

CURRICULUM VITAE (06/2016)
LUDA DIATCHENKO

PERSONAL INFORMATION

Place of Birth Moscow, Russia

Citizenship United States

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EDUCATION

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

PROFESSIONAL EXPERIENCE

2013-present Professor
Canadian Excellence Research Chair in Human Pain Genetics
Alan Edwards Centre for Research on Pain
McGill University, Montreal, QC, Canada

2013 Professor

Regional Center for Neurosensory Disorders
University of North Carolina, Chapel Hill, NC, USA

2012-2013 Associate Director
Regional Center for Neurosensory Disorders
University of North Carolina, Chapel Hill, NC, USA

2006-2013 Associate Professor
Regional Center for Neurosensory Disorders
University of North Carolina, Chapel Hill, NC, USA

2002-2005 Research Associate Professor
Regional Center for Neurosensory Disorders
University of North Carolina, Chapel Hill, NC, USA

2000-2002 Visiting Research Assistant Professor
Regional Center for Neurosensory Disorders University of North
Carolina, Chapel Hill, NC, USA

2002-2004 Director, Gene Discovery
Attagene Inc.
Morrisville, 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

HONORS AND AWARDS

1990 Diploma *cum laude*, Russian State Medical University
1995 CLONTECH Productivity Award
1996 CLONTECH Outstanding Innovation Award
2011 International Association for the Study of Pain (IASP) Research
Symposium Award
2013 Canada Excellence Research Chair in Human pain Genetics

BIBLIOGRAPHY

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.)

Books Edited

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

Books 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. Mogil JS, **Diatchenko L**, Fillingim. An Introduction to Pain. In: M Gold, ed. *Pain 2014 - An Updated Review: Refresher Course Syllabus*. Seattle: IASP Press; *in press*.
3. Kuo CL, **Diatchenko L**, Zaykin D. 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 7, pp 99-103.
4. **Diatchenko L**, Smith SB, Maixner. Discovering Multilocus Associations with Complex Pain Phenotype. In: *Genetics of Human Pain Perception: Basic to Translational Science*. Eds. Belfer I, **Diatchenko L**, Oxford, UK 2014 Chapter 10, pp 147-156
5. **Diatchenko L**. COMT is a Major Contributor to Pain Perception: from Humans to Rats and Back to Humans. In L. Eiden (Ed.), *Catecholamine Research in the 21st Century: Abstracts and Graphical Abstracts, 10th International Catecholamine Symposium 2012* (pages of contribution, can be obtained from your proofs). Oxford, UK: Elsevier; 2013; *in press*.
6. Smith SB, Tchivileva IE, Maixner W, **Diatchenko L**. The search for human pain genes using whole genome approaches: achievements, failures and promises. In: J Mogil, ed. *Pain 2010 - An Updated Review: Refresher Course Syllabus*. Seattle: IASP Press; 2012; 255-263.
7. Smith SB, Tchivileva IE, Maixner W, **Diatchenko L**. The search for human pain genes using whole genome approaches: achievements, failures and promises. In: Jeffrey Mogil, ed. *Pain Genes for Unraveling Pain: A Course for Non-Geneticists. Pain 2010 - An Updated Review: Refresher Course Syllabus*. Seattle: IASP Press; 2010; 255-265.

8. Zhumabayeva B, Chang C, McKinley J, **Diatchenko L**, Siebert PD. Generation of full-length cDNA libraries enriched for differentially expressed genes. In: Walker J., ed. *Methods in Molecular Biology*. Totowa: Humana Press; 2003:221:223-37.
9. Rebrikov DV, Kogan YN, **Diatchenko L**. SSH subtractive cloning: comprehensive survey of genome differences in prokaryotes. In: DelVecchio VG, Krcmery V, eds. *Applications of Genomics and Proteomics for Analysis of Bacterial Warfare Agents*. Amsterdam: IOS Press; 2003: 95-105.
10. Desai S, Hill JE, Trelogan S, **Diatchenko L**, Siebert PD. Identification of differentially expressed genes by suppression subtractive hybridization (SSH). In: Hunt SP, Livesey FJ, eds. *Functional Genomics: A Practical Approach*. Oxford: Oxford University Press; 2000: 81-112.
11. **Diatchenko L**, Trelogan S, Siebert PD. Update to: Differential screening of subtracted cDNA library: a rapid method to search for the genes preferentially expressed in two or multiple tissues. In: McClelland M and Pardee A, eds. *Expression Genetics: Accelerated and High-Throughput Methods*. Natick: Biotechniques Books; 1999: 141-144.
12. Jin H, Cheng X, **Diatchenko L**, Siebert PD, Huang CC. Differential screening of subtracted cDNA library: a rapid method to search for the genes preferentially expressed in two or multiple tissues. In: McClelland M and Pardee A, eds. *Expression Genetics: Accelerated and High-Throughput Methods*. Biotechniques Books; 1999: 135-141.
13. **Diatchenko L**, Lukyanov S, Lau YF, Siebert PD. Suppression subtractive hybridization: a versatile method for identifying differentially expressed genes. In: Weissman SM, ed. *Methods in Enzymology*. San Diego: Academic Press; 1999; 303: 349-380.
14. **Diatchenko L**, Chenchik A, Siebert PD. Suppression subtractive hybridization: a method for generating subtracted cDNA libraries starting from poly(A+) or total RNA. In: Siebert PD and Larrick J, eds. *RT-PCR Methods for Gene Cloning and Analysis*. Natick: Biotechniques Books; 1998:213-239.
15. Chenchik A, Zhu Y, **Diatchenko L**, Li R, Hill J, Siebert PD. Generation and use of high-quality cDNA from small amounts of total RNA by SMART PCR. In: Siebert PD, Larrick J, eds. *RT-PCR Methods for Gene Cloning and Analysis*. Natick: Biotechniques Books; 1998:305-321.

Peer-Reviewed Journal Articles.

1. 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
2. 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.
3. 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.
4. 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.
5. Meloto CB, Bortsov AV, Bair E, Helgeson E, Ostrom C, Smith SB, Dubner R, Slade GD, Fillingim RB, Greenspan JD, Ohrbach R, Maixner W, McLean SA, **Diatchenko** L. Modification of COMT-dependent pain sensitivity by psychological stress and sex. *Pain*. 2016 Apr;157(4):858-67.
6. 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.
7. 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.
8. Gao XH, Krokowski D, Guan BJ, Bederman I, Majumder M, Parisien M, **Diatchenko** L, Kabil O, Willard B, Banerjee R, Wang B, Bebek G, Evans CR, Fox PL, Gerson SL, Hoppel CL, Liu M, Arvan P, Hatzoglou M. Quantitative H2S-mediated protein sulfhydration reveals metabolic reprogramming during the integrated stress response. *Elife*. 2015 Nov 23;4:e10067.
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10. van Hecke O, Kamerman PR, Attal N, Baron R, Bjornsdottir G, Bennett DL, Bennett MI, Bouhassira D, **Diatchenko** L, Freeman R, Freynhagen R, Haanpää M, Jensen TS, Raja SN, Rice AS, Seltzer Z, Thorgeirsson TE, Yarnitsky D, Smith BH. Neuropathic pain

