 agonists by Luca Posa
- 2016-present Member, Ph.D. Supervisory Committee, McGill University, Faculty of Dentistry. Thesis title: Epigenetic modifications of pain relevant genes and their impact upon the induction and development of chronic pain by Lucas Topham
- 2016-2018 Member, Ph.D. Supervisory Committee, McGill University, Shriners' Hospital for Children, Faculty of Dentistry. Thesis title: Purinergic Signaling in Bone Mechanotransduction and Adaptation to Mechanical Environments by Nicholas Mikolajewicz
- 2016 Member, Final Ph.D. Oral defense committee member, McGill University, Department of Medicine, Division of Experimental Medicine, Thesis Title: The role of PKM ζ in chronic pain by Ms. Hibatulnaseer Nasir
- 2015 External Reviewer, PhD student committee member, McGill University, Department of Dentistry, Thesis Title: Comorbidities in a TMD patient population. Haissam Dahan
- 2013-2019 Member, Dissertation Committee, McGill University, The Integrated Program in Neuroscience at McGill, Thesis Title: The effects of P2X7R genetic polymorphisms on pain phenotypes, Katerina Zorina
- 2013 Member, Dissertation Committee, McGill University, Department of Psychology in Behavioral Neuroscience, Thesis Title: Involvement of Novel Genes in Chronic Pain Behaviour in Mice, Jeffrey S. Wieskopf
- 2012-2013 Member, Dissertation Committee, University of Helsinki Division of Pharmacology and Toxicology, Department of Pharmacy, Finland. Oleg Kambur
- 2011-2014 Member, Dissertation Committee, Curriculum in Neurobiology, UNC School of Medicine, Elliott Robinson
- 2008-2010 Member, Dissertation Committee, Department of Genetics, UNC School of Medicine, Samantha Segall
- 2009 Member, Candidacy Exam Committee, Department of Genetics, UNC School of Medicine, Samantha Segall
- 2008-2011 Member, Dissertation Committee, Department of Chemistry, UNC School of Medicine, Douglas Tsao
- 2007 Member, Dissertation Committee, Curriculum in Oral Biology, UNC School of Dentistry, Emad Khan
- 2003-2007 Member, Dissertation Committee, Curriculum in Oral Biology, UNC School of Dentistry, Jungli Guo
- 2006-2007 Member, Master Thesis Committee, Curriculum in Oral Biology, UNC School of Dentistry, Amanda Snyder
- 2007 Member, Master Thesis Committee, Department of Endodontics, UNC School of Dentistry, Elizabeth Chanenson
- 2006 Chair, Candidacy Exam Committee, School of Dentistry, Amanda Snyder
- 2004 Member, Candidacy Exam Committee, School of Dentistry, Emad Khan
- 2003 Member, Candidacy Exam Committee, School of Dentistry, Juangli Guo

OTHER CONTRIBUTIONS

HONORS AND AWARDS

- 2019-present Jens Christian Skou honorary professor, Aarhus University, DK.
 2019 American Pain Society, The Future of Pain Science Award (in recognition of chairing Scientific program Committee).
- 2018-2019 Chair, Scientific Program Committee, American Pain Society.
- 2013-present Endowed Chair of Pfizer Canada Professorship in Pain Research
 2013-2019 Canada Excellence Research Chair in Human pain Genetics.
- 2012 Co-Director, Regional Center for Neurosensory Disorders, UNC at Chapel Hill, USA.
- 2012 Elected Chair, Special Interest Group (SIG) in Genetics and Pain, International Association for the Study of Pain (IASP). The SIG in Genetics and Pain is the only organization in IASP that fosters academic and clinical activity in genetics and pain-related research.
- 2011 International Association for the Study of Pain (IASP) Research Symposium Award.
- 2011 Chair, International Association for the Study of Pain (IASP) Research Symposium.
- 2011 Director, Molecular Profiling Core, Regional Center for Neurosensory Disorders, UNC at Chapel Hill, USA.
- 2009 Elected Chair, Special Interest Group (SIG) in Genetics and Pain, American Pain Society.
- 1996 CLONTECH Outstanding Innovation Award.
 1995 CLONTECH Productivity Award.
 1990 Diploma cum laude, Russian State Medical University

