

Cristian A. Zaelzer-Pérez Ph.D.

265 Rue La Verendrye • Longueuil, QC, J4G 2S1 • (438)838-8831 • cristian.zaelzer@gmail.com

PERSONAL DETAILS

- Citizenship: Chilean citizen, Permanent resident in Canada.
- Languages: Fluent in English and Spanish. Intermediate French.

EDUCATION

Ph.D. Molecular and Cell Biology.

Universidad Austral de Valdivia, Oct 2009. Valdivia, Chile.

B.Sc. Medical Technology, Health Sciences & Molecular Biology.

Universidad de la Frontera, Dec 2003. Temuco, Chile.

Minor in Computer Programing.

Liceo Politécnico de Pueblo Nuevo, Dec 1994. Temuco, Chile.

RESEARCH EXPERIENCE & EMPLOYMENT

Convergence, Perceptions of Neuroscience.

(*Science outreach*) June 2016 – Today. Montreal, Canada.

- **Founder & Director (Volunteer work).**
- Conception and direction of a non-profit science outreach organization that establishes “*two-way engagement*” collaborations between neurosciences trainees and art students.
- Coordinator and facilitator between the institutions involved in the program. The Brain Repair and Integrative Neuroscience (BRaIN) Program of the Research Institute of the McGill University Health Centre (RI-MUHC), students from the McGill University IPN Program, Concordia University Faculty of Fine Arts (FoFA), the Canadian Association for Neuroscience, the Montreal General Hospital Foundation (MGH Foundation), and the Visual Voice Gallery.
- Coordination and direction of funding, timelines, committee’s management, speakers, and student’s collaborations.
- Scientific advisor, contributor, and mentor of the 3 credits winter semester course *Independent Studies DART461 Art+Neuroscience* offered by FoFA to frame the participation of 20 fine art students in *Convergence, Perceptions of Neuroscience*.
- Design and maintenance of the website www.convergenceinitiative.org
- Design and production of the *Convergence, Perceptions of Neuroscience*, exhibition catalogue 2017.
- Coordination of the exhibitions *Convergence, material*, and *Convergence, dynamic*, at the Visual Voice Gallery, BAnQ, and the 11th Annual Meeting of the Canadian Association for Neuroscience during April and May 2017.
- We currently work with the Integrative Program in Neurosciences (IPN) officials at McGill University, to create a “Neuroscience Outreach” course as a formal frame for the neurosciences students involved in the Convergence Initiative.

Research Institute of the McGill University Health Centre (RI-MUHC).

Dec 2014 – Today. Montreal, QC, Canada.

- **Research Associate.**
- Study the mechanisms and role of axonal and somatodendritic release of neuropeptides in brain slices and isolated tissue using GCaMP6-based sniffer cells.

- Study the molecular phenotype of temperature and pressure sensitive neurons in the *Organum Vasculosum Lamina Terminalis (OVLT)*.
- Study the synaptic regulation of Supraoptic Nucleus neurons.
- Member of the BRAIN Program Trainees Committee and the MGH Animal User Committee.

McGill University & the RI-MUHC.

Oct 2009 – Dec 2014. Montreal, QC, Canada.

- **Postdoctoral Fellow.**
- Cloned and studied the mammalian osmosensitive and thermosensitive receptor ΔN -TRPV1.

University of Chicago.

Jul 2007 – Feb 2009. Chicago, IL, USA.

Universidad Austral de Chile.

Jun 2004 – Feb 2009. Valdivia, Chile.

- **Ph.D. Student.**
- Studied the structure-function relation in BK⁺ channels using LRET (Ph.D. thesis).
- Studied the role on thermosensitivity played by different domains on TRPV1 and TRPM8 using chimeras, punctual mutations, and FRET.
- Studied voltage dependency in TRPV1 and TRPM8 using cysteine-scanning approaches.

Centro de Estudios Científicos.

May 2003 – May 2004. Valdivia, Chile.

- **Research Assistant.**
- Molecular Biology, my work contributed to the following publications:
 - Carvacho I, Gonzalez W, Torres YP, Brauchi S, Alvarez O, Gonzalez-Nilo FD, Latorre R. (2008) Intrinsic electrostatic potential in the BK channel pore: role in determining single channel conductance and block. *J Gen Physiol.* Feb;131(2):147-61.
 - Brauchi S, Orta G, Salazar M, Rosenmann E, Latorre R. (2006) A hot-sensing cold receptor: C-terminal domain determines thermosensation in transient receptor potential channels. *J Neurosci.* May 3;26(18):4835-40.
 - Gonzalez C, Morera FJ, Rosenmann E, Alvarez O, Latorre R. (2005) S3b amino acid residues do not shuttle across the bilayer in voltage-dependent Shaker K⁺ channels. *Proc Natl Acad Sci U S A.* Apr 5;102(14):5020-5.

