

Katerina Zorina-Lichtenwalter

CONTACT INFORMATION	Integrated Program in Neuroscience McGill University 740 Dr. Penfield, Suite 2300 Montreal, Quebec, H3A 0G1	Phone: +1-514-998-9501 E-mail: katerina.lichtenwalter@mail.mcgill.ca WWW: www.hppl.ca
RESEARCH INTERESTS	Pain mechanisms, genetics, migraine, pain channels, enzyme kinetics, mass spectrometry, calcium imaging.	
EDUCATION	McGill University , Montreal, QC, Canada Ph.D., Neuroscience, October 2019 <ul style="list-style-type: none">• Thesis Topic: <i>Informed combinations: common genetic variants in MC1R and P2RX7 and their effects on pain phenotypes</i>• Adviser: Luda Diatchenko Catholic University of America , Washington, D.C., USA M.A., Musicology, May 2009 <ul style="list-style-type: none">• Thesis Topic: <i>Elgar's unintentional modernism: the aesthetics of captivity in the Cello Concerto</i>• Adviser: Andrew Weaver The University of Notre Dame , Notre Dame, Indiana, USA Independent Coursework, January 2011-May 2012 <ul style="list-style-type: none">• Organic Chemistry I (CHEM 10172) and II (CHEM 20273)• Molecular Biology I (BIOS 60531)• Principles of Biochemistry, (CHEM 60520) M.A., French Language and Literature, May 2006 B.A., French, May 2005 <ul style="list-style-type: none">• <i>cum Laude</i> B.A., Music, May 2005 <ul style="list-style-type: none">• Specialization: <i>Clarinet Performance</i>• <i>cum Laude</i>	
PROFESSIONAL EXPERIENCE	McGill University , Montreal, Quebec Canada <i>Postdoctoral Researcher</i> September 2019 to Present <ul style="list-style-type: none">• Laboratory of Luda Diatchenko, Alan Edwards Centre for Research on Pain• Conduct statistical association analyses of human genetic variants and pain conditions• Work in R, Bash, Plink, BOLT, and Haploview University of Notre Dame , Notre Dame, Indiana USA <i>Research Associate</i> June 2012 to July 2013 <ul style="list-style-type: none">• Laboratory of Mayland Chang, Department of Chemistry and Biochemistry	

- Conducted enzyme kinetics (fluorometric) assays to establish inhibition profiles for compounds with the potential to inhibit matrix metalloproteinases (MMPs) involved in diabetic wound healing, idiopathic pulmonary fibrosis, sepsis and cancer
- Conducted *in vitro* studies to establish pharmacokinetic parameters for MMP inhibitors; developed LC-MS, LC-MRM, and LC-MS/MS methods for compound quantification and metabolite identification
- Conducted assays with potential antibiotic compounds (oxadiazoles): hemolysis and analysis by UV spectroscopy
- Performed protein purification: bacterial lytic transglycosylases

University of Notre Dame, Notre Dame, Indiana USA

Lab Assistant

November 2011 to June 2012

- Laboratory of Mayland Chang, Department of Chemistry and Biochemistry
- Conducted assays with potential antibiotic compounds (oxadiazoles): hemolysis and analysis by UV spectroscopy; protein-binding and analysis by LC-MS/MS
- Conducted assays with compounds shown to be effective in Alzheimer's Disease treatment: compound stability in S9 rat liver microsomes and human plasma, analyzed by mass spectrometry, and metabolite identification by LC-MS/MS

Office of the Dean of Science, University of Notre Dame, South Bend, Indiana USA

Senior Administrative Assistant

August 2009 to June 2012

- Provided any necessary administrative support to the dean and his staff
- Organized two meetings of the annual Parseghian Conference for Niemann-Pick Type C Research (2011 and 2012)

REFEREED
JOURNAL
PUBLICATIONS

Zorina-Lichtenwalter, K., Maixner, W., Diatchenko, L. Detangling red hair from pain: phenotype-specific contributions from different genetic variants in melanocortin-1 receptor. Submitted to: *Pain*.