SCIENTIFIC PEER REVIEW (COMMITTEES AND GRANT APPLICATION REVIEWS) (LAST 5 YEARS)

- 2019 Scientific Review Group: ZNS1 SRB-H 08, EPPIC-Net: Objective review of Pain Therapeutics for the EPPIC-Network
- 2019 Reviewer, Recurring Review Panel, Early Phase Pain Investigation Network (EPPIC-Net) HEAL Initiatives.
- 2019 Member of the College of Reviewers (College), Canada. Canadian Institutes of Health Research (CIHR).
- 2018-present Member, IASP Fellowships, Grants, and Awards Working Group (FGAWG)
- 2018-present Reviewer, Standing Committee, MITACs Awards for trainees associated with the Healthy Brains for Healthy Lives, Graduate and Postdoctoral Studies.
- 2018 Reviewer of “Advancing Therapeutic Development for Pain and Opioid Use Disorders through Public-Private Partnerships: Proceedings of a Workshop” by National Academies of Science, Engineering and Medicine, Health and Medicine Division, Board on Health Sciences Policy
- 2018 Reviewer, Health Sciences Panel of the Ontario Research Fund, Research Excellence program.
- 2017 Reviewer, The Croucher Foundation, An assessment of a proposal for a scientific meeting organized by Professor Pak-chung Sham of the University of Hong Kong on four-day workshop on genetic variation and genome architecture.

- 2014-2015 Reviewer, In Bev-Baillet Latour Grant for Medical Research (IBL-GMR), 2015 award for a medical research project in the field of Metabolic Disorders
- 2014 Phone-in reviewer, Scientific Review Branch, NINDS, ZNS1 SRB G(78) Special Emphasis Panel.
- 2014 Reviewer, The Croucher Foundation. Proposal for Scientific Meeting in Hong Kong on Low Back Pain

SOCIETY MEMBERSHIP

- 2014-present Canadian Pain Society
- 2013-present Alan Edwards Centre for Research on Pain
- 2013-present Member, Quebec Pain Research Network (QPRN)
- 2013-present Member, QPRN Low Back Pain steering committee
- 2006–2019 American Pain Society
- 2006–2014 American Society of Human Genetics
- 2005–present International Association for the Study of Pain

AD HOC REVIEWER FOR PEER-REVIEWED JOURNALS

- 2019 *Nature Review Neurology*
- 2019 *Science Translational Medicine*
- 2018 *Nature Medicine*
- 2017 *New England Journal of Medicine*
- 2016 *Neuroscience*
- 2012 *Social Science and Medicine*
- 2011-present *Genes, Brain and Behavior*
- 2011 *Human Molecular Genetics*
- 2011 *Journal of Medical Genetics*
- 2011 *Journal of Molecular Medicine*
- 2011 *Nature Review Genetics*
- 2010-present *Arthritis and Rheumatism*
- 2010 *Canadian Journal of Physiology and Pharmacology*
- 2010 *Journal of Human Genetics*
- 2010 *Neuroscience*
- 2009-present *European Journal of Pain*
- 2009-present *Journal of Pain*
- 2009-present *Molecular Pain*
- 2009, 2011 *Cellular and Molecular Medicine*
- 2009 *Anesthesiology*
- 2008-present *Clinical Journal of Pain*
- 2008-present *Pain*
- 2008-present *Trends in Pharmacological Sciences*
- 2008 *Biological Psychology*
- 2008 *American Journal of Medical Genetics*
- 2007-present *Arthritis Research & Therapy*
- 2007-present *Pharmacogenomics*

2004, 2011 *Nucleic Acid Research*
 2004 *BMC Bioinformatics*
 2000-present *Science*
 2000 *Proceedings of the National Academy of Sciences/USA*
 1997-2002 *BioTechniques*

