CURRICULUM VITAE

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Nationality:	Chile
Date of Birth:	December 3, 1973
Address:	Centro de Neurociencias de Valparaíso Facultad de Ciencias Universidad de Valparaíso Gran Bretaña 1111, Playa Ancha Valparaíso, Chile.
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Academic Positions

2019 – present	Full Professor. Department of Neuroscience, Faculty of Sciences, University of Valparaiso, Chile.
2012 - 2019	Associate Professor. Department of Neuroscience, Faculty of Sciences, University of Valparaiso, Chile.
2007 - 2011	Auxiliary Professor. Department of Neuroscience, Faculty of Sciences, University of Valparaiso, Chile.

EDUCATION

1998-2004	Ph.D. in Biological Sciences. Facultad de Ciencias, Universidad de Chile, Santiago, Chile.
1992-1997	Biochemistry. Facultad de Ciencias Químicas y Farmacéuticas, Universidad de Chile, Santiago, Chile.

Titles and Degrees

2004	Ph.D. in Biological Sciences. Facultad de Ciencias, Universidad de Chile, Santiago, Chile.
2000	Biochemist. Facultad de Ciencias Químicas y Farmacéuticas, Universidad de Chile, Santiago, Chile.

Research Experience

2007 - Modelling of stochastic and dynamical systems applied to neuroscience.

2005 - 2007 Electrophysiological Characterization and Quantitative Description of Cold-sensing Neurons. Sensory Transduction and Nociception Laboratory, Instituto de Neurociencias de Alicante (Universidad Miguel Hernández/CSIC), Alicante, Spain.

1999 – 2004 Function-Structure Relationships in the BK Potassium Channel and its Regulation by -subunits. (PhD Thesis). Dr. Ramón Latorre, Laboratorio de Biofísica y Fisiología Molecular, Centro de Estudios Científicos (CECS), Valdivia, Chile.

1997 Functional and Molecular characterization of Gap Junctions in human circulating lymphocytes (Thesis for Biochemist title). Dr. Juan Carlos Sáez, P. Universidad Católica de Chile.

Scientific Grants (last 10 years)

2021 – 2023 Fondecyt Grant 1211750 “Revealing the relationship between high-order interdependencies and critical-like behavior in biophysical neural networks”. PI

2021 – 2022 STIC/AMSUD Grant “SILIDOC: In silico modeling of single-subject neuroimaging data for the characterization and prognosis of patients with disorders of consciousness”. Regional coordinator.

2018 – 2020 Fondecyt Grant 1181076 “Chaos versus Noise as drivers of Multistability in Neural Networks”. PI.

2017 – 2018 FONDEF-Idea Grant: “Dispositivo neuroingenieril para mejorar el control de la atención de trabajadores en minas a gran altura”. Investigador.

2014 – 2019 Basal Grant “Advanced Center for Electronic and Electrical Engineering”. Resarcher.

2013 – 2015 Fondecyt 1130862: Conductance-based modeling of the dynamic response of cold thermoreceptors. PI

2013 – 2015 Fondecyt 1131064: Cellular And Molecular Determinants of the Abnormal Cold Sensitivity of Primary Sensory Neurons in Response to Axonal Damage. Co-Inv

2013 – 2015 Anillo de Ciencia y Tecnología ACT-1113 “Estudio Del Papel Fisiológico De Los Canales TRP En La Termotransducción Y La Plasticidad Sináptica”. PI

2013 – 2015 Anillo de Ciencia y Tecnología ACT-1104 “Sensor de Voltage de Canales de Iones: Desde la Estructura a la Función”. Co-Inv.

2012 – 2013 ANR/CONICYT-47 “KEOpS: Algorithms for modelling the visual system: From natural vision to numerical applications.” Investigador Asociado.

2011 - 2013 INRIA Associated Team ‘Cortina’. (Chile-France).

