

Dr. Karen Castillo, PhD – (karen.castillo@cinv.cl)

EDUCATION

INSTITUTION AND LOCATION	DEGREE	CONFERRED	FIELD OF STUDY
University of Chile, Chile	B.S Biotechnology	2003	Biology and Biotechnology
University of Chile, Chile	Molecular Biotechnology Engineer	2005	Biology and Biotechnology
University of Chile, Chile	PhD in Sciences	2008	Biology and Neuroscience

CURRENT POSITION

Young Research Scientist at Centro Interdisciplinario de Neurociencia de Valparaíso, CINV. ThermoTRP ion channels from biophysics to physiology.

PAST POSITION

Postdoctoral Researcher Senior Anillo Project ACT-1104: “Voltage sensor of ion channels: from structure to function”.

Laboratory of Molecular Sensors. Centro Interdisciplinario de Neurociencias de Valparaíso, Facultad de Ciencias, Universidad de Valparaíso, Chile. Advisor: Dr. Carlos González (carlos.gonzalezl@uv.cl)

Postdoctoral Researcher FONDECYT #3100112: “Induction of autophagy protects against motoneuron degeneration in Amyotrophic Lateral Sclerosis induced by mutant SOD1 aggregation”

Laboratory of Cellular Stress and Biomedicine, Instituto de Ciencias Biomédicas, Facultad de Medicina, Universidad de Chile. Advisor: Dr. Claudio Hetz (chetz@hsph.harvard.edu)

SELECTED AWARDS

1994-1997 PRESIDENTE DE LA REPUBLICA FELLOWSHIP.
1998-2002 MINEDUC UNDERGRADUATED FELLOWSHIP.
2004 MILLENIUM INSTITUTE DOCTORAL FELLOWSHIP.
2004-2007 CONICYT DOCTORAL FELLOWSHIP.
2005 IBRO ADVANCED SCHOOL IN NEUROSCIENCE FELLOWSHIP.
2006 ACHEMS AWARDS FELLOWSHIP.
2007 Travelling fellowship - VICERRECTORIA ACADEMICA UNIVERSIDAD DE CHILE.
2007 MECESUP TRAINING RESEARCH FELLOWSHIP.
2007 REGULAR FELLOW UNIVERSITY OF COLORADO DENVER.
2010 EMBO J fellowship.
2010-2012: FONDECYT Postdoctoral Fellowship.

PUBLICATIONS

1. Sara T Granados, **Karen Castillo**, Felipe Bravo, Romina Sepulveda, Danilo Gonzalez-Nilo, Janneth Gonzalez, Yolima P Torres and Ramon Latorre. BK channel modulation by 17 β -estradiol is related through direct binding to β 1 auxiliary subunit. ***Under preparation.***
2. Ramírez-Barrantes R, Cordova C, Muñoz P, Simon, F, Martinez A, Gonzalez, C, **Castillo K**, Latorre R, Olivero P. 2016. 17 β -Estradiol improves TRPV1-dependent cell protection against oxidative cell death. ***Submitted.***