PATENTS

- **Diatchenko L**, Maixner W, Slade G, Nackley AN. Methods and Materials for Determining Pain Sensitivity and Predicting and Treating Related Disorders. US Patent US20190010548A1. Pending
- **Diatchenko L**, Maixner W. Compositions and methods for the treatment of somatosensory disorders. US Patent US8716349B2. 2010-03-30 to 2031-09-25
- Chenchik A, York Zhu, **Diatchenko L**, Siebert P. Methods and compositions for generating full-length cDNA having arbitrary nucleotide sequence at the 3'-end. US5962271A. 1996-01-03 to 2019-08-14
- Chenchik A, **Diatchenko L**, Siebert P, Lukianov S, Lukianov K, Gurskaya N, Tarabykin V, Sverdlov U. Method for Suppressing DNA Fragment Amplification During PCR. US Patent US5759822A. 1995-01-27 to 2019-08-14

ALLIANCE AGREEMENT

2017 Mutual Confidentiality Agreement between **Eli Lilly and Company** and The Royal Institution for the Advancement of Learning, McGill University on behalf of Luda Diatchenko, M.D., Ph.D. The parties desire to exchange certain confidential and proprietary information in connection with Epiregulin/EGFR for pain and in populations with pain, for potential business or scientific transactions.

2017 **Duke University** and McGill University seek to promote cooperation and advancement of understanding between Duke University's Department of Anesthesiology and McGill University's Department of Anesthesiology and Edwards Pain Center. The purpose of this MoU is to develop and nurture academic and education cooperation between Duke and MGU with the aim of enhancing each institutions initiatives in translational pain medicine and pain management. A subsidiary purpose of this MoU is to promote closer relations and mutual understanding between the the departments at both universities.

2016 McGill University finalizes an umbrella agreement with **Proove Biosciences**, to work together in a collaborative fashion on the commercial developments on the field of pain genetics.

2009 Algnomics finalizes an alliance with **Eli Lilly & Co** to study genetic associations in osteoarthritis and lower back pain with the goal of identifying phenotypic and genetic markers of duloxetine responses.

2009 Algnomics furthers its alliance with **Orthogen Inc.** in the area of orthopedic medicine and therapeutics specific to osteoarthritis with the goal of identifying phenotypic and genetic markers of Orthokine responses.

- 2009 Algnomics furthers its alliance with **Beckman Coulter Genomics**, formerly Cogenics, to conduct genotyping studies of biological samples. Beckman Coulter Genomics is the sole provider of Algnomics's proprietary Pain Research Panel.
- 2008 Algnomics and **Pfizer**, Inc. finalize an alliance agreement to conduct a genome wide association with the goal of identifying new therapeutic targets for the treatment of painful osteoarthritis.
- 2007 Algnomics and **Orthogen** Inc. establish an alliance in individualized orthopedic medicine

LICENSES

- 2019 Mycroft Bioanalytics acquired in-licensing agreement with UNC at Chapel Hill for patent pending - Diatchenko L, Maixner W, Slade G, Nackley AN. Methods and Materials for Determining Pain Sensitivity and Predicting and Treating Related Disorders. US Patent Pending: Pct/US2005/026201
- 2014 Proove Biosciences Inc. has established an in-licensing agreement with UNC at Chapel Hill for patent pending - Diatchenko L, Maixner W, Slade G, Nackley AN. Methods and Materials for Determining Pain Sensitivity and Predicting and Treating Related Disorders. US Patent Pending: Pct/US2005/026201
- 2011 Algnomics has established an in-licensing agreement for data from the ongoing, longitudinal, multisite study entitled "Orofacial Pain: Prospective Evaluation and Risk Assessment (OPPERA)." OPPERA is a study of muscle, joint, and jaw function that is sponsored by NIH/NIDCR; participating institutions include the University of North Carolina at Chapel Hill, the University of Florida at Gainesville, the University of Maryland at Baltimore, and the State University of New York at Buffalo. Battelle Memorial Institute serves as the Data Coordinating Center.
- 2005 Algnomics Inc. entered into a landmark licensing agreement with the University of North Carolina. The agreement provides Algnomics with the exclusive rights to develop and market proprietary genetic pain markers owned and patented (pending) by the University of North Carolina.