2011 - 2021 Millenium Institute “Centro Interdisciplinario de Neurociencia de Valparaíso CINV”. Adjunt Researcher

2009 – 2011 Proyecto FONDECYT de Iniciación en Investigación. “Effect of stochastic channel gating and axonal geometry on sensory transduction and encoding in cold-sensitive nerve endings”. (PI)

Supervision of Thesis works

- Samy Castro, Ph in Neuroscience, Universidad de Valparaíso. Finished July, 2020. "The mesoscale organization of human connectome shapes ignition in cortical activity".
- Miguel Piñeiro, PhD thesis in Neuroscience, Universidad de Valparaíso. Finished May, 2018. "Estudio de las propiedades del circuito asociado a las neuronas CCAP AN1 – AN4 y motoneuronas durante la ecdisis a pupa en Drosophila Melanogaster".
- Erick Olivares, PhD thesis in Neuroscience, Universidad de Valparaíso. Finished March, 2014. "Estudio a través de modelación matemática del rol de TRPM8 en el patrón de disparo de terminales nerviosos sensibles a frío."
- Marilyn Gatica, PhD thesis in Biophysics and Computational Biology (in progress). "High-order brain interactions and multi-scale structure in the aging"
- Jean Paul Maidana, PhD thesis in Statistics. Universidad de Valparaíso (in progress). "Information Transfer in Neural Networks"
- Gaspar Herrera, PhD thesis in Neuroscience, Universidad de Valparaíso (*in progress*). "Injury-associated changes in the expression of KCNA genes in cold-sensitive DRG neurons and their impact on the detection threshold to cold of free nerve endings."

Undergraduate students.

- Jean Paul Maidana, Mathematical Engineering, Universidad Técnica Federico Santa María. *Graduated December, 2015*. "Análisis matemático de spike-trains con aplicaciones en termoreceptores de frío".
- Marilyn Gatica, Mathematical Engineering, Universidad de Santiago de Chile. *Graduated November 2014.* "Efecto del ruido multiplicativo en sistemas de ecuaciones diferenciales estocásticas aplicadas a la neurociencia".
- Mauricio Caviedes, program in Physics, Universidad de Valparaíso. *Graduated August 2014.* "Análisis Geométrico de un modelo de excitabilidad neuronal".

Publications

- Coronel-Oliveros C, Cofré R, Orio P (2021) Cholinergic neuromodulation of inhibitory interneurons facilitates functional integration in whole-brain models. *PLoS Comput Biol* **17**(2): e1008737. https://doi.org/10.1371/journal.pcbi.1008737

- Rivera B, Campos M, Orio P, Madrid R and María Pertusa (2020) Negative Modulation of TRPM8 Channel Function by Protein Kinase C in Trigeminal Cold Thermoreceptor Neurons. *Int. J. Mol. Sci.* 21(12), 4420; https://doi.org/10.3390/ijms21124420

- Castro, S., El-Deredy, W., Battaglia, D., & Orio, P. (2020). Cortical ignition dynamics is tightly linked to the core organisation of the human connectome. *PLoS Comput Biol* **16**(7): e1007686. https://doi.org/10.1371/journal.pcbi.1007686

- Gatica, M., Cofre, R., Mediano, P. A. M., Rosas, F. E., Orio, P., Diez, I., et al. (2020). High-order interdependencies in the aging brain. bioRxiv Neuroscience, 1–11. doi:10.1101/2020.03.17.995886

- Piña R, Ugarte G, Campos M, Íñigo-Portugués A, Olivares E, Orio P, Belmonte C, Bacigalupo J & Madrid R (2019). Role of TRPM8 Channels in Altered Cold Sensitivity of Corneal Primary Sensory

Neurons Induced by Axonal Damage. *J Neurosci* **39**, 8177–8192. doi: 10.1523/JNEUROSCI.0654-19.2019

- R. Manríquez, S. D. Peterson, P. Prado, P. Orio, G. E. Galindo and M. Zañartu (2019) Neurophysiological Muscle Activation Scheme for Controlling Vocal Fold Models. *IEEE Trans Neural Syst Rehabil Eng* **27**(5):1043-1052. doi: 10.1109/TNSRE.2019.2906030

- Orio P, Gatica M, Herzog R, Maidana J, Castro S, Xu K. (2018). Chaos versus Noise as drivers of multistability in neural networks. *Chaos* **28**:106321. doi: 10.1063/1.5043447.