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21. De Gregori M, **Diatchenko L**, Belfer I, Allegri M. Minerva Anestesiol. OPRM1 receptor as new biomarker to help the prediction of post mastectomy pain and recurrence in breast cancer. 2015 Aug;81(8):894-900. Epub 2014 Oct 10.
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- Clinical Orofacial Characteristics Associated With Risk of First-Onset TMD: The OPPERA Prospective Cohort Study. *J Pain*. 2013 Dec;14(12 Suppl):T33-50.
30. Slade GD, Bair E, Greenspan JD, Dubner R, Fillingim RB, **Diatchenko L**, Maixner W, Knott C, Ohrbach R. Signs and Symptoms of First-Onset TMD and Sociodemographic Predictors of Its Development: The OPPERA Prospective Cohort Study. *J Pain*. 2013 Dec;14(12 Suppl):T20-T32.
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 32. Slade GD, Fillingim RB, Sanders AE, Bair E, Greenspan JD, Ohrbach R, Dubner R, **Diatchenko L**, Smith SB, Knott C, Maixner W. Summary of Findings From the OPPERA Prospective Cohort Study of Incidence of First-Onset Temporomandibular Disorder: Implications and Future Directions. *J Pain*. 2013 Dec;14(12 Suppl):T116-24.
 33. Bair E, Ohrbach R, Fillingim RB, Greenspan JD, Dubner R, **Diatchenko L**, Helgeson E, Knott C, Maixner W, Slade GD. Multivariable Modeling of Phenotypic Risk Factors for First-Onset TMD: The OPPERA Prospective Cohort Study. *J Pain*. 2013 Dec;14(12 Suppl):T102-15.
 34. Sanders AE, Essick GK, Fillingim R, Knott C, Ohrbach R, Greenspan JD, **Diatchenko L**, Maixner W, Dubner R, Bair E, Miller VE, Slade GD. Sleep apnea symptoms and risk of temporomandibular disorder: OPPERA cohort. *J Dent Res*. 2013 Jul;92(7 Suppl):70S-7S.
 35. Slade GD, Smith S, Zaykin D, Tchivileva I, Gibson DG, Yuryev A, Mazo I, Bair E, Fillingim R, Ohrbach R, Maixner W, **Diatchenko L**. Facial pain with localized and widespread manifestations: separate pathways of vulnerability. *Pain*. 2013 Nov;154(11):2335-43.
 36. Jeffers L, Duan K, Ellies L, Seaman W, Burger-Calderon, R, **Diatchenko L**, Webster-Cyriaque. Correlation of transcription of MALAT-1, a novel noncoding RNA, with deregulated expression of tumor suppressor p53 in small DNA tumor virus models. *J of Cancer Therapy*. 2013 May;4(3).
 37. Chen H, Nackley A, Miller V, **Diatchenko L**, Maixner W. Multisystem Dysregulation in Painful Temporomandibular Disorders. *J Pain*. 2013 Sep;14(9):983-96.
 38. Bortsov AV, Smith JE, **Diatchenko L**, Soward AC, Ulirsch JC, Rossi C, Swor RA, Hauda WE, Peak DA, Jones JS, Holbrook D, Rathlev NK, Foley KA, Lee DC, Collette R, Domeier RM, Hendry PL, McLean SA. Polymorphisms in the glucocorticoid receptor co-chaperone FKBP5 predict persistent musculoskeletal pain after traumatic stress exposure. *Pain*. 2013 Aug;154(8):1419-26.

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43. Sorge RE, Trang T, Dorfman R, Smith SB, Beggs S, Ritchie J, Austin J-S, Zaykin DV, Meulen HV, Costigan M, Herbert TA, Yarkoni-Abitbul M, Tichauer D, Livneh J, Gershon E, Zheng M, Tan K, John SL, Slade GD, Jordan J, Woolf CJ, Peltz G, Maixner W, **Diatchenko L**, Seltzer Z, Salter MW, Mogil JS. Genetically determined P2X7 receptor pore formation regulates variability in chronic pain sensitivity. *Nat Med* 2012;18(4):595-9.
44. Sanders AE, Maixner W, Nackley AG, **Diatchenko L**, By K, Miller VE, Slade GD. Excess Risk of Temporomandibular Disorder Associated With Cigarette Smoking in Young Adults. *J Pain* 2012;13(1):21-31. Epub 2011 Oct 26. PMID: PMC3249502
45. Orrey DC, Bortsov AV, Hoskins JM, Shupp JW, Jones SW, Cicuto BJ, Hwang J, Jordan MH, Holmes JH, Haith LR, Roane BM, **Diatchenko L**, Cairns BA, McLean SA. Catechol-O-Methyltransferase Genotype Predicts Pain Severity in Hospitalized Burn Patients. *J Burn Care Res* 2012 Jan 2. [Epub ahead of print]
46. Maixner W, **Diatchenko L**, Dubner R, Fillingim RB, Greenspan JD, Knott C, Ohrbach R, Weir B, Slade GD. Orofacial Pain Prospective Evaluation and Risk Assessment Study – The OPPERA Study. *J of Pain* 2011;12(11; Supplement):T4-T11.e2. PMID: PMC3233836
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48. Maixner W, Greenspan JD, Dubner R, Bair E, Mulkey F, Miller V, Knott C, Slade GD, Ohrbach R, **Diatchenko L**, Fillingim RB. Potential autonomic risk factors for chronic

- TMD: Descriptive data and empirically identified domains from the OPPERA case-control study. *J of Pain* 2011;12(11; Supplement):T75-T91. PMID: PMC3233841
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Peer-Reviewed Abstracts

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2. 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 26-30, 2016.
 3. 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.
 4. 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.
 5. 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.
 6. 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.*
7. 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.
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 9. 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.

10. 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
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32. 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
33. 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
34. 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
35. 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
36. 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
37. 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
38. 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
39. Smith SB, Mir E, Bair E, Slade GD, Dubner R, Fillingim RB, Greenspan JD, Ohrbach R, Knott C, Weir B, Maixner W, **Diatchenko L**. Genetic architecture of intermediate

phenotypes associated with incident TMD in the OPPERA Prospective Study. American Academy of Orofacial Pain 37th Scientific Meeting, Orlando, Florida 2013

40. Smith SB, **Diatchenko L**, Palsson O, Kanazawa M, van Tilburg M, Maixner W and Whitehead WE. Genetic association and meta-analysis implicates the ADRB2 adrenergic receptor gene in Irritable Bowel Syndrome (IBS). American Pain Society Annual Scientific Meeting, New Orleans, LA, 2013
41. Marcovitz J, Wieskopf JS, Webb ME, Samoshkin A, Dokholyan N, Convertino M, Stone LS, Mogil JS, **Diatchenko L**. Synergistic Analgesia Between Morphine and Beta-Adrenergic Antagonists. Annual Scientific Meeting, Society for Neuroscience, San Diego, CA, 2013.
42. De Gregori M, Di Matteo M, Allegri M, Belfer I, **Diatchenko L**. How pharmacogenetics might help to predict postoperative pain and patient response to analgesia by morphine PCA: a case report. 8th ISABS Conference on Forensic, Anthropologic and Medical Genetics. Split, Croatia, 2013.
43. Bortsov AV, **Diatchenko L**, Swor RA, Peak DA, Jones JS, Rathlev NK, Lee DC, Domeier RM, Hendry PL, McLean SM. *COMT* Haplotypes Predict Pain Intensity and Interference 6 Weeks after Motor Vehicle Collision. 32nd Annual Scientific Meeting, American Pain Society, New Orleans, LA, 2013.
44. Smith SB, **Diatchenko L**, Palsson O, Kanazawa M, van Tilburg M, Maixner W, Whitehead WE. Genetic association and meta-analysis implicates the ADRB2 adrenergic receptor gene in Irritable Bowel Syndrome (IBS). 32nd Annual Scientific Meeting, American Pain Society, New Orleans, LA, 2013.
45. Meloto C, Segall S, Gauthier J, Tsao D, Maixner W, **Diatchenko L**. Characterization of a new COMT isoform associated with TMD. 32nd Annual Scientific Meeting, American Pain Society, New Orleans, LA, 2013.
46. Segall SK, Maixner W, Belfer I, Wiltshire T, Seltzer Z, **Diatchenko L**. Janus molecule I: Dichotomous effect of COMT in neuropathic vs. nociceptive pain modalities. IASP Research Symposium, The Genetics of Pain: Science, Medicine and Drug Development, February 7-9, 2012, Miami Beach, Florida, USA
47. Meloto CB, Segall SK, Gauthier J, Park HJ, **Diatchenko L**. Characterizing a novel COMPT isoform: expression levels and enzymatic activity. IASP Research Symposium, The Genetics of Pain: Science, Medicine and Drug Development, February 7-9, 2012, Miami Beach, Florida, USA
48. Smith JE, Bortsov A, Ulirsch JC, Swor R, Peak D, Jones J, Rathlev N, Lee D, Domeier R, Hendry P, **Diatchenko L**, Liberzon I, McLean SA. FKBP5 Polymorphisms Predict Peritraumatic Dissociation and Elevated PTSD Symptoms 6 Weeks After Motor Vehicle Collision. Program number 243. Society of Biological Psychiatry 67th Annual Scientific Convention and Program EBook of Abstracts, Philadelphia, PA 2012.