3. Amaury Pupo, David Baez-Nieto, Ester Otarola, **Karen Castillo**, Feng Qiu, Gustavo F. Contreras, German Miño, Wendy Gonzalez, Osvaldo Yañez, Alan Neely, Peter H Larsson, Ramon Latorre and Carlos Gonzalez. 2016. Permeation mechanism of Hv1 voltage-gated proton channel. **Submitted**.
4. **Karen Castillo**, Vicente Valenzuela, Maritza Oñate, and Claudio Hetz. 2016. A molecular reporter for monitoring autophagic flux in nervous system in vivo. **Methods in Enzymology, Accepted**
5. Ramón Latorre, **Karen Castillo**, Willy Carrasquel-Ursulaez, Romina V. Sepulveda, Fernando González-Nilo, Carlos Gonzalez and Osvaldo Alvarez. 2016. Molecular determinants of BK channel functional diversity and functioning. **Physiological Reviews, Accepted**.
6. **Karen Castillo**, Amaury Pupo, David Baez, Gustavo Contreras, Francisco Morera, Alan Neely, Ramon Latorre, Carlos Gonzalez. 2015. Voltage-gated proton (Hv1) channels, a singular voltage sensing domain. **FEBS letters** 589(22): 3471-8.
7. Francisco J. Morera, Julia Saravia, Juan Pablo Pontigo, Luis Vargas-Chacoff, Gustavo F. Contreras, Amaury Pupo, Yenisleidy Lorenzo, **Karen Castillo**, Cholpon Tilegenova, Luis G. Cuello and Carlos Gonzalez. 2015. Voltage-dependent BK and Hv1 channels: new therapeutic opportunities as targets in human diseases. **Pharmacological Research** 101: 56-64.
8. **Karen Castillo**, Gustavo F. Contreras, Amaury Pupo, Yolima P. Torres, Alan Neely, Carlos Gonzalez and Ramon Latorre. 2015. Molecular mechanism underlying $\beta 1$ regulation in voltage- and calcium-activated potassium (BK) channels. **Proc Natl Acad Sci U S A** 112(15):4809-14.
9. Francisco J. Morera, David Baez-Nieto, Yenisleidy Lorenzo, **Karen Castillo**, Verónica Milesi, Luis Vargas-Chacoff and Carlos Gonzalez. 2015. Role of ion channels in salt secretion by atlantic salmon gills during acclimation to seawater. **Physiological Mini Reviews** 8(1): 1-11.
10. Nassif M, Valenzuela V, Rojas-Rivera D, Vidal R, Matus S, **Castillo K**, Fuentealba Y, Kroemer G, Levine B, Hetz C. 2014. Pathogenic role of BECN1/Beclin 1 in the development of amyotrophic lateral sclerosis. **Autophagy** 10(7):1256-71.
11. Gustavo F. Contreras, **Karen Castillo**, Nicolás Enrique, Willy Carrasquel-Ursulaez, Juan Pablo Castillo, Verónica Milesi, Alan Neely, Osvaldo Alvarez, Gonzalo Ferreira, Carlos Gonzalez and Ramon Latorre. 2013. A BK (Slo1) Channel Journey from Molecule to Physiology. **Channels** (7)6.
12. **Castillo K**, Nassif M, Mercado G, Valenzuela V, Rojas F, Court FA, Van Zundert B and Hetz C. 2013. Trehalose protects against ALS progression possibly through autophagy activation. **Autophagy** 9(9).
13. **Castillo K**, Valenzuela V, Matus S, Nassif M, Oñate M, Fuentealba Y, Encina G, Irrazabal T, Parsons G, Court FA, Schneider BL, Armentano D and Hetz C. 2013. Measurement of autophagy flux in the nervous system *in vivo*. **Cell Death Dis** 4:e917.
14. Soledad Matus, **Karen Castillo**, Claudio Hetz. 2012. Hormesis: Protecting neurons against cellular stress in Parkinson's disease. **Autophagy** 8(6).
15. **Castillo K**, Rojas-Rivera D, Lisbona F, Caballero B, Nassif M, Court FA, Schuck S, Ibar C, Walter P, Sierralta J, Glavic A, Hetz C. 2011. BAX inhibitor-1 regulates autophagy by controlling the IRE1 α branch of the unfolded protein response. **EMBO J** 30:4465-78.
16. Torres M, **Castillo K**, Armisén R, Stutzin A, Soto C, Hetz C. 2010. Prion protein misfolding affects calcium homeostasis and sensitizes cells to endoplasmic reticulum stress. **PLoS One** 5(12):e15658.
17. **Castillo K**, Restrepo D, Bacigalupo J. 2010. Cellular and molecular Ca²⁺ microdomains in olfactory cilia support low signaling amplification of odor transduction. **Eur J Neurosci** 32(6):932-8.
18. Nassif M, Matus S, **Castillo K**, Hetz C. 2010. Amyotrophic lateral sclerosis pathogenesis: a journey through the secretory pathway. **Antioxid Redox Signal** 13(12):1955-89.
19. Saavedra MV, Smalla KH, Thomas U, Sandoval S, Olavarria K, **Castillo K**, Delgado MG, Delgado R, Gundelfinger ED, Bacigalupo J, Wyneken U. 2008. Scaffolding proteins in highly purified rat olfactory cilia membranes. **Neuroreport** 19(11):1123-6.