- Xu K, Maidana JP, Castro S, Orio P. (2018) Synchronization transition in neuronal networks composed of chaotic or non-chaotic oscillators. *Sci Rep* **8**: 8370. doi: 10.1038/s41598-018-26730-9

- Richard A, Orio P, Tanré E. (2018) An integrate-and-fire model to generate spike trains with long-range dependence. *J Comput Neurosci* **44**: 297–312. doi: 10.1007/s10827-018-0680-1

- Xu K., Maidana JP, Caviedes M, Quero D, Aguirre P and Orio P. (2017). Hyperpolarization-activated current induces period-doubling cascades and chaos in a cold thermoreceptor model. *Front. Comput. Neurosci.* **11**:12. doi: 10.3389/fncom.2017.00012

- González A., Ugarte G., Restrepo C., Herrera G., Piña R., Gómez-Sánchez JA., Pertusa M., Orio P. and Madrid R. (2017). Role of the excitability brake potassium current IKD in cold allodynia induced by chronic peripheral nerve injury. *J Neurosci* **37**(12):3109-3126; doi:10.1523/JNEUROSCI.3553-16.2017

- González, A., Herrera, G., Ugarte, G., Piña, R., Pertusa, M., Orio, P. and Madrid, R. (2017) IKD current in cold transduction and damage-triggered cold hypersensitivity. *Adv. Exp. Med. Biol.* **1015**:265-277; doi: 10.1007/978-3-319-62817-2_14.

- Olivares E, Salgado S, Maidana JP, Herrera G, Campos M, Madrid R, Orio P (2015). TRPM8-Dependent Dynamic Response in a Mathematical Model of Cold Thermoreceptor. *PLOS One* **10**:e0139314. doi: 10.1371/journal.pone.0139314

- Leiva V, Tejo M, Guiraud P, Schmachtenberg O, Orio P and Marmolejo-Ramos F (2015). Modeling neural activity with cumulative damage distributions. *Biol Cybern* **109**:421-433. doi: 10.1007/s00422-015-0651-9

- Pezo D, Soudry D and Orio P (2014). Diffusion approximation-based simulation of stochastic ion channels: which method to use?. *Front. Comput. Neurosci.* **8**:139. doi: 10.3389/fncom.2014.00139

- Escobar MJ, Pezo D, Orio P (2013), Mathematical Analysis and Modeling of Motion Direction Selectivity in the Retina. *J Physiol Paris,* **107**(5):349-359

- Boric K, Orio P, Vieville T, Whitlock K (2013). Quantitative analysis of cell migration using optical flow. PLoS ONE **8**(7): e69574.

- Orio P., Parra A., Madrid R., González O., Belmonte C., Viana F. (2012) Role of Ih in the Firing Pattern of Mammalian Cold Thermoreceptors. *J Neurophysiol* **108**:3009-3023

- Orio P. and Soudry D. (2012) Simple and Fast Implementation of the Diffusion Approximation Algorithm for Stochastic Ion Channels with Multiple States. *PLoS ONE* 7(5): e36670.

- Latorre R., Brauchi S., Madrid R., Orio P. (2011) A Cool Channel in Cold Transduction. *Physiology* **26**:273-285.

- Brauchi S., Orio P. (2011) Voltage Sensing in thermo-TRP channels. *Adv. Exp. Med. Biol.* **704**:517-530.