Zorina-Lichtenwalter, K., Lichtenwalter, R.N., Zaykin, D.V., Parisien, M., Gravel, S., Bortsov, A., Diatchenko, L. A study in scarlet: *MC1R* as the main predictor of red hair and exemplar of the flip-flop effect. In: *Human Molecular Genetics*, 2019.

Zorina-Lichtenwalter, K., Parisien, M., Diatchenko, L. Genetic studies of human neuropathic pain conditions: a review. In: *Pain*, 2018.

Meloto, C.B., Lichtenwalter, R.N., Wen, X., Tugarinov, N., **Zorina-Lichtenwalter, K.**, Chabot-Dor, A.J., Piltonen, M.H., Cattaneo, S., Verma, V., Klares, R., Khoury, S., Parisien, M., Diatchenko, L. Genetic predictors of human chronic pain conditions. In: *Pain*, 2017.

Manahasenan, K.V., Bastian, M., Gao, M., Frost, E., Ding, D., **Zorina-Lichtenwalter, K.**, Jacobs, J., Suckow, M., Schroeder, V., Wolter, W., Chang, M., Mobashery, S. Exploitation of conformational dynamics in imparting selective inhibition for related matrix metalloproteinases. In: *ACS Medicinal Chemistry Letters*, 2017.

Zorina-Lichtenwalter, K., Meloto, C.B., Khoury, S., Diatchenko, L. Genetic predictors of human chronic pain conditions. In: *Neuroscience*, 2016.

Spink, E., Ding, D., Peng, Z., Boudreau, M.A., Leemans, E., Lastochkin, E., Song, W., **Lichtenwalter, K.**, O'Daniel, P.I., Testero, S.A., Hualiang, P., Schroeder, V.A., Wolter, W.R., Antunes, N.T., Suckow, M.A., Vakulenko, S., Chang, M., and Mobashery, S. Structure-activity relationship for the oxadiazole class of antibiotics. In: *Journal of Medicinal Chemistry*, 2015.