20. **Castillo K**, Delgado R, Bacigalupo J. 2007. Plasma membrane Ca²⁺-ATPase in the cilia of olfactory receptor neurons: possible role in Ca²⁺ clearance. *Eur J Neurosci* 26(9):2524-31.
21. Muñoz P, Zavala G, **Castillo K**, Aguirre P, Hidalgo C, Núñez MT. 2006. Effect of iron on the activation of the MAPK/ERK pathway in PC12 neuroblastoma cells. *Biol Res* 39(1):189-90.
22. **Castillo K**, Bacigalupo J, Wolff D. 2005. Ca²⁺-dependent K⁺ channels from rat olfactory cilia characterized in planar lipid bilayers. *FEBS Lett* 579(7):1675-82.

5. BOOK CHAPTER

1. Melissa Nassif, Danilo Medinas, **Karen Castillo**, Camila Gherardelli and Claudio Hetz. 2013. When the good turns bad: Challenges in the targeting of autophagy in neurodegenerative diseases. In Volume Series "Autophagy: Cancer, Other Pathologies, Infection, Inflammation and Immunity". **Elsevier/Academic Press**. Edited by Eric Hayat.

6. CONFERENCE PARTICIPATION

6.1 National conferences

1. **Castillo K**, Jorquera O, Saavedra V, Bacigalupo J, Wolff D. Canales de K⁺ dependientes de Ca²⁺ en cilios de neuronas olfatorias. XLV Reunión Anual De la Sociedad de Biología De Chile, 2002. *Biol Res* 35(3-4): R-74. PUYEHUE-CHILE.
2. Muñoz P, Zavala G, **Castillo K**, Hidalgo C, Kirkwood A, Nuñez MT. Effect of iron on the activation of the MAPK/ERK pathway in PC12 cells. Third International Workshop on Iron and Copper (TIVICH), 2004. VIÑA DEL MAR-CHILE.
3. **Castillo K**, Bacigalupo J, Wolff D. Canales de potasio dependientes de calcio de los cilios de las neuronas olfatorias de rata. XLVII Reunión Anual De la Sociedad de Biología De Chile, 2004. PUCON-CHILE. *Biol Res* 37(4): R-52.
4. **Castillo K**, González C, Cabello S and Bacigalupo J. A Ca²⁺-ATPase is present in the olfactory cilia. 2006. 2ª Reunión Sociedad Chilena de Neurociencias. SEP 27-29, 2006. CURICÓ-CHILE.
5. M. Nassif, S. Matus, **K. Castillo**, R. Brown, and C. Hetz. Mutants SOD1 increase the autophagy levels in a model of amyotrophic lateral sclerosis by disturbing the BCL-2/BECLIN1 complex. XXIII Reunion Annual de la Sociedad de Biología Celular de Chile. 2009, NOV-PUCON, CHILE.
6. **K. Castillo**, D. Rojas-Rivera, B. Caballero, F. Lisbona, A. Glávic, and C. Hetz. The ER located protein Bax-inhibitor 1 (Bi-1) regulates autophagy (La proteína inhibidora de Bax (BI-1) del RE regula la autofagia). XXIII Reunion Annual de la Sociedad de Biología Celular de Chile. 2009, NOV-PUCON, CHILE.
7. **Castillo K**, Restrepo D, Bacigalupo J. Chemosensory cilia of olfactory neurons contain calcium microdomains with one to three cyclic nucleotide-gated channels: a two-photon fluorescence microscopy study. 16th symposium on Ca²⁺-binding proteins and Ca²⁺ function in health and disease. 2010, NOV-PUCON, CHILE.
8. **Castillo K**, Caballero B, Nassif M, Matus S and Hetz C. Enhancing autophagy decreases mutant SOD1 aggregation in a cellular model of Amyotrophic Lateral Sclerosis. XXIV Reunion Annual de la Sociedad de Biología Celular de Chile. 2010, NOV-PUCON, CHILE
9. **Castillo K**. The ER resident protein BAX inhibitor-1 prevents autophagy by controlling the IRE1a/JNK branch of UPR. Reunion Annual Centro FONDAF de

Estudios Celulares y Moleculares de la Célula. 23 Marzo 2011, Cajón del Maipo, STGO-CHILE.

10. **Castillo K**, Lopez E , Nassif M, Matus S and Hetz C. Trehalose alleviates and attenuates ALS progression possibly through autophagy activation. XXV Reunion Anual de la Sociedad de Biología Celular de Chile. 2011, NOV-PTO VARAS, CHILE.