49. Ballina LE, Bortsov AV, **Diatchenko L**, Ulirsch J, Swor R, Peak D, Jones J, Rathlev N, Lee D, Domeier R, Hendry P, Liberzon I, McLean SA. Sexually Dimorphic Influence of COMT on Distress in the Immediate Aftermath of Trauma. Program number 472. Society of Biological Psychiatry 67th Annual Scientific Convention and Program EBook of Abstracts, Philadelphia, PA 2012.
50. Platts-Mills TF, Ballina L, **Diatchenko L**, Bortsov A, Swor R, Jones J, Rathlev N, Lee D, Domeier R, Hendry P, Liberzon I. Influence of COMT HPS Haplotype on Peritraumatic Distress Severity among Women Experiencing Motor Vehicle Collision: Report of an Age x Gene Interaction Program number 470. Society of Biological Psychiatry 67th Annual Scientific Convention and Program EBook of Abstracts,, Philadelphia, PA 2012.
51. Bortsov A, Soward A, **Diatchenko L**, Ulirsch J, Swor R, Peak D, Jones J, Rathlev N, Lee D, Domeier R, Hendry P, Liberzon I, McLean S. Tryptophan Hydroxylase 2 Synonymous Polymorphism rs7305115 is Associated with Acute Psychological Response after Motor Vehicle Collision. Program number 474. Society of Biological Psychiatry 67th Annual Scientific Convention and Program EBook of Abstracts, Philadelphia, PA 2012.
52. Smith J, Bortsov A, Ulirsch J, Swor R, Peak D, Jones J, Rathlev N, Lee D, Domeier R, Hendry P, **Diatchenko L**, Liberzon I, McLean S. FKBP5 Polymorphism Predicts Peritraumatic Dissociation after Motor Vehicle Collision. Annual Meeting of the Society for Biological Psychiatry, Philadelphia, PA, 2011.
53. Bortsov A , Soward A, **Diatchenko L**, Ulirsch J, Swor R, Peak D, Jones J, Rathlev N, Lee D, Domeier R, Hendry P, Liberzon I, McLean SA. Tryptophan Hydroxylase 2 Synonymous Polymorphism rs7305115 is Associated with Acute Psychological Response after Motor Vehicle Collision. Annual Meeting of the Society for Biological Psychiatry, Philadelphia, PA, 2011.
54. Ulirsch J, Bortsov A, Smith J, Swor R, Peak D, Jones J, Rathlev N, Lee D, Domeier R, Hendry P, **Diatchenko L**, Liberzon I, McLean SA. ADRA2A Variants Predict Peritraumatic Dissociation After Motor Vehicle Collision. Annual Meeting of the Society for Biological Psychiatry, Philadelphia, PA, 2011.
55. Ballina LE, **Diatchenko L**, Ulirsch J, Swor R, Peak D, Jones J, Rathlev N, Lee D, Domieir R, Hendry P, Liberzon I, McLean SA. Sexually Dimorphic Influence of COMT on Distress in the Immediate Aftermath of Trauma. Annual Meeting of the Society for Biological Psychiatry, Philadelphia, PA, 2011.
56. Platts-Mills TF, Ballina L, **Diatchenko L**, Bortsov A, Swor R, Peak D, Jones J, Rathlev N, Lee D, Domieir R, Hendry P, Liberzon I, McLean SA. Influence of COMT HPS Haplotype on Peritraumatic Distress Severity among Women Experiencing Motor Vehicle Collision: Report of an Age x Gene Interaction. Annual Meeting of the Society for Biological Psychiatry, Philadelphia, PA, 2011.
57. Tsao D, Segall S, Wieskopf J, Mogil J, Dokholyan NV, **Diatchenko L**. Serotonin-

- induced hyperalgesia via inhibition of catechol O-methyltransferase activity. 30th Annual Scientific Meeting, American Pain Society, Austin, TX, 2011.
58. Tsao D, **Diatchenko L**, Gauthier J, Dokholyan NV, Shabalina SA. Disruptive mRNA folding increases translational efficiency of catechol-O-methyltransferase variant. 30th Annual Scientific Meeting, American Pain Society, Austin, TX, 2011.
 59. Orrey D, Shupp J, Hoskins J, Platts-Mills T, Bortsov A, Bangdiwala S, Haith L, **Diatchenko L**, Holmes J, Jordan M, Cairns B, McLean S. Pilot multicenter, genotype-based, randomized, double-blind, placebo-controlled trial of propranolol to reduce initial pain symptoms in patients with major burn injury. 30th Annual Scientific Meeting, American Pain Society, Austin, TX, 2011.
 60. Chen H, Slade G, Maixner W, Miller V, **Diatchenko L**. Widespread palpation tenderness is associated with multiple pain conditions in females with temporomandibular disorders. 30th Annual Scientific Meeting, American Pain Society, Austin, TX, 2011.
 61. Slade GD, **Diatchenko L**, Nackley A. Contributions of inflammation mediators to localized TMD and widespread pain. 89th General Session and Exhibition, International Association for Dental Research/American Association for Dental Research/Canadian Association for Dental Research, San Diego, CA, 2011.
 62. Gracely RH, Smith SB, Slade G, **Diatchenko L**, Fillingim RB, Fijal B, Frakes E, McLean SA, Piezer K, Heinloth AN, Maixner W, Houston JP. Association of genetic polymorphisms with placebo treatment in patients with osteoarthritis knee pain. 13th World Congress, International Association for the Study of Pain, Montréal, Québec, Canada, 2010.
 63. Maixner W, Smith SB, Bhangale T, Weir B, Hyde C, Slade G, John SL, McLean SA, Gracely RH, Ambrose K, Tan K, Jordan J, **Diatchenko L**. Initial identification of genetic variants associated with painful osteoarthritis - results from a community based genome-wide association study. 13th World Congress, International Association for the Study of Pain, Montréal, Québec, Canada, 2010.
 64. Smith SB, Fillingim RB, Maixner W, Hyde C, Slade G, John SL, McLean SA, Gracely RH, Zaykin D, Mazo I, Yuryev A, Tchivileva I, Tan K, **Diatchenko L**. Multivariate factor analysis and genetic association provide evidence for clinical heterogeneity in fibromyalgia. 13th World Congress, International Association for the Study of Pain, Montréal, Québec, Canada, 2010.
 65. Miller VE, Slade GD, **Diatchenko L**, Maixner W. The role of age in TMD: a case-control study. 13th World Congress, International Association for the Study of Pain, Montréal, Québec, Canada, 2010.
 66. Nackley A, Conrad M, Slade G, Smith S, Gibson D, Kasravi P, Miller V, Lim P, Maixner W, **Diatchenko L**. Cytokines associated with TMD case status and related intermediate phenotypes. 29th Annual Scientific Meeting, American Pain Society, Baltimore, MD, 2010.

67. Choi Y, Bhangale T, Smith S, **Diatchenko L**, Maixner W, Jordan JM, Hyde CL, John S, Weir BS. A unified case-control association testing with unknown multilevel relationships. 59th Annual Meeting, The American Society of Human Genetics, Honolulu, HI, 2009.
68. Gris P, Cheng P, Gauthier J, Gibson D, Maixner W, **Diatchenko L**. Activation of novel isoform of mu-opioid receptor (MOR1K) results in cellular excitation. Society for Neuroscience Annual Meeting, Chicago, IL, 2009.
69. Smith SB, Fillingim RB, Slade GD, Greenspan JD, Ohrbach RK, Knott C, Weir B, Maixner W, **Diatchenko L**. Candidate genes associate with psychological risk factors for chronic pain in OPPERA, a multi-site population-based cohort study. Abstract. Society for Neuroscience, 39th Annual Meeting, Chicago, IL, 2009.
70. Conrad M, Wentworth S, Prusik D, Gauthier J, Sukumar R, Maixner W, **Diatchenko L**, Nackley AG. Role of MOR-1K in Opioid Induced Hyperalgesia. Abstract. Society for Neuroscience, 39th Annual Meeting, Chicago, IL, 2009.
71. Segall S*, Nackley A, Diatchenko L, Tarantino L, Bailey J, Steffy B, Maynard T, Wiltshire T. Comt1 and pain perception in common inbred strains of mice. Abstract. Dental Research Day, School of Dentistry, University of North Carolina , 2009.
- *Samantha Segall won the NCAADR Derek Turner Award for her work on this project and abstract.
72. Smith SB, Miller V, Siddiqi M, Gibson D, Arunasalam R, Kasravi P, Neely A, Bair E, Slade G, Maixner W, **Diatchenko L**. Candidate gene analysis of a persistent pain disorder. Abstract. NIH Pain Symposium, Bethesda, MD, 2009.
73. Smith SB, Fillingim RB, Greenspan JD, Ohrbach RK, Slade GD, Knott C, **Diatchenko L**, Maixner W. Candidate genes associated with psychological risk factors for chronic pain – preliminary findings from the multisite OPPERA cohort study. 28th Annual Scientific Meeting, American Pain Society, San Diego, CA, 2009.
74. Tchivileva IE, Lim PF, Kasravi P, Gibson D, Smith S, **Diatchenko LB**, Maixner W, McLean SA. Propranolol in TMJD treatment. Abstract. American Pain Society, 28th Annual Meeting, San Diego, CA, 2009.
75. Nackley AG, Conrad M, Gibson D, **Diatchenko L**, and Maixner W. Cytokine Profiles Associated with TMD Case Status. Abstract. 7th Annual Conference on Cytokines and Inflammation, San Diego, CA, 2009.
76. Conrad M, Arunasalam R, Gibson D, Bair E, Smith S, Slade G, Maixner W, Diatchenko L, and Nackley AG. Proinflammatory Cytokine Profiles Associated with TMD Case Status and Related Intermediate Phenotypes. Abstract. American Pain Society, 27th Annual Meeting, Tampa, FL, 2008.