PRODUCTS

- 2012 Illumina Inc. launches Algnomics' genetic **Pain Research Panel II**
- 2007 Clinical Data Inc. launches Algnomics' genetic **Pain Research Panel**

COMPANIES

- 2005 Co-founder of Algnomics, Inc. a biopharmaceutical company that uses cutting edge phenotyping and genomic approaches to identify new drug targets, treatment responses to analgesics, and diagnostic approaches for common pain conditions.
- 2002 Co-founder of Attagene Inc., a contract research organization that offers unique screening services for the evaluation of biological activities and prediction of potential toxicities of pharmaceuticals, agricultural and industrial chemicals, cosmetics, and nanomaterials.

RESEARCH ACTIVITIES

- 2019 member, UK Biobank Pain Research Consortium
- 2019 McMaster Chronic Pain Network - Canadian Consensus on Biomarkers in Pain Research Meeting, February 4-5, 2019
- 2019 Quebec Pain Research Network Retreat, January 25-27, 2019
- 2018 McMaster Chronic Pain Network Annual Meeting, April 24, 2018
- 2018 American Pain Society 2018 Scientific Summit, Disneyland Hotel, Anaheim, California, USA, March 4-6, 2018
- 2017 Pain Retreat and Provincial Symposium of Table nationale des experts en douleur chronique, Quebec City, November 8-10, 2017
- 2017 McMaster Chronic Pain Network Annual Meeting, Sept. 14, 2017
- 2017 CERC Summit, 7th Annual meeting. Dalhousie University, Halifax. August 17-18, 2017
- 2017 Genome Canada granting opportunity meeting, organized by Dr. Diatchenko, McGill Faculty Club, Montreal, February 2-3, 2017
- 2016 CIHR Canadian Pain Research Summit, Organized by CIHR Institutes of Musculoskeletal Health and Arthritis (IMHA), Neurosciences, Mental Health and Addiction (INMHA), Cancer Research (ICR), and Gender and Health (IGH) Sheraton Centre Hotel in Toronto, Ontario. September 18 – 20, 2016.
- 2016 SPOR FACE-TO-FACE MEETING. Strategy for Patient-Oriented Research (SPOR) for “Chronic Pain Network”, Principal Applicant Meeting #2, Toronto, June 16, 2016
- 2016 Initiative on methods, measurement, and pain assessment in clinical trials (IMPACT-XIX). Washington, DC June 3-4, 2016
- 2016 SPOR FACE-TO-FACE MEETING. Strategy for Patient-Oriented Research (SPOR) for “Chronic Pain Network”, Principal Applicant Meeting #1, Toronto, May 13, 2016
- 2016 CERC SUMMIT – 6th Annual Meeting Science and Society, Ottawa, April 11 and 12, 2016
- 2015 Orofacial Pain: Prospective Evaluation and Risk Assessment (OPPERA) study. OPPERA External Advisory meeting, University of North Carolina, Chapel Hill, December 9-11, 2015
- 2015 Proove Biosciences bi-annual Medical Advisory Board meeting, November 17-18, 2015 Miami, Florida
- 2015 IASP Scientific Program Committee Meeting for the 16th World Congress on Pain. Madrid Sept 26 to Oct 1, 2015.
- 2015 CERC SUMMIT – 5th Annual Meeting, Pushing the boundaries of research and innovation, University of Waterloo, April 13-14, 2015
- 2015 Face-to-Fact CA8 Grant Meeting, University of Miami Miller School of Medicine, and Miami, Florida. March
- 2014 Orofacial Pain: Prospective Evaluation and Risk Assessment (OPPERA) study. OPPERA External Advisory meeting, University of North Carolina, Chapel Hill, December
- 2014 The Genetics of Pain and Pain Inhibition: Where to From Here? Invited Presentation: “Complex pain genetics: progress so far” Banbury Center, Cold Spring Harbor Laboratory, Cold Spring Harbor, NY