11. **Karen Castillo**, Gustavo F. Contreras, Yolima Torres, Osvaldo Alvarez, Alan Neely, Carlos Gonzalez and RamonLatorre. 2013. THE MODULATION OF BK CHANNEL GATING BY β SUBUNITS APPEARS TO INVOLVE TWO MOLECULAR REGIONS OF THE AUXILIARY PROTEIN. 2013. II Meeting Millenium Institute CINV. VALPARAISO-CHILE.

12. Gustavo F. Contreras, **Karen Castillo**, Amaury Pupo, Yolima Torres, Yenisleidy Lorenzo, Osvaldo Alvarez, Alan Neely, Carlos Gonzalez & RamonLatorre. The β subunit N-terminus is involved in the modulation of α subunit voltage sensor of BK channels. X Reunión Anual Sociedad de Neurociencia de Chile. 2014, OCT VALDIVIA-CHILE.

13. Sara T. Granados, Luciano Piccinini, **Karen Castillo**, Yenislady Lorenzo, Yolima Torres, Verónica Milesi, Carlos Gonzalez and RamonLatorre. BK activation by Estradiol is associated to voltage sensor modulation through direct binding to β 1 subunit. X Reunión Anual Sociedad de Neurociencia de Chile. 2014, OCT VALDIVIA-CHILE.

14. Amaury Pupo, Ester Otarola, David Baez-Nieto, German Miño, Gustavo Contreras, Osvaldo Yañez, **Karen Castillo**, Wendy Gonzalez, Ramón Latorre and Carlos Gonzalez. Permeation pathway mechanism in Hv1 channel. . X Reunión Anual Sociedad de Neurociencia de Chile. 2014, OCT VALDIVIA-CHILE.

15. **Karen Castillo**, Gustavo F. Contreras, Amaury Pupo, Yolima P. Torres, Alan Neely, Carlos Gonzalez and Ramon Latorre. The β 1 subunit N-terminus is involved in the modulation of a subunit voltage sensor of BK channels. Ion channels in the valley III. 2015. APR, MONTEGRANDE-CHILE.

16. Yenisleidy Lorenzo, Gustavo Contreras, **Karen Castillo**, Amaury Pupo, Willy Carrasquel, Alan Neely, Osvaldo Alvarez, Carlos González and Ramon Latorre. β 1 subunit modify the total gating charge movement of BK channels. Ion channels in the valley III. 2015. APR, MONTEGRANDE-CHILE.

6.2 International conferences

1. **Castillo K**, Wolff D, Bacigalupo J, Delgado R. Recording of Ca^{2+} -dependent K^+ channels activated by odors in on cell and excised toad ciliary patches: complementary lipid bilayer studies. 25th Annual Meeting The Association for Chemorreception Sciences (AChemS meeting), 2003. SARASOTA-FLORIDA, USA.

2. **Castillo K**, Delgado R and Bacigalupo J. A Ca^{2+} -ATPase extrudes calcium from the cilia of olfactory sensory neurons. 37th annual meeting of the Society for Neuroscience. NOV 3-7, 2007. SAN DIEGO-CALIFORNIA, USA.

3. Saavedra VM, **Castillo K**, Thomas U, Gundelfinger ED, Wyneken U, Bacigalupo J. Scaffolding proteins in the olfactory epithelium. The physiological Society, Young Physiologist's Symposium. Kings College London, 2004. *J Physiol* **565P** PC63. LONDON-ENGLAND.

4. **Castillo K**, Bacigalupo J, Wolff D. Characterization of Ca^{2+} -dependent K^+ channels from rat olfactory cilia incorporated into planar lipid bylayers. The Physiological Society. Kings College London, 2004. *J Physiol* **565P** PC88. LONDON-ENGLAND.