77. Gris P, Cheng P, Pierson J, Gauthier J, Shabalina S, Spiridonov N, Maixner W, **Diatchenko L**. Functional characterization of the novel alternatively spliced form of mu-opioid receptor OPRM1. Abstract. American Pain Society, 27th Annual Meeting, Tampa, FL, 2008.
78. McLean SA, **Diatchenko L**, Reed C, Jones CW, Zaleski E, Mistry Y, Swor R, Sochor MR, Liberzon I, Clauw D, Maixner W. Catechol *O*-Methyltransferase (COMT) met/met genotype influences cortisol response and pain symptoms after minor motor vehicle collision (MVC). Abstract. American Pain Society, 27th Annual Meeting, Tampa, FL, 2008.
79. Tchivileva IE, Lim PF, **Diatchenko LB**, McLean SA and Maixner W. Effect of propranolol on TMD patients: preliminary findings. Abstract. American Pain Society, 27th Annual Meeting, Tampa, FL, 2008.
80. Smith SB, Siddiqi M, Miller V, Gibson D, Arunasalam R, Kasravi P, Slade G, Neely A, Bair E, Maixner W, **Diatchenko L**. Candidate gene analysis reveals genetic pathways associated with a persistent pain disorder. Abstract. American Society for Human Genetics, 58th Annual Meeting, Philadelphia, PA, 2008.
81. Smith SB, Siddiqi M, Miller V, Gibson D, Arunasalam R, Kasravi P, Slade G, Neely A, Bair E, Maixner W, **Diatchenko L**. Candidate gene analysis of a persistent pain disorder. Abstract. International Association for the Study of Pain, 12th World Congress on Pain, Glasgow, Scotland, 2008.
82. Gris P, Cheng P, Pierson J, Gauthier J, Shabalina S, Spiridonov N, Maixner W, **Diatchenko L**. Functional characterization of the novel alternatively spliced form of mu-opioid receptor OPRM1. Abstract. International Association for the Study of Pain, 12th World Congress on Pain, Glasgow, Scotland, 2008.
83. Tchivileva IE, Lim PF, Kasravi P, Smith S, **Diatchenko LB**, Maixner W, McLean SA. Propranolol in TMD Treatment: Preliminary Findings. Abstract. 5th Scientific Meeting of the TMJ Association, Bethesda, MD, 2008.
84. Zaykin DV, Shibata K, **Diatchenko L**. Detecting associations under models of complex traits prone to an effect reversal. Abstract. American Society for Human Genetics, 57th Annual Meeting, San Diego, CA, 2007.
85. Zaykin DV, Shibata K, **Diatchenko L**. Haplotype associations with quantitative traits in the presence of complex multilocus and heterogeneous effects. Abstract. American Society for Human Genetics, 57th Annual Meeting, San Diego, CA, 2007.
86. Tchivileva IE, Sitcheran R, Baldwin AS, Maixner W, **Diatchenko L**. The NF-kB dependent regulation of catechol-O-methyltransferase expression. Abstract. American Pain Society, 26th Annual Meeting, Washington, DC, 2007.
87. Smith SB, Slade GD, Belfer I, Goldman D, Max MB, Fillingim RB, Higgins TJ, Sama S, Maixner W, **Diatchenko L**. ADRA1A polymorphisms associated with multiple

- psychological and nociceptive phenotypes predict vulnerability to an idiopathic pain conditions. Abstract. American Pain Society, 26th Annual Meeting, Washington, DC, 2007.
88. Nackley AG, Tchivileva IE, Conrad M, Cooke B, Maixner W, **Diatchenko LB**. The role of NF- κ B in modulating inflammatory pain and catechol-O-methyltransferase expression. Abstract. American Pain Society, 26th Annual Meeting, Washington, DC, 2007.
 89. Lambert J, Conrad M, Shabalina, SA, Satterfield K, Maixner W, **Diatchenko L**, Nackley AG. Effect of Minor SNPs on Enzymatic Activity Regulated by Common Human Haplotypes of the Catechol-O-methyltransferase Gene. Abstract. Society for Neuroscience 37th Annual Meeting, San Diego, CA, 2007.
 90. Smith SB, Slade G, Belfer I, Goldman D, Max MB, Fillingim RB, Maixner W, **Diatchenko L**. Genetic and pharmacological modulation of the alpha-1a adrenergic receptor affects psychological and nociceptive risk factors for idiopathic pain. Abstract. Society for Neuroscience 37th Annual Meeting, San Diego, CA, 2007.
 91. Gris P, Gauthier J, Maixner W, Shabalina S, Spiridinov, **Diatchenko L**. Strategies for molecular identification and functional characterization of alternative splicing forms in human mu-opioid receptor OPRM1. Abstract. Society for Neuroscience 37th Annual Meeting, San Diego, CA, 2007.
 92. Tchivileva IE, Sitcheran R, Baldwin AS, Maixner W, **Diatchenko L**. The role of NF- κ B in TNF α -regulated transcription of the human COMT in astrocytes. Abstract. American Society for Human Genetics, 56th Annual Meeting, New Orleans, LA, 2006.
 93. Tchivileva IE, Sitcheran R, Baldwin AS, Maixner W, **Diatchenko L**. NF- κ B mediates TNF α inhibitory effect on human COMT gene expression. Abstract. American Society for Human Genetics, 55th Annual Meeting, Salt Lake City, UT, 2005.
 94. Higgins T, Tchivileva IE, Downey C, Maixner W, **Diatchenko L**. Regulation of Adrenergic Receptor β 2 by C/EBP and cAMP Pathways. Abstract. American Society for Human Genetics, 55th Annual Meeting, Salt Lake City, UT, 2005.
 95. Nackley AG, Shabalina S, Maixner W, **Diatchenko LB**. Common human catechol-O-methyltransferase haplotypes modulate RNA stability, protein expression, and enzymatic activity. Abstract. American Society for Human Genetics, 55th Annual Meeting, Salt Lake City, UT, 2005.
 96. Nackley AG, Lambeth BL, Faison JM, Fecho K, **Diatchenko LB**, Maixner W. Catechol-O-methyltransferase Inhibition Produces Enhanced Pain Sensitivity and Cytokine Production via a β -adrenergic Mechanism. Abstract. International Association for the Study of Pain, 11th World Congress on Pain, Sydney, Australia, 2005.
 97. Nackley AG, Faison JM, Lambeth BL, Tan KS, Fecho K, Flood P, **Diatchenko LB**, Maixner W. Catechol-O-methyltransferase modulates pain behavior and cytokine

production via β 2/3-adrenergic receptor mechanisms. Abstract. Society for Neuroscience 35th Annual Meeting, Washington, DC, 2005.

98. Nackley AG, Wu Y, **Diatchenko LB**, Maixner W. Catechol-O-methyltransferase haplotypes modulate pain sensitivity. Abstract. Society for Neuroscience 34th Annual Meeting, San Diego, CA, 2004.
99. **Diatchenko L**, Vijaychander S, Chenchik A, Siebert PD. Reliable cDNA subtraction starting from small amounts of total RNA. Abstract. Molecular Biology of the Cell 7: 932-932 Suppl. S, Dec 1996. American Society for Cell Biology.

Published Thesis and Dissertation

Diatchenko L. New method of poly(A)+RNA fingerprinting. Moscow, Russia: Russian State Medical University, 1993. 150 pages.

Diatchenko L. Nucleotide and primer specificity of DNA polymerases. Moscow, Russia: Russian State Medical University, 1990. 67 pages.