- O'Daniel, P.I., Peng, Z., Pi, H., Testero, S.A., Ding, D., Spink, E., Leemans, E., Boudreau, M.A., Yamaguchi, T., Schroeder, V.A., Wolter, W.R., Llarrull, L.I., Song, W., Lastochkin, E., Kumarasiri, M., Antunes, N.T., Espahbodi, M., **Lichtenwalter, K.**, Suckow, M.A., Vakulenko, S., Mobashery, S., and Chang, M. Discovery of a new class of non- β -lactam inhibitors of penicillin-binding proteins with Gram-positive antibacterial activity. In: *Journal of the American Chemical Society*, 2014.
- Ding, D., **Lichtenwalter, K.**, Pi, H., Mobashery, S., and Chang, M. Characterization of a selective inhibitor for matrix metalloproteinase-8 (MMP-8). In: *Medicinal Chemistry Communications*, 2014.
- Gooyit, M., Song, W., Mahasenan, K.V., **Lichtenwalter, K.**, Suckow, M.A., Schroeder, V.A., Wolter, W.R. Mobashery, S., and Chang, M. *O*-Phenyl carbamate and phenyl urea thiiranes as selective matrix metalloproteinase-2 inhibitors that cross the blood-brain barrier. In: *Journal of Medicinal Chemistry*, 2013.
- Lichtenwalter, R.N., **Lichtenwalter, K.**, and Chawla, N.V. A Machine-learning approach to autonomous music composition. In: *Journal of Intelligent Systems*, 2010.
- CONFERENCE PUBLICATIONS
- Lichtenwalter, R.N., **Zorina-Lichtenwalter, K.**, Diatchenko, L. Genotypic data in relational databases: efficient storage and rapid retrieval. In: *Proceedings of the Advances in Databases and Information Systems*, 2017.
- Lichtenwalter, R.N. and **Lichtenwalter, K.** and Chawla, N.V. Applying learning algorithms to music generation. In: *Proceedings of the Indian International Conference on Artificial Intelligence*, December 2009.
- INVITED TALKS
- Lichtenwalter, K.**, Lichtenwalter, R.N., Parisien, M., Bortsov, A., Slade, G., Dubner, R., Fillingim, R., Greenspan, J., Ohrbach, R., Knott, C., Maixner, W., Diatchenko, L. Differential effects of the *MC1R* "red hair" SNPs on pain sensitivity and depression. Presented at the McGill's Faculty of Dentistry Research Day in Montreal, Canada. April 2017.
- Lichtenwalter, K.**, Lichtenwalter, R.N., Slade, G.D., Dubner, R., Fillingim, R.B., Greenspan, J.D., Ohrbach, R., Knott, C., Maixner, W., and Diatchenko, L.B. Melanocortin-1 receptor and its role in pain sensitivity. Presented at the Hot Topics session of the Canadian Pain Society scientific meeting in Vancouver, Canada. May 2016.
- Lichtenwalter, K.**, Lichtenwalter, R.N., Ase, A.R., Niu, M., Komarova, S., Seguela, P., Slade, G.D., Dubner, R., Fillingim, R.B., Greenspan, J.D., Ohrbach, R., Knott, C., Maixner, W., and Diatchenko, L.B. Genetic predisposition to chronic pain and inflammation? Exploring neuroimmune interactions through gain- and loss-of-function polymorphisms in *P2RX7*. Presented at the Philip R. Bromage Anesthesia Research Day in Montreal, Canada. May 2015.
- POSTER PRESENTATIONS
- Zorina-Lichtenwalter, K.**, Lichtenwalter, R.N.; Bortsov, A.; Slade, G.D.; Dubner, R.; Fillingim, R.B.; Greenspan, J.D.; Ohrbach R.; Knott, C.; Weir, B.S.; Maixner, W.; Diatchenko, L.B. Dissociating the genetic underpinnings of red hair and pain sensitivity. Presented at the annual Canadian Pain Society scientific meeting in Montreal, Canada. May 2018.
- Zorina-Lichtenwalter, K.**, Lichtenwalter, R.N.; Bortsov, A.; Slade, G.D.; Dubner, R.; Fillingim, R.B.; Greenspan, J.D.; Ohrbach R.; Knott, C.; Weir, B.S.; Maixner, W.; Diatchenko, L.B. Red hair and pain sensitivity mediated by different MC1R variants. Presented at the annual McGill Pain Day in Montreal, Canada. January 2018.