- 2014 The Seventh Scientific Meeting of the TMJ Association Genetic and Epigenetic Basis of Temporomandibular Disorders and Related Chronic Overlapping Conditions, Invited Presentation: “Translational Research in the Genomic Era: OPPERA Study”, Bethesda, Maryland
- 2014 Consensus Meeting, Phenotyping of Pain Cohorts – OPPERA Experience, Neuropathic pain phenotyping by international consensus (NeuroPPIC), Versailles, France
- 2014 CERC SUMMIT – 4th Annual Meeting, At the Forefront of Research and Innovation, Université Laval, Québec, QC, April 15-17, 2014

McGill University, Montreal, Quebec

- 2019/08-current Member, Search Committee, CRC2 Assistant Professor in Tissue Remodeling, School of Dentistry
- 2018/08-2019/08 Member, Search Committee, CRC2 Assistant Professor in Big data Analysis, School of Dentistry
- 2018-current Tenure Track Reappointment Committee
- 2017-2020 Senate Pool appointment for Statutory Selection Committee. Term commences.
- 2017/11-2018/02 Member, Search Committee, Clinical Pain Geneticist (Associate Professor), School of Dentistry
- 2017/12-2018/04 Member, Search Committee, Pain Researcher (Assistant/Associate Professor), department of Anesthesia, School of Medicine/ School of Dentistry
- 2017/17-2018/05 Member, Search Committee, Statistical Geneticist (Associate Professor), Department of Human Genetics, School of Medicine
- 2016-present Alternate chair to the University Tenure Committee for the Faculty of Dentistry for a term commencing.
- 2015-present McGill Anesthesia resident research committee
- 2015/09 Member, Evaluation Committee, Edwards PhD. Studentships in Pain Research, The Louise and Alan Edwards Foundation
- 2015-present Statutory Selection Committee Senate Pool Representative for Faculty of Dentistry
- 2014-present Continuing Cross-Appointment and Associate Member, Department of Human Genetics, Faculty of Medicine
- 2014-present Cross-Appointment and Associate Member, Department of Medicine, Division of Experimental Medicine
- 2014-present Member, Faculty of Dentistry’s University Tenure Committee
- 2014-present Cross-Appointment and Associate Member, Department of Pharmacology and Therapeutics, Faculty of Medicine
- 2014/9 Member, Evaluation Committee, Edwards PhD. Studentships in Pain Research, The Louise and Alan Edwards Foundation
- 2014/1-2015/3 Member, Search Committee, Clinical Pain Geneticist (Associate Professor), School of Dentistry
- 2013/12-2014/12 Member, Search Committee, Statistical Geneticist (Associate Professor), Department of Human Genetics, School of Medicine

RESEARCH STATEMENT AND OBJECTIVES

Persistent pain is a part of many common human clinical conditions, yet the current ability to diagnose and manage these conditions is inadequate. Pain perception is one of the most complicated quantitative and measurable traits, as it is composed of an aggregate of several measurable phenotypes associated with peripheral and central nervous system dynamics, stress responsiveness, and inflammatory state. It is generally accepted that complex traits, like pain perception, result from the interplay between environmental exposures and multiple genetic variants. However, little is known about the nature of these genetic variants. Because of the established roles of environmental exposures and the commonly held view that pain perception is an unquantifiable “subjective” experience, a genetic basis for pain perception has long been questioned. The rapidly developing discoveries in the field of pain genetics have provided evidence for a substantial role for an individual’s genetic background on pain perception and clinical pain phenotypes. These findings provide unique opportunities to identify new genetic variants that contribute to pain phenotypes.

My research objectives are to investigate the biological, psychological, molecular, cellular, and genetic pathways that mediate both acute and persistent pain states. My primary goal is to identify the critical elements of human genetic variability contributing to pain sensitivity and pathophysiological pain states that will enable individualized treatments and therapies. Another related research goal includes studying the molecular hierarchy and evolution of functional SNPs (single-nucleotide polymorphisms), regulation of gene expression underlying molecular pain signaling, development of surrogate animal models of human pain conditions, and clustering of neurological and psychological phenotypes that contribute to human persistent pain conditions. I firmly believe that answering these questions requires collaboration with experts in both clinical and basic biological sciences. I am open to such collaborative activities, which have already permitted me to translate basic genetic findings spanning the spectrum from human association studies, through molecular and cellular mechanisms, to animal models, and ultimately, to human clinical trials.