- Orio P., Madrid R., de la Peña E., Parra A., Meseguer V., Bayliss D.A., Belmonte C., Viana F. (2009) Characteristics and physiological role of hyperpolarization-activated current I_h in mouse cold thermoreceptors. *J Physiol* **587**:1961-1976.

- González-Pérez V., Neely A., Tapia C., González-Gutiérrez G., Contreras G., Orio P., Lagos V., Rojas G., Estévez T., Stack K., Naranjo D. (2008) Slow inactivation in Shaker K channels is delayed by intracellular tetraethylammonium. *J. Gen. Physiol.* **132**:633-50.
- Orio P., Torres Y., Rojas P., Carvacho I., Garcia M.L., Toro L., Valverde M.A., Latorre R. (2006). Structural Determinants for Functional Coupling Between the α and β Subunits in the Ca^{2+}-activated K^{+} (BK) Channel. *J. Gen. Physiol.* **127**:191-204.
- Orio, P., Latorre, R. (2005) Differential effect of β1 and β2 subunits on BK Channel Activity.*J. Gen. Physiol.* **125**:395-411.
- Brauchi, S., Orio, P., Latorre, R. (2004) Clues to understanding cold sensation. Thermodynamics and electrophysiological analysis of the cold receptor TRPM8. *Proc Natl Acad Sci USA*. **101**:15494-15499
- Fernández-Fernández, J.M., Tomás, M., Vázquez, E., Orio, P., Latorre, R., Sentí, M., Marrugat, J., Valverde, M.A. (2004). Gain-of-function mutation in the KCNMB1 potassium channel subunit associated with low prevalence of diastolic hypertension. *J. Clin. Invest.* **113**:1032-1039.
- Orio, P; Rojas, P; Ferreira, G; Latorre, R. (2002) New disguises for an old channel: MaxiK channel β-subunits. *Physiology* **17**:156-161
- Bravo-Zehnder, M.; Orio, P.; Norambuena, A.; Wallner, M.; Meera, P.; Toro, L.; Latorre, R.; González, A. (2000) Apical sorting of a voltage-and Ca2+-activated K+ channel α-subunit in Madin-Darby canine kidney cells is independent of N-glycosylation. *Proc Natl Acad Sci USA* **97**(24):13114-13119.
- Valverde, MA; Rojas, P; Amigo, J; Cosmelli, D; Orio, P; Bahamonde, MI; Mann, GE; Vergara, C; Latorre, R (1999) Acute activation of Maxi-K channels (hSlo) by estradiol binding to the β subunit. *Science* **285**:1929-1931.
- Bitran, M; Tapia, W; Eugenın, E; Orio, P; Boric, MP (1999) Neuropeptide Y Induced inhibition of noradrenaline release in rat hypothalamus: role of receptor subtype and nitric oxide. *Brain Res* **851:**87-93

Book chapters

Orio P. (2021) Mathematical Modeling in Neuroscience. In: Zeise M.L. (eds) Neuroscience for Psychologists. Springer, Cham. https://doi.org/10.1007/978-3-030-47645-8_8
Olivares, E; Orio, Patricio. (2015) Mathematical Modeling of TRPM8 and the Cold Thermoreceptors. In: TRP Channels in Sensory Transduction. Madrid, R.; Bacigalupo, J., editors. Springer International Publishing.
Pertusa M, Moldenhauer H, Brauchi S, Latorre R, Madrid R, Orio P. (2012) Mutagenesis and Temperature-Sensitive Little Machines. In: Mutagenesis. Mishra R, editor. InTech.

Abstracts (last 5 years)

- María Pertusa, Bastián Rivera, Claudio Moreno, Matías Campos, Kang-Sik Park, Patricio Orio, Félix Viana, Rodolfo Madrid. Regulation of TRPM8 channels by phosphorylation. XVI Reunión Anual Sociedad Chilena de Neurociencia. Online. November 2020.
- Patricio Orio, Fernando Lehue, Pedro Mediano, Fernando Rosas. Emergence of Synergistic interactions in small networks of neuronal oscillators. XVI Reunión Anual Sociedad Chilena de Neurociencia. Online. November 2020.