5. Bacigalupo J, **Castillo K**, Delgado R, Wolff D. Pharmacological and electrophysiological studies of Ca^{2+} -dependent K^+ channels from rat olfactory cilia. Society for Neuroscience 34th Annual Meeting, 2004. SAN DIEGO-CALIFORNIA, USA.
6. Muñoz P, Zavala G, **Castillo K**, Aguirre P, Hidalgo C, Núñez, MT. Iron-generated reactive oxygen species activates ryanodine receptor and contribute to synaptic plasticity through ERK activation. First Congress of the International Biolron Society. MAY, 2005. PRAGA-CZECH REPUBLIC.
7. **Castillo K**, González C, Bacigalupo J. Ca^{2+} -ATPase extrudes calcium from olfactory cilia. IBRO/ INMHA Advanced School of Neurosciences. NOV 19 – DEC 6, 2005. BUENOS AIRES-ARGENTINA.
8. **Castillo K**, Bacigalupo J. Ca^{2+} -ATPase in olfactory cilia. Association for Chemoreception Sciences (AChemS) 28th Annual Meeting. APR 26-30, 2006. SARASOTA-FLORIDA, USA
9. MV Saavedra, **K Castillo**, U Thomas, ED Gundelfinger , U Wyneken , J Bacigalupo. Scaffolding proteins as possible organizers of the constituents of rat olfactory transduction. XVIIth conference of the European Chemoreception Research Organisation (ECRO). SEP 4-8, 2006. GRANADA-SPAIN.
10. Juan Bacigalupo, Ricardo Delgado, **Karen Castillo**, Verónica Saavedra y Carolina González. Molecular events occurring in olfactory cilia during the olfactory response. XXII Congreso Latinoamericano & Iberoamericano de Ciencias Fisiológicas. NOV 4-7, 2006. BUENOS AIRES-ARGENTINA.
11. **Castillo K**, Bacigalupo J and Restrepo D. Calcium microdomains in the chemosensory cilia of olfactory receptor neurons. The Association for Chemoreception Sciences, XV International Symposium on Olfaction and Taste (ISOT). JUL 21-26, 2008. SAN FRANCISCO-CALIFORNIA, USA.
12. **Castillo Karen**, Caballero B, Nassif M, Matus S and Hetz. 2012. Targeting the autophagy machinery decreases mutant SOD1 aggregation in a cellular model of Amyotrophic Lateral Sclerosis. EMBO Workshop 5th INPROTEOLYSIS Meeting: Proteolysis and Neurodegeneration, MAY 2-7, Fundación Ramón Aceres, MADRID-SPAIN.
13. **Castillo K**, Lopez E, Nassif M, Matus S and Hetz C. Induction of autophagy decrease ^{mut}SOD1 aggregation in ALS cellular model and alleviates and attenuates disease progression in a mouse model of the disease. 1-6 DIC 2011, Autophagy Conference, XCARET- MEXICO.
14. Lisbona F, **Castillo K.**, Alvaro Glavic and Hetz C. Role of RECS1, a BI-1 ortholog, in autophagy regulation. Autophagy Conference, 1-6 DIC 2011, XCARET-MEXICO.
15. **Karen Castillo**, Melissa Nassif, Vicente Valenzuela, Fabiola Rojas, Soledad Matus, Gabriela Mercado, Felipe A. Court, Brigitte van Zundert, and Claudio Hetz. Trehalose protects against amyotrophic lateral sclerosis progression by enhancing autophagy. 27 NOV-1 DEC 2012. Neurodegeneration Conference, XCARET-MEXICO.

16. **Karen Castillo**, Gustavo F. Contreras, Yolima Torres, Osvaldo Alvarez, Alan Neely, Carlos Gonzalez & RamonLatorre. The N-terminus of auxiliary α subunit is involved in the modulation of voltage sensor BK pore-forming β subunit. 15-19 FEB 2014. Biophysocal Society Annual Meeting, San Francisco, CALIFORNIA-USA.

17. Ester Otarola, David E Baez-Nieto, Gustavo Contreras, Osvaldo Yañez, **Karen Castillo**, Peter Larsson, Ramon Latorre, Carlos Gonzalez. 2014. The Permeation Pathway Mechanism in Ciona Intestinalis Hv Channel. 15-19 FEB 2014. Biophysocal Society Annual Meeting, San Francisco, CALIFORNIA-USA.

18. **Karen Castillo**, Gustavo F. Contreras, Yolima Torres, Sara Granados, Yenisleidy Lorenzo, Osvaldo Alvarez, Alan Neely, Carlos Gonzalez & RamonLatorre. The β subunit N-terminus is involved in the modulation of α subunit voltage sensor of BK channels. Gordon Research Conference in Ion Channels 2014. Mount Holyoke College. 6-11 JUL 2014. BOSTON-USA.

19. Amaury Pupo, David Baez-Nieto, Ester Otarola, Osvaldo Yañez, Ariela Vergara-Jaque, Wendy Gonzalez, **Karen Castillo**, Gustavo Contreras, H Peter Larsson, Ramón Latorre, Carlos Gonzalez. 7-11 FEB 2015. Biophysical Society Annual Meeting, Baltimore, MARYLAND-USA.