A recent illustration of how human genetic association studies has been used by my current research program to reveal and validate new drug targets for common pain conditions is shown below in Figure 1. This first of its kind translational discovery included the following steps:

1. The association of polymorphisms within the human *COMT* gene, which codes for an enzyme that metabolizes catecholamines (i.e., epinephrine, norepinephrine, and dopamine), with human pain perception and risk of developing a common musculoskeletal pain condition (Tempromandibular Disorder, TMD).
2. The identification of three major haplotypes of *COMT* that control COMT expression.
3. *In vivo* rodent studies showing that the pharmacological inhibition of COMT results in mechanical and thermal hypersensitivity that is reversed by the nonselective β -adrenergic antagonist propranolol, or by the combined administration of selective β_2 - and β_3 -adrenergic antagonists.
4. The clinical demonstration that propranolol, a clinically used non-selective β -adrenergic antagonist that is widely used for treatment of hypertension, produces analgesia in TMD patients in a manner that is dependent on the subject’s *COMT* diplotypes. Other examples of putative pathways and targets identified by our human genetic association studies include adrenergic receptor alpha 1 (ADRA1), epidermal growth factor receptor (EGFR) and vascular epidermal growth factor (VEGF). The ADRA1 antagonist such as prazosin, alfuzosin and doxazosin, EGFR antagonists and antibody, and VEGF antibody are clinically used in the treatment of post-traumatic stress disorders, benign prostatic hyperplasia and cancers, which will substantially speed up the validation and introduction

of new classes of drugs for pain management based on these putative drug targets for pain conditions.

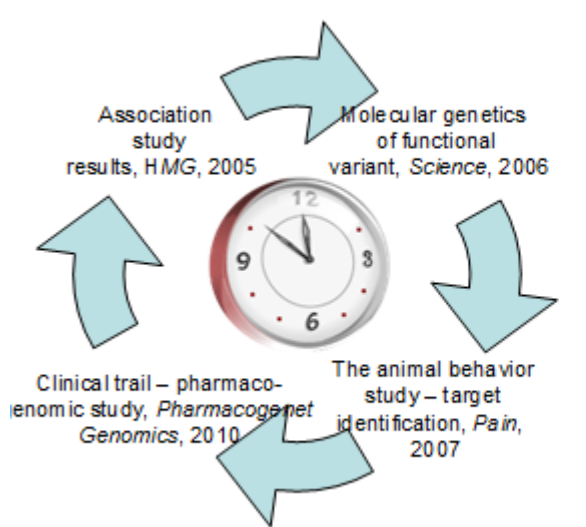


Figure 1. Translational clock – closing the circle. The publication record of Dr.Diatchenko’s pain program

It is my firm view that McGill University represents a unique and premier academic environment where such collaborative efforts can reach its highest potential. The long history of McGill’s Edwards Pain Center as the leader in the area of the basic mechanisms that mediate the perception and modulation of pain is impressive and has been made possible by its strong focus on pain psychophysics, biological studies on pain pathways, and animal pain genetics. My expertise in human molecular genetics, and my experience in collecting and analyzing large human cohorts characterized for pain phenotypes, will create a new level of opportunities for translational research. Our combined effort will enable the amalgamation of basic findings and human genetics indices into new molecular-based approaches to characterize patient populations in a manner that permits the identification of new drug targets and the future development of new personalized approaches for pain management. The positioning of my program at the Edwards Pain Centre and within School of Medicine and Dentistry will provide a direct path for clinical trials that can be initiated relatively immediate for drug repurposing and targeting specific patient population using genetically-based algorithms. Furthermore, the location of my laboratory within the cutting edge McGill University and Genome Quebec Innovation Centre will assure an easy and natural access to not only the latest available technologies and secure sample storage for my large human biological samples collection, but will also permit access to a wide-range of expertise from fellow faculty members who are the amongst the top in the geneticist field. This unique intellectual environment, and combination of expertise in the pain and genetic field, will create the basis for the rapid development of a new research directions in the junction between human pain genetics, pain pathophysiology, and analgesic drug discovery.