Dreams & Nightmares Advertising Agency.

2003. Valdivia, Chile.

- **Founder & Director.**
- Organized, managed and executed the Celtic Music Festival “*Sonidos en la Bruma*” that placed in scene more than seventy artists, performers and musicians.

Universidad de la Frontera.

Jan 2002 – Dec 2002. Temuco, Chile.

- **Research Assistant.**
- Managed project FDI CORFO 01CR3FT-01 to increase the productivity of *Eucaliptus globulus* plantations through the production of transgenic trees tolerant to *Mycosphaerella spp.*

Punto UNO Advertising.

1995 – 1999. Temuco, Chile.

- **Art Director & Graphic Designer.**
- Developed advertising campaigns for products and services over radio, national and local newspapers.
- Managed the art direction for several brands and artistic events (Ballet Giselle by the Chilean National Ballet Company, Niri-Vilcun Zoo Temuco, Socovesa construction company).
- Designed the logotypes and corporate images for different companies.
- Accomplished the successful graphic design of several paper pieces.

Mutual de Seguridad C.CH.C.

1993-1994, Temuco, Chile.

- **Regional Account Manager.**
- Managed the regional portfolio of companies protected under the Chilean law #16744 “occupational accidents and professional illness”

TEACHING EXPERIENCE

Convergence Initiative 2016-2017.

(All the following courses, conferences, and teaching events were created as a formal frame for the Convergence Initiative).

Concordia University, 2016-2017.

Faculty of Fine Arts, Montreal, QC, Canada.

- Winter-Spring 2017 – Scientific liaison, advisor, mentor, and critique of the Fine Arts Independent Studies DART461/4 BB. 16 Neuroscience Students (1 Undergrad, 2 Master Students, 11 Ph.D. Students, 2 Postdoctoral Fellows), plus 20 Art Students. 3 Credits course.
- Fall 2016 – Organizer and coordinator of the Neurosciences Five Minute Talks presentations where 17 neuroscience students from the Integrative Program in Neurosciences of McGill University explained their research to an audience of 40 art students and academics at Concordia University.

Research Institute of the McGill University Health Centre, 2016-2017.

Brain Repair and Integrative Neurosciences Program (BRaIN), Montreal, QC, Canada.

- Winter 2017 – Organizer and coordinator of the “Sensory” event, a neurosciences public event that include two conferences of 25 minutes, guided visits for art students to neurosciences labs, and a social event between neuroscientists and artists. 56 assistants.
- Fall 2016 – Organizer and coordinator of “The Black Box” event, a neurosciences public event that include two conferences of 25 minutes, guided visits for art students to neurosciences labs, and a social event between neuroscientists and artists. 120 assistants.

Brock University 2017.

Department of Biological Sciences, Faculty of Mathematics & Science, St. Catharines, ON, Canada.

- Winter 2017 – Invited professor to the course BIOL 4P35 – Biology of the senses, coordinated by Dr. Glenn Tattersall, professor at the department of Biological Sciences. 15 students, 3 hours.

McGill University 2012-2016.

Department of Physiology, McGill University, Montreal, QC, Canada.

- Fall 2016 – Invited professor to the course PHGY311 – Ion Channels, coordinated by Dr. Reza Sharif, assistant professor at the Department of Physiology, McGill University. 6 students, 3 hours.

Centre for Research in Neuroscience (CRN).

Research Institute of MUHC, Montreal, QC, Canada.

- Summer 2014 - Intermediate between the CRN and the Montreal community on the Montreal General Hospital Heritage Day. Around 50 people, from 1 to 4 PM.
- 2012- 2017 - Laboratory Teaching and Mentorship. Guiding new students and internship students in the lab on Tissue Culture and Molecular Biology.

Universidad Austral de Chile 2004-2004.

Centro de Estudios Científicos, Valdivia, Chile.

- Community Teaching, Science week 2004, programa EXPLORA, National Council for Scientific and Technological Research (CONYCIT). 34 students grade 10, 2 hours.

Universidad de la Frontera, Chile 1999-1999.

- Second term 1999 - Teaching Assistant, Organic Chemistry, 30 students, 3 hours per week.
- First term 1999 - Teaching Assistant, Human Anatomy, 40 students, 2 hours per week.