Invited Oral Presentations

Local, Montreal, Quebec (since 2013):

- 2016 Experimental Therapeutics and Metabolism Program seminar series. Invited
mu- Presentation: “Translational Studies in the Genomic Era: Expansion of
Health Opioid Receptor Gene Locus”. Research Institute of the McGill University
Centre. March 3, 2016
- 2015 Rendez-Vous Génome Québec 2015. Invited Presentation: “The Search for Pain
Genes in Humans” Dec 4, 2015
- 2015 Alan Edwards Centre for Research on Pain Journal Club Presentation and
Discussion: “Contribution of Somatization to Development of the Pain
States”
Feb 12, 2015
- 2014 Pain Rounds, Alan Edwards Pain Management Unit, McGill University Health
Centre: Invited Presentation: “Human genetics for pain drug target development”
Dec, Montreal Quebec
- 2014 Department of Anatomy and Cell Biology, McGill University, Invited
Presentation: “Translational Studies in the Genomic Era: Persistent Pain
Condition” Nov, Montreal, Quebec
- 2014 Board of Governors, McGill University, Invited Presentation” Translational
Studies in the Genomic Era: Persistent Pain Conditions” Oct, Montreal, Quebec
- 2014 Shiner’s Hospital, McGill University Health Centre, Invited Presentation:
“Translational Studies in the Genomic Era: Persistent Pain Condition” Montreal,
Quebec

- 2014 Killam Seminar Series, Montreal Neurological Institute, McGill University Health Centre, Invited Presentation: “Translational Studies in the Genomic Era: Persistent Pain Condition” Montreal, Quebec
- 2014 Pharmacology and Therapeutics Department, Faculty of Medicine, McGill University, Invited Presentation: “Translational Studies in the Genomic Era: Persistent Pain Condition” Montreal, Quebec
- 2013 Division of Oral Health and Society. Faculty of Dentistry, McGill University, Invited Presentation: “Translational Research in the Genomic Era: OPPERA Study” Montreal, Quebec
- 2013 Alan Edwards Centre for Research on Pain, 10th Anniversary Celebration, Keynote Speaker “Translational Studies in the Genomic Era”, Montreal, Quebec

University of North Carolina (2005-2011):

- 2011 UNC School of Medicine, Department of Anesthesiology Pain Lecture Series, “An expansion of the world of mu-opioid receptor: New functional variants.”
- 2007 UNC School of Dentistry, Dental Research in Review Day, Lunch and Learn Series, “Genetics of Human Pain Perception.”
- 2007 Carolina Center for Genome Sciences, Department of Genetics, UNC, “COMT Modulation of Pain Sensitivity: Molecular Genetic Mechanism.”
- 2007 Department of Gastroenterology, School of Medicine, UNC, “COMT Activity & Beta-Adrenergic Receptors – Key Mediators of Chronic Pain Disorders and Targets for Therapeutic Intervention.”
- 2007 Theoretical and System Biology Seminar Series, Department of Cell and Developmental Biology, UNC, “Genetic basis for human pain perception and risk for development persistent pain conditions.”
- 2006 Departments of Anesthesiology, School of Medicine, UNC, “Genetic basis for individual variations in pain perception and the development of a chronic pain condition.”
- 2005 Neuroscience Seminar Series, Curriculum in Neurobiology, UNC, “Individual variations in pain perception: genetic and molecular basis.”
- 2005 Thurston Arthritis Center, UNC, “Effect of COMT haplotypes on human pain perception and the development of a common chronic pain condition (TMD).”

National & International:

- 2016 Duke University, Department of Anesthesiology. Invited Presentation : 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 (SIMPAR) 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 Medicine “The Genetics of Pain Perception”, Palm Springs, CA February 21, 2016
- Pain: A
where we have
2015 7th Annual Scientific meeting, Study in Multidisciplinary Pain Research SIMPAR Conference, Invited Presentation at Symposium: Pharmacogenetics and new approach to pain therapy. “Genetics and Pain: Where we are to go”. Rome, Italy. March 26, 2015
- Acute Pain.
clinicians”
2015 7th Annual Scientific meeting, Study in Multidisciplinary Pain Research SIMPAR Conference, Invited Presentation at Symposium: The Role of Stress in “OPRM1 and COMT in clinical pathway. What geneticists teach to clinicians” Rome, Italy. March 27, 2015
- “Subgrouping of
Genetic,
Rome, Italy. March
2015 7th Annual Scientific meeting, Study in Multidisciplinary Pain Research SIMPAR Conference, Invited Presentation at Symposium: Low Back Pain. Low Back Pain Patients for Targeting Treatments: Evidence from Psychological and Activity-related Behavioral Approaches” Rome, Italy. March 27, 2015
- Soon
approaches”
2015 7th Annual Scientific meeting, Study in Multidisciplinary Pain Research SIMPAR Conference, Invited Presentation at Plenary Session, Future Insights That 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 Pain in TMD”, Buenos Aires, Argentina
- Persistent
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 International Narcotics Research Conference, Invited Presentation: “Expansion of mu-opioid receptor gene locus: new functional variants” Montreal, Quebec
- 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 pain conditions" Rome, Italy
- complex
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
- 2013 Canadian Orofacial Pain Meeting. Invited Presentation: "Unraveling Persistent Pain in TMD: What Can We Learn From Genetic Studies?" Montreal, Quebec
- 2013 American Pain Society Annual Meeting. Symposium Moderator: "From receptors to pain: the molecular dynamics of pain." New Orleans, LA.
- 2013 Conference on "Pain, Addiction and the Law: Update 2013". Invited Presentation: "Elucidation of μ -Opioid Gene Structures: How Genetics Can Help Predict Responses to Opioids." Chapel Hill, NC.
- 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.
- 2013 10th International Symposium on Functional Gastrointestinal Disorders, Mini Symposium Session "Genetics", "future Directions", Milwaukee, WI.
- 2012 University of Maryland, Dental School, Dept. of Neural and Pain Sciences. Invited Presentation: "Gene Pathway Analysis of Complex Pain Conditions" Baltimore MD.
- 2012 Virginia Commonwealth University, Department of Pharmacology and Toxicology. Invited Presentation: "Expansion of Mu opioid receptor gene locus – new functional variants". Richmond, VI.
- 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.
- 2012 University Hospital Erlangen and the Friedrich-Alexander-University, International Symposium of the Clinical Research Unit, "Determinants and Modulators Of Postoperative Pain," Erlangen-Nürnberg, Germany.
- 2011 NCBI Scientific Visitor's Program: "Gene Pathway Analysis of Complex Pain Conditions." Bethesda, MD.
- 2011 Moscow Conference on Computational Molecular Biology (MCCMB'11): "Translational studies in the genomic era." Moscow, Russia.

- 2011 American Pain Society Annual Meeting. Symposium Moderator: “Target identification strategies in the genomic era.” Austin, TX.
- 2011 12th International Congress for Human Genetics, Invited Symposium Presentation: “New Insights from Human Pain Genetic Studies.” Topic: “Genetic risk factors for the development of chronic pain in humans.” Montréal, Québec, Canada.
- 2011 GPCR and Kinase Targets: Advances in drug development from molecular to clinical, Conference Proceedings Invited Presentation: “A novel alternatively spliced isoform of the mu-opioid receptor (MOR): functional antagonism.” London, UK
- 2011 University of Pittsburgh, Invited Presentation: “Drug Target Identification in the Genomic Era.” Pittsburgh, PA
- 2011 University of Pennsylvania, Invited Presentation: “Drug Target Identification in the Genomic Era.” Philadelphia, PA
- 2011 Dept. of Anesthesiology, Perioperative Medicine and Pain Management, and the John P. Hussman Institute for Human Genomics, University of Miami, Invited Presentation: “Drug Target Identification in the Genomic Era.” Miami, FL
- 2010 International Narcotics Research Conference. Symposium Topic: Transcription and epigenetics of the opioid genes. “Expansion of the Human μ -Opioid Receptor Gene Architecture: Novel Functional Variants.” Malmö, Sweden.
- 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.
- 2010 UCSF, “Expansion of the Human mu-Opioid Receptor Gene Architecture: Novel Functional Variants.” San Francisco, CA.
- 2010 California Pacific Medical Center. “Assessment of Biopsychosocial and Genetic Risk Factors for Chronic Orofacial Pain: The OPPERA. Analysis of Signaling Pathways.” San Francisco, CA
- 2009 6th Annual Pain Management Conference. “Genetic architecture of human pain perception.” BSG Conference Centre, London, UK,
- 2009 Royal Marsden 2nd Pain & Opioid Conference. “Expansion of the Human mu-Opioid Receptor Gene Architecture: Novel Functional Variants.” BMA House, Tavistock Square, London, UK
- 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.
- 2009 Keystone Symposia “The Neurobiology of Pain and Analgesia.” Santa Fe, NM.
- 2008 Fibromyalgia – From Symptoms to the Disease Symposium, Keynote Speaker: “Individual predispositions: hormonal condition, genetic predisposition, biochemical data.” Les Entretiens du Carla, France.