- Carlos Coronel-Oliveros, Samy Castro, Patricio Orio. Structural features define the best targets for changing whole-brain dynamics via neuromodulation. XVI Reunión Anual Sociedad Chilena de Neurociencia. Online. November 2020.

- Marilyn Gatica, Rodrigo Cofre, Fernando Rosas, Pedro Mediano, Patricio Orio, Ibai Diez, Stephan Swinnen, Jesus Cortes. High-order interdependencies and the functional balance of segregation-integration in the aging brain. Computational Neuroscience Meeting CNS*2020, Online Meeting. July 2020.
- Carlos Coronel, Patricio Orio , Rodrigo Cofré. Inhibitory gain allows transitions between integrated and segregated states: a neuromodulatory analysis from whole-brain models. Computational Neuroscience Meeting CNS*2020, Online Meeting. July 2020.
- Samy Castro, Patricio Orio. The cortical ignition is related to local and mesoscale features of structural connectivity in the connectome of non-human organisms. Computational Neuroscience Meeting CNS*2020, Online Meeting. July 2020.
- Patricio Orio. Dynamical Richness Emerging from Fixed Connectomes. Workshop: “Spatiotemporal Dynamics in Neuroimaging: Models and Analysis” in Computational Neuroscience Meeting CNS*2020, Online Meeting. July 2020.
- Patricio Orio, Carlos Coronel, Javier Palma-Espinosa, Marilyn Gatica, Samy Castro. Contribution of noise, chaos and network topology to the emergence of multi-stable dynamics in neuronal networks. Society for Neuroscience Meeting, Chicago, October 2019.
- Samy Castro, Wael El-Deredy, Demian Battaglia, and Patricio Orio. Is the human connectome optimized to enhance dynamic cortical ignition? Computational Neuroscience Meeting CNS*2019, Barcelona, Spain. July 2019.
- Kesheng Xu, Jean Paul Maidana, Patricio Orio. Diversity of neuronal activity is provided by hybrid synapses. Computational Neuroscience Meeting CNS*2019, Barcelona, Spain. July 2019.
- Patricio Orio. Drivers of Multi-stability in Neuronal Networks: A modelling approach. Computational Neuroscience Meeting CNS*2019, Barcelona, Spain. July 2019.
- Patricio Orio, Javier Palma-Espinosa, Marilyn Gatica, Carlos Coronel, Jean Paul Maidana. Noise, Chaos and Topology in the Emergence of Multi-stable Dynamics of Neuronal Networks. 4th Workshop on advanced methods in theoretical neuroscience. Goettingen, Germany. July 2019.
- Samy Castro, Demian Battaglia, Wael El-Deredy, Patricio Orio. The structural core for cortical ignition is preserved in the connectome of mammals. XV Annual Meeting of the Chilean Society for Neuroscience. La Serena, Chile, November 2019.
- Marilyn Gatica, Jesús Cortés, Patricio Orio, Rodrigo Cofré. High-order interactions among brain areas show higher redundancy with aging. XV Annual Meeting of the Chilean Society for Neuroscience. La Serena, Chile, November 2019.
- Aland Astudillo, Patricio Orio, Sonja Kotz, Simone Dalla Bella, Nelson Trujillo-Barreto, El-Deredy Wael. Spontaneous brain dynamics characterization in Parkinson’s Disease. XV Annual Meeting of the Chilean Society for Neuroscience. La Serena, Chile, November 2019.
- Patricio Orio, Javier Palma-Espinosa, Samy Castro, Carlos Coronel. How the Human Connectome sustains Multiple States. XV Annual Meeting of the Chilean Society for Neuroscience. La Serena, Chile, November 2019.