PEER-REVIEWED PUBLICATIONS

- **Zaelzer C.**, Gizowski C., Salmon C., Murai K., Bourque C.W. (In preparation). Direct detection of axonal and somatodendritic release of Arginine Vasopressin by sniffer cells.
- Gizowski C., **Zaelzer C.**, Bourque C.W. (2016). Clock-driven vasopressin neurotransmission mediates anticipatory thirst prior to sleep. *Nature*. Sept 29th, 537: 685-688.
- Castillo J.P., Sánchez-Rodríguez J.E., Hyde H.C., **Zaelzer C.A.**, Aguayo D., Sepúlveda R.V., Luk L.Y., Kent S.B., Gonzalez-Nilo F.D., Bezanilla F., Latorre R. (2016). β -1 subunit-induced structural rearrangements of the Ca^{2+} - and voltage-activated K^{+} (BK) channel. *Proc. Natl. Acad. Sci. USA*. Jun 7; 113(23): E3231-3239.
- Farmer W.T., Abrahamsson T., Chierzi S., Lui C., **Zaelzer C.**, Jones E.V., Bally B.P., Chen G.G., Thérroux J.F., Peng J., Bourque C.W., Charron F., Ernst C., Sjöström P.J., Murai K.K. (2016). Neurons diversify astrocytes in the adult brain through sonic hedgehog signaling. *Science*. Feb 19; 351(6275): 849-854.
- **Zaelzer C.**, Hua P., Prager-Khoutorsky M., Ciura S., Voisin D., Liedtke W. & Bourque C.W. (2015). ΔN -TRPV1: A Molecular Co-Detector of Body Temperature and Osmotic Stress. *Cell Rep*. Oct 6; 13(1): 23-30.
- Gagnon A., Walsh M., Okuda T., Choe K.Y., **Zaelzer C.**, Bourque C.W. (2014) Modulation of spike clustering by NMDA receptors and neurotensin in rat supraoptic nucleus neurons. *J Physiol*. 2014 Jul 25.
- Latorre R., Morera F.J., **Zaelzer C.** (2010) Allosteric interactions and the modular nature of the voltage- and Ca^{2+} - activated (BK) channel. *J Physiol*. Sept 1; 588(Pt 17): 3141-8.
- Latorre R., **Zaelzer C.**, Brauchi S. (2009) Structure-functional intimacies of transient receptor potential channels. *Q Rev Biophys*. Aug 42(3): 201-46.
- Latorre R., Brauchi S., Orta G., **Zaelzer C.**, Vargas G. (2007) ThermoTRP channels as modular proteins with allosteric gating. *Cell Calcium*. Volume 42, Issues 4-5, October-November, pages 427-438.

AWARDS

- Travel Award 11th International Conference in Cell Volume Regulation, Chicago, USA. (US\$500), 2016.
- Institute Community Support (ICS) BRAIN Star Award, Institute of Neurosciences, Mental Health and Addiction (INMHA) from the Canadian Institutes in Health Research (CIHR), Canada. (CAN\$1,500), 2016.
- MECESUP Graduate fellowship. National Council for Scientific and Technological Research (CONYCIT), Chile. (CAN\$42,873.60), 2004-2009.

- Journal of Cell Science Travelling Fellowship Fund Winner, “Structural Analysis of ThermoTRP Channels”. (US\$3,900), 2007.
- DID UACH FUND for graduate student’s projects. “Conformational changes in the C-terminus on thermosensitive channels”. Universidad Austral de Valdivia, Chile. (US\$2,000), 2006.
- Outstanding Student Award, National Medical Technologist School Board. For outstanding student record and qualifications during undergraduate education. Temuco, Chile, 2001.