- 2008 Departments of Anesthesiology, Molecular Epidemiology of Pain Program. Invited presentation: “Expanded Structure of Human Mu-Opioid Receptor: New Functional SNPs.” University of Pittsburgh, Pittsburgh, PA.
- 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.
- 2008 41st Annual Winter Conference on Brain Research Panel: “The Neurobiology of Pain and Analgesia.” Topic: “COMT-Dependent Modulation of Pain Sensitivity: Molecular Genetic Mechanism.” Snowbird, UT.
- 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.
- 2007 World Congress. World Institute of Pain (WIP). Topical Seminar 20: “Recent Discoveries In Pain Genetics - Implications for the Diagnosis and Treatment of Chronic Pain Conditions.” Budapest, Hungary.
- 2007 Department of Biostatistics, University of Washington, “New Functional SNPs within *OPRM1* gene locus.” Seattle, WA.
- 2006 NIH Pain Consortium. 1st annual meeting. “Pain Consortium Symposium: Highlights in Pain Research 2006.” Genetic markers of individual variations in pain perception and TMD development.” Bethesda, MD.
- 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.
- 2006 American Pain Society Annual Meeting. Basic Science SIG Business Meeting, Data Blitz. Topic: “COMT Modulation of Pain Sensitivity: Molecular Genetic Mechanism.” San Antonio, TX.
- 2005 Winter Conference on Brain Research Panel Discussion entitled “New Approaches to Pain Research: Target Genes, Population Genetics, Regulatory Pathways, and Cell Interactions.” Topic: “From Humans to Rats: How Human COMT Haplotypes Modulate Pain Sensitivity.” Breckenridge, CO.
- 2005 American Society for Human Genetics Annual Meeting. Panel Discussion: “Genetics of Human Pain and Stress Response.” Topic: “Genetic markers of individual variations in pain perception and TMD development.” Salt Lake City, UT.
- 2005 Department of Physiology And Biophysics, University of Iowa, Carver College of Medicine, “Genetic markers of individual variations in pain perception and the development of painful TMD.” Iowa, IA.
- 2004 NIH/NIAAA, Laboratory of Neurogenomic, pain research group seminar serials. “Effect of COMT haplotypes on pain perception and development of TMD.” Bethesda, MD.
- 2004 NIH/NIDCR, pain research group seminar serials. “Molecular biology of common genetic variation within COMT gene locus.” Bethesda, MD
- 2004 Bioinformatics Program and Graduate program in Genome Sciences, NC State University, “Effect of COMT haplotypes on human pain perception and the development of a common chronic pain condition (TMD).” Raleigh, NC.

- 2002 A NATO Advanced Research Workshop on the “Applications of Genomics and Proteomics for Analysis of Bacterial Biological Warfare Agents.” Topic: “SSH Subtractive Cloning: Comprehensive Survey of Genome Differences in Prokaryotes.” Bratislava, Slovakia.
- 2002 The 12th International Conference on Periodontal Research, Molecular Determinants of Risk. Topic: “Subtractive cloning: new genes for studying inflammatory disorders.” Chapel Hill, NC.
- 2000 NIH cDNA Technology Workshop. Topic” Full length cDNA cloning: Amplification of cDNA ends based on template-switching effect and step-out PCR.” Washington, DC.

RESEARCH ACTIVITIES

- 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 (IMMPACT-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

TEACHING ACTIVITIES

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 Lab Tour for R1 anesthesia residents. May 27, 2016
- 2015 Lecturer and Section Editor in Pain Genetics
Current Topics in Neurosciences NEUR602
Graduate Course, McGill University, Department of Neurology & Neurosurgery
Review article on Nat Rev Rheumatol. 2013 Jun;9(6):340-50 and Research article: PLoS Genet. 2012;8(12). Nov 24,26.
- 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

2016-present Masha Verner, Undergraduate Student, Concordia University
2016-present Nicol Tugarinov, Undergraduate Student, McGill University
2015-present Richie Klares III, Undergraduate Student, McGill University
2015-present Julia Segal, Undergraduate Student, McGill University
2015-present 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

2014-2015 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”*

2014-present Graduate Research Advisor
Stefano Cattaneo, MSc Program, Experimental Medicine, McGill University
*Genotype dependent variation within COMT gene locus in post-surgical opioid-
induced analgesia*

2014-2015 Graduate Research Advisor

- Lisanne 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-present 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
- Lichtenwalter K'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.*
- 2012 Graduate Rotation Advisor
Cortney 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 COM.T
- 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

- 2015-2016 Yerkebulan Talzhanov (PhD), McGill University
Association Studies of Human Cohort with Chronic Pain Conditions
- 2014-present Anne-Julie Chabot-Dore (PhD), McGill University
Molecular pharmacology of delta opioid receptors
- 2014-present Rodrigo Benavides (MD), McGill University
Genotype dependent variation in post-surgical opioid-induced analgesia
- 2014-present Samar Khoury (PhD), McGill University
Genetic association study between sleep, somatization and thermal sensitivity in TMD and other chronic pain conditions

- 2013–present Marjo Piltonen (PhD), McGill University
Diversity of delta-opioid receptor: Characterization of novel truncated receptor isoforms
- 2013–present Carolina Meloto (DDS, PhD), McGill University
Characterization of a new COMT isoform associated with TMD

Dr. Carol Meloto is the Recipient of the Catherine Bushnell Fellowship in Chronic Pain Research 2016. September 1, 2016 -August 31, 2017. Received May 17, 2016

Dr. Carol Meloto is the Recipient of the 14th Kresimir Krnjevic Research Award 2016. Received May 18, 2016.

- 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

- 2014–present 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.

Thesis, Dissertation and Candidacy Exam Committee

- 2016-present 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-present External Reviewer, PhD student committee member, McGill University, Department of Dentistry, Thesis Title: Comorbidities in a TMD patient population. Haissam Dahan
- 2013-present 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-present 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

GRANTS AND CONTRACTS

Active

- 2016-2021 Canadian Institutes of Health Research (CIHR) Grant (SCA145102)
Chronic Pain Network (Strategy for Patient–Oriented Research (SPOR) Networks
in Chronic Disease)
Award: \$12,450,000 from CIHR, plus \$12,450,000 partnership matching over 5
years
Principal Applicants: N Buckley, M Choinière, K Davis, L Diatchenko, A Finley,
P Fréchette, I Gilron, A Iorio, M Hudspith, M Latimer, J MacDermid, P Poulin, C
Schneider, B Stevens, J Stinson.
Co-Applicants: K Baerg, N Beaudet, J. Busse, K Craig, P. Devereaux, R. El-
Gabalawy, L. Gendron, N Ghasemlou, A Gordon, T Hadjistavropoulos, K. Jarvi,
J. Katz, M McGillion, D. Moulin, M Noel, S Prescott, M Salter, B Sessle, M
Shamji, G. Singh, K Toupin-April, D Walton, M Ware, J Watt-Watson.
Leading PI: Dr. Norman Buckley, McMaster University
Total subcontract cost: \$20,000,000.00

McGill subcontract is \$3,668,710

- 2016-2017 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
- 2016-2017 McGill University subcontract, NIH/University of Chicago
“Center for dynamic RNA epitranscriptomes”
Leading PI: Prof Tao Pan
PI of McGill University subcontract: Prof Luda Diatchenko
Total subcontract cost: \$ 40,000 USD (McGill Subgrant)
- 2015-2017 McGill University subcontract, US Dept of Defense/Technion
(Technion # 2021883) (SP0027788)
“Why does acute post whiplash injury pain transform into chronic pain? Multi-modal assessment of risk factors and predictors of pain chronification”
Leading PI: Prof David Yarnitsky
PI of McGill University subcontract: Prof Luda Diatchenko
Total subcontract cost: \$ 131,386 USD (McGill Subgrant)
- 2014-2019 McGill University subcontract, NIH/NIDCR Grant #1 R01 DE023846-01
University of Maryland
Leading PI: Dr. Chung
“Genetic and post-translational modifications of TRPV1 in craniofacial pain”
Co-PI: L Diatchenko
Total cost: \$410,839
Total subcontract cost: \$ 215,313 (McGill Subgrant)
- 2013-2020 CERC09 “Canada Excellence Research Chair (CERC) in Personalized Pain Medicine”
PI: L Diatchenko
CIHR \$1,250,000
Pfizer \$105,000
McGill Institutional Funds \$120,000
- 2013-2017 McGill University subcontract, NIH/NIDCR Grant # U01DE017018/UNC
“Genetic & Psychosocial Influences on Transition to Chronic TMD and Related Pain (OPPERRA II)”
PI: Maixner, Slade
Co-PI, Scientific Leader of the Neurogenomics Core and PI of McGill University subcontract: L Diatchenko
Total subcontract cost: \$496,000 (McGill Subgrant)
- 2013-2018 CENTER FOR INHERITED DISEASE RESEARCH (CIDR) HIGH THROUGHPUT GENOTYPING AND SEQUENCING RESOURCE ACCESS