- Carlos Miguel Coronel, Patricio Orio. EEG Functional Connectivity in High Altitude Hipoxia. XV Annual Meeting of the Chilean Society for Neuroscience. La Serena, Chile, November 2019.
- Felipe Torres, Patricio Orio, Maria-Jose Escobar. A search for slow-wave sleep events enhancer stimulation pattern with neural field theory. XV Annual Meeting of the Chilean Society for Neuroscience. La Serena, Chile, November 2019.
- Javier Palma-Espinosa, Marilyn Gatica, Carlos Coronel, Patricio Orio. Modularity and Small-Worldness enhance Multi-stable Dynamics in biophysical neural networks. XV Annual Meeting of the Chilean Society for Neuroscience. La Serena, Chile, November 2019.
- Natalia Díaz, Kesheng Xu, Patricio Orio. Effects of the topology of electrical synapses between inhibitory neurons on the activity patterns of a balanced network. XV Annual Meeting of the Chilean Society for Neuroscience. La Serena, Chile, November 2019.
- Mauricio Aspé-Sánchez, José Casanova, Rómulo Fuentes, Patricio Orio, Pablo Moya. Cross-areal spectral coherence in anxiety-related serotonergic networks in mice. XV Annual Meeting of the Chilean Society for Neuroscience. La Serena, Chile, November 2019.

- Xu K, Orio P. Diversity of neuronal activity is provided by mixed (chemical plus electrical) synapses. XIV Annual Meeting of the Chilean Society for Neuroscience. Puerto Varas, Chile, November 2018.
- Palma-Espinosa J, Coronel C, Gatica-Briceño M, Castro S, Orio P. Multi stable dynamics in a brain inspired network model of Wilson Cowan oscillators depends on structural, connectivity and noise properties. XIV Annual Meeting of the Chilean Society for Neuroscience. Puerto Varas, Chile, November 2018.
- Astudillo A, Orio P, Kotz S, Trujillo-Barreto N, El-Deredy W. Resting-state brain switching dynamics in Parkinson's Disease. XIV Annual Meeting of the Chilean Society for Neuroscience. Puerto Varas, Chile, November 2018.
- Madrid R, González A, Ugarte G, Restrepo C, Herrera G, Piña R, Orio P, Pertusa M. Role of the excitability brake potassium current IKD in damage-triggered cold hypersensitivity. XIV Annual Meeting of the Chilean Society for Neuroscience. Puerto Varas, Chile, November 2018.
- Castro S, El-Deredy W, Battaglia D, Orio P. Connectivity structures shape bistable collective cortical dynamics on a largescale model. XIV Annual Meeting of the Chilean Society for Neuroscience. Puerto Varas, Chile, November 2018.
- Madrid R, Herrera G, Orio P. Innocuous and noxious cold specificity emerge from the variability of slowly inactivating Shaker-like current density in a TRPM8-dependent model of peripheral receptor. XIV Annual Meeting of the Chilean Society for Neuroscience. Puerto Varas, Chile, November 2018.

- Orio P, Gatica M, Coronel C, Herzog R, Xu K, Castro S, Maidana JP. Chaos versus Noise as Drivers of Dynamic Functional Connectivity in Neural Networks. Sixth Biennial Conference on Resting State and Brain Connectivity, Montreal, Canada, September 2018.
- Astudillo A, Weinstein A, Orio P, Mendez-Campos JI, Trujillo-Barreto N, El-Deredy W. Loss of Resting State EEG switching dynamics at high geographical altitude: Evidence for loss of
cognitive flexibility? Sixth Biennial Conference on Resting State and Brain Connectivity, Montreal, Canada, September 2018
- Castro S., El-Deredy W, Battaglia D, Orio P. Connectivity structures drive multistability of global brain activity. Sixth Biennial Conference on Resting State and Brain Connectivity, Montreal, Canada, September 2018