20. Lisbona F, Dehay B, Lourido F, **Castillo K**, Molina E, Glavic A and Hetz C. TMBIM1/RECS1 regulates autophagy. Gordon Research Conference: Autophagy in Stress, Development and Disease. Ventura, CA. 20-25 MAR 2016 USA.

7. COURSES

- **2002**: Bioética y sus implicancias en la Ciencia y Sociedad. Curso avanzado de discusión de aspectos bioéticos relacionados con el quehacer científico y su impacto en la sociedad Instituto Milenio CBB, Facultad De Ciencias, Universidad de Chile. 2002
- **2005**: IBRO Advanced School in Neuroscience. BUENOS AIRES-ARGENTINA, NOV-DIC.
- **2006**: Advanced Course of Neurosciences: Ca²⁺ Measurements in Slices of Central Nervous System, Theory and Practice. Lecturer by Drs. Isabel Llanos and Alain Marti from The Brain Physiology Labs University Paris 5 and 7. Centro de Neurociencias de Valparaiso, Valparaiso University. DIC-2006. VALPARAISO-CHILE
- **2007**: Advanced Course in Microscopy Techniques and Applications, Theory and Practice. Lecturer by Juan Fernandez. Faculty of Sciences, University of Chile. ENE-2007. SANTIAGO, CHILE.
- **2007**: Advanced Course: Biophysics of Single Molecules Manipulation. Faculty of Sciences, University of Chile. Lecturer by Carlos Bustamante from University of Barkley. 10-12 DIC, 2007. SANTIAGO, CHILE.
- **2008**: Internacional Course: Calcium Signalling and Plasticity. Department of Biology, Faculty of Sciences, University of Chile. 10-15 ENE, 2008. SANTIAGO, CHILE.
- **2008**: Summer School of Cell Biology. Intensive Course, Institute Curie-University of Chile. 21-25 ENE, 2008. SANTIAGO, CHILE.
- **2013**: Latin American school on ion channels biophysics. Ion channels: structure, function and disease. CINV-Universidad de Valparaíso. 23-30 SEPT, 2013. VALPARAISO, CHILE.

- **2015:** Biochemical, Spectroscopic and Crystallographic approaches used to study the functional-structural correlations of membrane proteins. CINV-Universidad de Valparaíso. 25-29 JUL, 2015. VALPARAISO, CHILE.

8. TEACHING

- **2011.** Invited to give the class: “Regulación de la Autofagia en Neurodegeneración”, in the postgraduate course of Biomedical Science graduate program “Estrés de organelos y su rol en enfermedades”. Facultad de Medicina, Universidad de Chile.

9. RESEARCH EXPERIENCE

- **(1) Research Experience**
Institution: Laboratorio de Fisiología Celular, Facultad de Ciencias, Universidad de Chile, CHILE.
Charge: Undergraduate Thesis Student
Experimental approaches: Western blot, single channel recordings in planar lipid bilayers
Permanence: 2003-2005
- **(2) Research Experience**
Institution: Laboratorio de Fisiología Celular, Facultad de Ciencias, Universidad de Chile.
Charge: Graduate Thesis Student
Experimental approaches: Western blot, calcium imaging, immunofluorescence, patch clamp
Permanence: 2004-2008
- **(3) Research Experience**
Institution: Taste and Smell Center, University of Colorado Denver, USA.
Charge: Graduate Thesis Fellow
Experimental approaches: multiphoton microscopy and calcium imaging.
Permanence: 2007-2008
- **(4) Research Experience**
Institution: Laboratorio de Estres Celular y Biomedicina, Facultad de Medicina, Universidad de Chile, CHILE.
Charge: Postdoctoral Fellow
Experimental approaches: Western blot, immunoprecipitation, cell culture, animal model handling, *in vitro* and *in vivo* drug delivery, calcium imaging, immunofluorescence, immunohistochemistry, fluorescence imaging, AAVs technology.
Permanence: 2009-2013
- **(5) Research Experience**
Institution: Laboratorio de Sensores Moleculares, CINV, Universidad de Valparaíso, CHILE.
Charge: Senior Postdoctoral Researcher
Experimental approaches: patch clamp, molecular biology, two-electrode voltage clamp, voltage clamp fluorometry, gating current recordings, molecular modeling
Permanence: 2013-2015