(X01), 1X01HG007586-01 "Genome Wide Association Study of Chronic TMD: Discovery Phase". Leading PI: L Diatchenko
No cost grant

2013-2020 NIH/NIDCR Grant #K12DE022793 "Biomedical Researcher Development Program in TMJD and Orofacial Pain. Multi-PI grant, PI: L Diatchenko, Program Director: W Maixner.
Consultant: L. Diatchenko
Total estimated cost: \$374,293

Completed

2013-2015 NIH/NINDS Grant #P01 NS045685-061A "Complex Persistent Pain Conditions: Common and Unique Pathways of Vulnerability." PI: W Maixner; Consultant: L Diatchenko,
Total Award: \$1,221,031.

2012-2017 NIH/NIDCR Grant "Genetic and Psychosocial Influences on Transition to Chronic TMD and Related Pain". Multi-PI grant, PI: L Diatchenko, Program Director: W Maixner.
Total Award: \$ 17,142,097.32.

2012-2013 NIH/NIDCR Grant #K12DE022793 "Biomedical Researcher Development Program in TMJD and Orofacial Pain. Multi-PI grant, PI: L Diatchenko, 3 % effort. Program Director: W Maixner.
Total estimated cost: \$374,293

2014-2014 NIH/NIDCR Grant #R03DE022595-02 "Effects of cumulative stress and change in pain regulation on risk of chronic TMD" PI: L Diatchenko, 3% effort. Program Director: GD Slade
Total Award: \$ 96,000.

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 #1R03DE022595-01 "Effects of cumulative stress and change in pain regulation on risk of chronic TMD." PI: GD Slade; Co-Investigator: L Diatchenko, 2.5% effort.
Total Award: \$100,000.

2010-2013 NIH/NINDS Grant #P01 NS045685-061A "Complex Persistent Pain Conditions: Common and Unique Pathways of Vulnerability." PI: W Maixner; Co-I: L Diatchenko, 12% effort.
Total Award: \$1,221,031.

- 2011-2016 NIDCR/NIH Grant #T90DE021986 “Training Program for the Next Generation of Oral Health Researchers (NextGen).” PI: JD Beck, Investigator: L Diatchenko, no cost to the grant.
Total Award: \$306,513.
- 1999-2014 NIH Grant #T32 GM08719 “Medical Scientist Training Program (MSTP).” PI: E Orringer; Investigator: L Diatchenko, no cost to the grant.
Total Award: \$439,958.
- 2012-2013 NIDCR Grant #1R34DE022088-01A1 “Effect of COMT genetic polymorphism on response to propranolol therapy in TMD.” Co-PI: I Tchivileva, GD Slade; Investigator: L Diatchenko, 3% effort.
Total Award: \$238,744.
- 2009-2013 NIH/NIDDK Grant #2-R01-DK031369-21A1 “Psychophysiology of Irritable Bowel Syndrome.” PI: W Whitehead; Co-PI: L Diatchenko, 10% effort.
Total Award: \$615,796.
- 2008-2013 NIH/NICHD Grant # 5R01HD054767-04 “Longitudinal population-based study of vulvodynia.” PI: BD Reed; Consultant: L Diatchenko.
Total Award: \$2,500,000.
- 2010-2013 NIH/NIAMS Grant #R01 AR060492-01 “Genetics of Foot Disorders.” PI: J Jordan & M Hannan; Co-Investigator: L Diatchenko, 10% effort.
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.” PI: AG Nackley; Co-Investigator: L Diatchenko, no cost to the grant.
Total Award: \$50,000.
- 2009-2010 NC TraCS Grant #10KR30904 “Hair Cortisol as a Biomarker of Chronic HPA Axis Response to Stress.” PI: A Sanders; Co-Investigator: L Diatchenko, no cost to the grant.
Total Award: \$9,270.
- 2008-2012 NIH/NIAMS Grant #1R01AR056328 “Genetic predictors of acute and chronic musculoskeletal pain after minor MVC.” PI: S McLean; Co-PI: L Diatchenko, 5% effort.
Total Award: \$2,551,312.
- 2008-2011 NIH/NIDCR Grant #5F32DE019057-03 “Contribution of ADRA1A polymorphism to persistent pain states.” PI: S Smith; Mentor: L Diatchenko, no cost to the grant.
Total Award: \$150,416.

- 2006-2009 NIH/NICHHD Grant #K12 HD052191 “Multidisciplinary Clinical Research Career Development Award.” PI: E Orringer; Mentor: L Diatchenko, 5% effort. Total Award: \$75,000.
- 2005-2012 NIDCR/NIH Grant #T32DE017245 “Clinical Research Training in Oral Diseases for Future Clinicians.” PI: JD Beck, Investigator: L Diatchenko, no cost to the grant. Total Award: \$347,731.
- 2005-2012 NIH/NIDCR Grant #1U01DE05007 “Risk Factors for Onset and Persistence of TMD.” PI: W Maixner; Director, Biogenetics Core: L Diatchenko, 50% effort. Total Award: \$17,216,202.
- 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.” PI: E Orringer; Investigator: L Diatchenko, no cost to the grant. Total Award: \$1,539,474.
- 2005-2010 NIH Grant # T32 DE 017245 “Medical Scientist Training Program (MSTP).” PI: JD Beck; Investigator: L Diatchenko, no cost to the grant. Total Award: \$433,599.
- 2005-2010 NIH Grant # T32 AR007414 “Medical Scientist Training Program (MSTP)” PI: J Jordan; Investigator: L Diatchenko, no cost to the grant. 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.

PATENTS

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.

Chenchik A, Zhu Y, **Diatchenko L**, Siebert PD. Methods and Compositions for Full-Length cDNA Cloning Using a Template-Switching Oligonucleotide. US Patent 5,962,272 of Oct. 5, 1999.

Chenchik A, Zhu Y, **Diatchenko L**, Siebert PD. Methods and Compositions for Generating Full-Length cDNA Having Arbitrary Nucleotide Sequence at the 3'-end. US Patent 5,962,271 of Oct. 5, 1999.

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 5,759,822 of Jun.2, 1998.

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 5,565,340 of Oct. 15, 1996.

PROFESSIONAL SERVICE

Public Services

- 2015 SigmaCamp Faculty 2015, Teaching Human Genetics at a science summer camp for students 12-16 years old. Stony Brook University, Brookhaven National Lab and Harvard Medical School.
- 2015 In Her Own Words: Stories from Distinguished Research Careers, Panel Discussion at New Music Building, Tanna Schulich Hall, Montreal, Quebec, April 15, 2015
- 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

McGill University, Montreal, Quebec

- 2015 Member, Evaluation Committee, Edwards PhD. Studentships in Pain Research, The Louise and Alan Edwards Foundation
- 2015-present Nominated, Statutory Selection Committee Senate Pool Representative for Faculty of Dentistry
- 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 Member, Evaluation Committee, Edwards PhD. Studentships in Pain Research, The Louise and Alan Edwards Foundation
- 2014-present Member, Search Committee, Clinical Pain Geneticist (Associate Professor), School of Dentistry

2013-present Member, Search Committee, Statistical Geneticist (Associate Professor),
Department of Human Genetics, School of Medicine