INVITED PRESENTATIONS

- La grande bibliothèque et archives nationales du Québec (BAnQ) (May 2017). *Convergence, Perceptions of Neuroscience*. Opening word of the Convergence Exhibition at the 11th Annual Meeting of the Canadian Association for Neuroscience Outreach Day.
- McGill University (May 2017). *The Engagement of Neurosciences and the Arts, The Convergence initiative*. Talk part of the Gran Rounds talks, Department of Psychiatry, McGill University Faculty of Medicine.
- Journées Internationales de la Culture Scientifique (May 2017). *Scientific Literacy and Citizen Involvement: The Convergence of Science and Art*. Symposium (organizer and participant).
- McGill University (March 2017). *Convergence, Perceptions of Neuroscience*. Mozilla Science Lab meets Open Research McGill.
- Queen’s University (February 2017). *The Convergence between Arts and Neuroscience*. Workshop at the NeuGeneration Conference.
- Brock University (February 2017). 1) *Direct detection of axonal and somatodendritic release of Arginine Vasopressin by sniffer cells*. 2) *The Convergence Initiative*. Hosted by the Ph.D. in Interdisciplinary Humanities, Brock University.
- Concordia University (October 2016). *Convergence, Perceptions of Neuroscience*. Part of “Blood, Brains + Other Trains: Thoughts on Emerging Collaborations & Camaraderie in the Arts+Sciences” Colloquium.
- Brock University (2015). *ΔN-TRPV1: A Molecular Co-detector of Body Temperature and Osmotic Stress*.
- Universidad de Valparaiso (2014). *ΔN-TRPV1: A Molecular Co-detector of Body Temperature and Osmotic Stress*.
- Universidad de La Frontera (2014). *ΔN-TRPV1: A Molecular Co-detector of Body Temperature and Osmotic Stress*.
- Universidad de Santo Tomás (2009). *Ion Channels. Molecular Customs*.

CONFERENCES

- Publication of 26 abstracts related to conferences (The Biophysical Society, The Society for Neuroscience, The American Physiology Society, and the Canadian Association for Neuroscience).

PROFESSIONAL ASSOCIATIONS

- Society for Neuroscience (2014, 2015, 2017).
- Biophysical Society (2008, 2009, 2010, 2011, 2013, 2015).
- American Physiology Society (2014, 2015, 2016, 2017).
- Canadian Association for Neuroscience (2013, 2014, 2016, 2017).

ADVANCED TRAINING

- 02-03/2015 University Teaching 101 – John Hopkins University - Coursera signature track, grade achieved 96.7%.
- 01-03/2014 Computational Molecular Evolution - Technical University of Denmark, Coursera signature track, grade achieved 98.2%.

- 01-03/2014 Introduction to Genetics and Evolution - Duke University, Coursera signature track, grade achieved 85.1%.
- 3/2012 EMBO Practical Course Single-Cell Gene Expression Analysis – European Molecular Biology Organization, Heidelberg, Germany.
- 11/2008 Structural Bioinformatics Workshop. Molecular Simulations of Transmembrane Proteins: VMD & NAMD. CBSM. Universidad de Talca, Chile.
- 03/2006 Bases and Applications of Confocal Microscopy. Universidad Austral de Chile in collaboration with Parc Recerca Biomèdica Barcelona, Spain. Universidad Austral de Chile. Chile.
- 10/2006 Kinetics: From Enzymes to Metabolic Pathways. Universidad Austral de Chile in collaboration with Le Centre National de la Recherche Scientifique, Marseille, France. Universidad Austral de Chile. Chile.
- 01/2004 Topics in Cellular and Molecular Biophysics. IV Intensive Course Theoretical Practical. Centro de Estudios Científicos, Valdivia, Chile.
- 08-12/2003 Ion Channels. Centro de Estudios Científicos, Valdivia, Chile.
- 01-05/2001 Topics in Physiology and Vegetal Molecular Biology . Vegetal Physiology and Molecular Biology Laboratory, Agro Industry Institute, Universidad de la Frontera, (MECE-SUP 1998), Chile.

REFERENCES

Charles W. Bourque Ph.D.

James McGill Professor – Member of the Royal Society of Canada
 Centre for Research in Neurosciences (CRN)
 Research Institute of McGill University Health Centre (MUHC)
 McGill University
 Pine Avenue 1650, Room L7-216
 Montreal, QC, H3G 1A4, Canada
 Office: (514) 934-1934 Ext 44239
 Lab: 1-(514) 934-1934 Ext 44605
 charles.bourque@mcgill.ca

Francisco Bezanilla Ph.D.

Lilian Eichelberger Cannon Professor
 Member of the National Academy of Sciences USA
 Department of Biochemistry and Molecular Biology
 The University of Chicago
 GCIS Building Room W244
 929 E. 57th Street
 Chicago, IL 60637, United States of America
 1-(773)-834-1458
 fbezanilla@uchicago.edu

Glenn Tattersall Ph.D.

Professor, Biological Sciences
 Department of Biological Sciences
 Brock University
 500 Glenridge Avenue
 St. Catharines, Ontario
 L2S 3A1, Canada
 gtatters@brocku.ca

Ramon Latorre Ph.D.

National Prize of Sciences, Chile.
 Centro Interdisciplinario de Neurociencia de Valparaíso
 Facultad de Ciencias, Universidad de Valparaíso
 Pasaje Harrington 287, Playa Ancha, Valparaíso, Chile
 Office: 56-(32)-2508040
 ramon.latorre@uv.cl