- Zorina-Lichtenwalter, K.**, Lichtenwalter, R.N.; Bortsov, A.; Slade, G.D.; Dubner, R.; Greenspan, J.D.; Ohrbach R.; Knott, C.; Weir, B.S.; Maixner, W.; Fillingim, R.B. ; Diatchenko, L.B. *MC1R* polymorphisms: of mice and (wo)men, red hair, and pain. Presented at the biennial European Federation of IASP Chapters scientific meeting in Copenhagen, Denmark. September 2017.
- Zorina-Lichtenwalter, K.**, Parisien, M., Slade, G.D., Dubner, R., Fillingim, R.B., Greenspan, J.D., Ohrbach R., Knott, C., Weir, B.S., Maixner, W., Chung, M.-K., Diatchenko, L.B. *TRPV1* polymorphisms in pain sensitivity and chronic pain. Presented at the annual Canadian Pain Society scientific meeting in Halifax, Canada. May 2017.
- Lichtenwalter, K.**, Lichtenwalter, R.N., Slade, G.D., Dubner, R., Fillingim, R.B., Greenspan, J.D., Ohrbach, R., Knott, C., Maixner, W., and Diatchenko, L.B. The effects of *MC1R* polymorphisms on pain sensitivity and psychological distress. Presented at the annual Canadian Pain Society scientific meeting in Vancouver, Canada. May 2016.
- Lichtenwalter, K.**, Lichtenwalter, R.N., Ase, A.R., Niu, M., Komarova, S., Seguela, P., Slade, G.D., Dubner, R., Fillingim, R.B., Greenspan, J.D., Ohrbach, R., Knott, C., Maixner, W., and Diatchenko, L.B. *P2RX7* genetics at the crossroads of neuroimmune interactions. Presented at the biennial European Federation of IASP Chapters scientific meeting in Vienna, Austria. September 2015.
- Lichtenwalter, K.**, Lichtenwalter, R.N., Ase, A.R., Niu, M., Komarova, S., Seguela, P., Slade, G.D., Dubner, R., Fillingim, R.B., Greenspan, J.D., Ohrbach, R., Knott, C., Maixner, W., and Diatchenko, L.B. The fine line between gain and loss: a genetic characterization of *P2RX7*. Presented at the annual Canadian Pain Society scientific meeting in Charlottetown, Canada. May 2015.
- Lichtenwalter, K.**, Lichtenwalter, R.N., Ase, A.R., Niu, M., Komarova, S., Seguela, P., Slade, G.D., Dubner, R., Fillingim, R.B., Greenspan, J.D., Ohrbach, R., Knott, C., Maixner, W., and Diatchenko, L.B. The foul in fair and the fair in foul: gaining and losing pain with SNPs in *P2RX7*. Presented at the McGill Pain Day in Montreal, Canada. January 2015.
- Lichtenwalter, K.**, Lichtenwalter, R.N., Ase, A.R., Niu, M., Komarova, S., Seguela, P., Slade, G.D., Dubner, R., Fillingim, R.B., Greenspan, J.D., Ohrbach, R., Knott, C., Maixner, W., and Diatchenko, L.B. The role of *P2RX7* genetic variants in pain processing examined through an annotated catalogue of non-synonymous SNPs. Presented at the biennial International Association for the Study of Pain Conference in Buenos Aires, Argentina. October 2014.
- Manahasenan, K., Ding, D., Pi, H., **Lichtenwalter, K.**, Chang, M.; and Mobashery S. In search of an MMP-14 inhibitor. Annual Chemistry, Biology and Biochemistry Interface Program (CBBI) Symposium, Notre Dame, IN, USA. May 2013.
- O'Daniel, P.I., Ikejiri, M., Testero, S., Peng, Z., Antunes, N., Kumarasiri, M., Boudreau, M., Spink, E., Leemans, E., Llarrull, L. I., Ding, D., Xiao, Q., Song, W., Pi, H., Espahbodi, M., **Lichtenwalter, K.**, Schroeder, V. A., Wolter, W. R., Suckow, M. A., Vakulenko, S. B., Mobashery, S., Chang, M. Discovery of the oxadiazole class of antibacterial agents. Presented at the Gordon Research Conference, New Antibacterial Discovery and Development, Lucca, Italy. April 2012.
- Lichtenwalter, K.** *Lieder eines fahrenden Gesellen*: an aesthetic dichotomy. Paper presented at the American Musicological Society Midwest Chapter Conference in Chicago, IL, USA. October 2009.

Lichtenwalter, K. Elgar's unintentional modernism: the aesthetics of captivity in the Cello Concerto. Paper presented at the American Musicological Society Capital Chapter Conference in Washington DC, USA. April 2009.

TEACHING
EXPERIENCE

Ivy Tech Community College, South Bend, Indiana, USA

Adjunct Professor of French

August 2012 to December 2012

Catholic University of America, Washington, D.C., USA

Lecturer of French

August 2007 to December 2008

Montgomery College, Rockville, Maryland, USA

Adjunct Professor of French

August 2006 to December 2008

SERVICE AND
AWARDS

- Recipient of the Mitacs Globalink Research Award for a project carried out in Chengdu, China with Professor Li Tao at Sichuan University (October 2018-March 2019)
- Summers of 2011 and 2012: Notre Dame Bike-to-Work Competition: author and co-organizer
- Green Ambassador (part of the pilot program, launched in March 2011 as part of the University's Sustainability Strategic Plan)
- Michiana Bike-to-Work Week (2011 and 2012): Science team captain
- Tutor for Red Cross Community Language Bank (September-December 2010)
- College of Science Sustainability Week 2010: author and organizer
- Michiana Bike-to-Work Week (2010): College of Science team captain
- Relay for Life at Notre Dame (2010): College of Science team co-captain
- Pi Delta Phi French Honor Society, 2004