University of North Carolina, Chapel Hill, NC

2009-2013 Designated Essential Employee, UNC Disaster Planning Team
2007-2013 Member, Carolina Center for Genome Sciences
2007-2008 Member, Search Committee, Clinical Psychologist (Associate Professor), School
of Dentistry
2007-2008 Member, Search Committee, Pain Management specialist (Associate Professor),
School of Dentistry
2007-2008 Member, Search Committee, Clinical Research Specialist (Research Associate),
School of Dentistry
2006-2007 Member, Search Committee, Molecular Pain Genetics (open rank), School of
Dentistry
2006-2007 Member, Search Committee, Molecular Pain Specialist (Research Associate),
School of Dentistry
2006 Member, Search Committee, Statistical Geneticist (Research Assistant Professor),
School of Dentistry
2006 Member, Search Committee, Molecular Immunologist (Research Associate),
School of Dentistry
2005-2013 Member, Center for Neurosensory Disorders
2005-2013 Member, Faculty Scholarship Development Committee, School of Dentistry
2005-2013 Member, Research Advisory Committee, School of Dentistry
2005-2013 Member, Graduate Studies Committee, Curriculum in Neurobiology, School of
Medicine, UNC.
2005-2006 Member, Search Committee, Clinical Pain Specialist (Research Assistant
Professor), School of Dentistry
2003-2013 Member, Graduate Studies Committee, Program in Oral Biology, School of
Dentistry, UNC.
2002-2005 Member, Graduate Studies Committee, Program in Biostatistics, North Carolina
State University.
2000-present Member, Center for Inflammatory Disorders

International

2013-2016 Member, Scientific Committee, International Association for Study of PAIN
(IASP) Congress, Yokohama, Japan
2014 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 Member, Consensus Phenotyping Committee, Neuropathic pain phenotyping by
international consensus (NeuroPPIC), Versailles, France
2014 Member, Scientific Committee, World Forum for Spine Research, Xi'an, China

- 2014 Chair of the poster session, pain and basic research, Study in Multidisciplinary Pain Research (SIMPAN) in Rome
- 2014 Reviewer, The Croucher Foundation, Low Back Pain Summit, a proposal for a scientific meeting to be held in Hong Kong
- 2013 Reviewer, NIH, Surgical Sciences, Biomedical Imaging and Bioengineering IRG
- 2012-present Member, Scientific Program Committee, International Association for the Study of Pain (IASP) 2012-present Consultant, The Frankel Group LLC, 11 W 42nd Street, New York, NY 10036
- 2012 Reviewer, UF Pain Research and Intervention Center of Excellence (PRICE) & UF Shands Cancer Center (UFSCC) Seed Grants for Research on Cancer-Related Pain
- 2011–2012 Member, Nomination Committee, American Pain Society
- 2010–2014 Chair, SIG in Genetics and Pain, International Society for Study of Pain
- 2010 Founder, SIG in Genetics and Pain, International Society for Study of Pain
- 2010 Chair, SIG in Genetics and Pain, American Pain Society
- 2010 Reviewer, Spinal Cord Injury & Regenerative Medicine Meeting, Dept. of Veteran’s Affairs Summer Merit Review
- 2009–2010 Chair, SIG in Genetics and Pain, American Pain Society
- 2008 Phone-in reviewer, Joint Croatia-Israel Research Grant
- 2008 Phone-in reviewer, NIH, National Institute of Dental and Craniofacial Research Special Emphasis Panel
- 2006 Phone-in reviewer, NIH, NIDR’s Special Study Section on Chronic Fatigue Syndrome, Fibromyalgia Syndrome and Temporomandibular Dysfunction
- 2001–2003 Consultant, BD Biosciences CLONTECH
1020 East Meadow Cr., Palo Alto, CA, 94303
- 2000–2002 Consultant, Rubicon Genomic
4370 Varsity Dr., Ann Arbor, MI, 48108
- 2000–2001 Consultant, Cogent Neuroscience
4425 Ben Franklin Blvd., Durham, NC, 27704
- 2000 Ad Hoc reviewer, NIH, Small Business Study Section Genetic Sciences

Ad hoc reviewer for peer-reviewed journals

- 2008 *American Journal of Medical Genetics*
- 2009 *Anesthesiology*
- 2007-now *Arthritis Research & Therapy*
- 2010 *Arthritis and Rheumatism*
- 2010 *Canadian Journal of Physiology and Pharmacology*
- 2004 *BMC Bioinformatics*
- 2008 *Biological Psychology*
- 1997-2002 *BioTechniques*
- 2009, 20011 *Cellular and Molecular Medicine*
- 2008-now *Clinical Journal of Pain*
- 2009-now *European Journal of Pain*
- 2011-now *Genes, Brain and Behavior*
- 2011 *Human Molecular Genetics*

2009-now	<i>Journal of Pain</i>
2010	<i>Journal of Human Genetics</i>
2011	<i>Journal of Medical Genetics</i>
2011	<i>Journal of Molecular Medicine</i>
2009-now	<i>Molecular Pain</i>
2011	<i>Nature Review Genetics</i>
2010	<i>Neuroscience</i>
2004, 20011	<i>Nucleic Acid Research</i>
2008-now	<i>Pain</i>
2007-now	<i>Pharmacogenomics</i>
2000	<i>Proceedings of the National Academy of Sciences/USA</i>
2012	<i>Social Science and Medicine</i>
2000-now	<i>Science</i>
2008-now	<i>Trends in Pharmacological Sciences</i>

Society memberships

2014-present	Canadian Pain Society
2013-present	Allan Edwards Centre for Research on Pain
2013-present	Member, Quebec Pain Research Network (QPRN)
2013-present	Member, QPRN Low Back Pain steering committee
2006-present	American Pain Society
2005-present	International Association for the Study of Pain
2006-present	American Society of Human Genetics
2006-present	Society for Neuroscience
1997-2002	American Association for Cancer Research
1997-2000	American Society for Cell Biology
1997-2000	American Society for Biochemistry and Molecular Biology

LICENSES

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.

ALLIANCE AGREEMENTS

- 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 Algnomix 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 Algnomix 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 Algnomix furthers its alliance with **Beckman Coulter Genomics**, formerly Cogenics, to conduct genotyping studies of biological samples. Beckman Coulter Genomics is the sole provider of Algnomix's proprietary Pain Research Panel.
- 2008 Algnomix 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 Algnomix and **Orthogen Inc.** establish an alliance in individualized orthopedic medicine

PRODUCTS

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

COMPANIES

- 2014-present Member, Medical Advisory Board, Proove Biosciences Inc
- 2014-present Consultant, Proove Biosciences Inc
- 2005 Co-founder of Algnomix, 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

MEDIA

- 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.
- 2016-April-8 Press Release Announcement of Proove Biosciences Strategic Partnership with McGill University to Study Link between Pain and Genetics. Irvine, CA (PRWEB)
- 2016-Feb-23 Interview video posted on the Pain Management Resource Center (PMRC) website, a public service microsite sponsored by Quest Diagnostics
- 2015-Nov-2 McGill researchers on the leading edge, article title: “Quicker relief for chronic pain sufferers” written by McGill Alumni Association
- 2015 - June- 24 CERC videos that were filmed at the annual meeting in Waterloo. The English version of the "talking heads" will be "premiered" at the next CERC announcement at UBC on Friday June 26, 2015.
- 2015-April-19 Headway Spring 2015, 10th Anniversary Issue. McGill Researchers take knowledge to new heights, from genomics and human rights to technology and biodiversity. “Customizing Relief” Interview with Dr. Luda Diatchenko by Mark Witten
- 2014-Oct-7 McGill Tribune Article and Interview with Luda Diatchenko “McGill chooses newest CERC recipient
- 2014-Sept-30 Interview for Upcoming Headway Magazine, Winter Edition, McGill University
- 2013-Sept-26 McGill posts a YouTube video with Luda Diatchenko 494 views Coverage in: Le Devoir and Genomeweb.com
- 2013-Sept-25 Press Conference with Minister Greg Rickford, Dr. Luda Diatchenko appointed to CERC Media advisory sent out about appointment and coverage in: The Gazette, Le Devoir, CBC, Noodle.com, Finanznachrichten.de (Germany), Marketwatch.com, Headway, CBC Tele Journal interviewed Dr. Fernando Cervero
- 2013-Sept-24 Dr. Fernando Cervero (Director of Alan Edwards Centre for Research on Pain) interview on CBC’s The Sunday Edition with news on CERC announcement.
- 2013-Sept-23 Media Advisory - Internationally renowned pain researcher appointed to CERC.

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

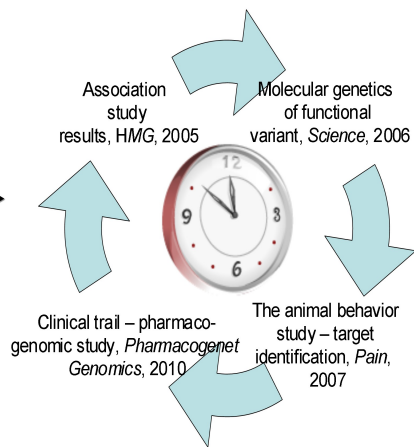


Figure 1. Translational clock – closing the circle. The publication record of Dr. Diatchenko’s pain program

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.

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.