- Orio P, Villar E, Castro S, Maidana JP. Chaos versus Noise as drivers of Multistability in Neural Networks. 4th International Conference on Mathematical NeuroScience (ICMNS). Antibes-Juan Les Pins, France. June 2018.
- Castro S, Fernandez M, El-Deredy W, Orio P. Local topology of connectome stabilizes the critical range in a model of global neural dynamics. XIII Reunión Anual de la Sociedad Chilena de Neurociencia. Castro, Chile. October 2017
- Medina L, Castro S, Palma J, Escobar MJ, Orio P. Model quantification of direction selectivity in starburst amacrine cells in the mammalian retina. XIII Reunión Anual de la Sociedad Chilena de Neurociencia. Castro, Chile. October 2017
- Maidana J, Gatica M, Nicolis O, Orio P. Comparison of Different Diffusion Approximation Implementations in a Conductance-Based Model of Slow Wave Parabolic Bursting. Reunión Anual de la Sociedad Chilena de Neurociencia. Castro, Chile. October 2017
- Xu K, Orio P. Is chaos making a difference? Synchronization transitions in chaotic and nonchaotic neuronal networks Reunión Anual de la Sociedad Chilena de Neurociencia. Castro, Chile. October 2017
- Olivares J, Orio P, Canales-Johnson A, Valdés J, Schmachtenberg O. Synchrony of neural oscillations in the olfactory system of rainbow trout (Oncorhynchus mykiss). Reunión Anual de la Sociedad Chilena de Neurociencia. Castro, Chile. October 2017
- Orio P, Castro S, Xu K, Maidana JP. The interplay between Neural dynamics, Connectivity and Network Dynamics. Reunión Anual de la Sociedad Chilena de Neurociencia. Castro, Chile. October 2017
- Xu K., Maidana JP., Orio P. How chaos in neural oscillators determine network behavior. 26th Annual Computational Neuroscience Meeting. Antwerp, Belgium July 2017. doi: 10.1186/s12868-017-0372-1
- Castro S., Fernandez M., El-Deredy W., Orio P. Local topology of connectome stabilizes critical points in mean field model. 26th Annual Computational Neuroscience Meeting. Antwerp, Belgium July 2017. doi: 10.1186/s12868-017-0372-1
- Castro S., Fernandez M., Battaglia D., El-Deredy W., Orio P. Effects of the Structural Connectivity on the Critical Transitions of Brain Functional Dynamics. 2nd FALAN Congress. Buenos Aires, Argentina. October 2016.
- Herrera G., Ugarte G., Madrid R., Orio P. Modulation of the response properties of skin cold sensitive receptors by slowly-inactivating Shaker-like currents.
- Xu K., Caviedes M., Olivares E. and Orio P. Is chaos making a difference? Synchronization transitions on chaotic and nonchaotic neuronal networks. 2nd International Conference on Mathematical Neuroscience. Antibes (France) June 2016. 2nd FALAN Congress. Buenos Aires, Argentina. October 2016.
- González, A., Ugarte, G., Restrepo, C., Herrera, G., Piña, R., Gómez-Sanchez, J.A., Pertusa, M., Orio, P. and Madrid, R. Role of the excitability brake potassium current IKD in cold allodynia induced by chronic peripheral nerve injury. Ion Channels Gordon Research Conference: Molecular Basis for Electrical Signaling in the Nervous System and Beyond, South Hadley, USA. 2016.
- González, Alejandro; Ugarte, Gonzalo; Restrepo, Carlos; Herrera, Gaspar; Piña, Ricardo; Pertusa, María; Orio, Patricio and Madrid, Rodolfo.. Role of the excitability break potassium current IKD in cold allodynia. Annual RECI. Barcelona, Spain. 2015
- González, Alejandro; Ugarte, Gonzalo; Restrepo, Carlos; Herrera, Gaspar; Piña, Ricardo; Pertusa, María; Orio, Patricio and Madrid, Rodolfo. 2015. Role of the excitability break potassium current IKD in cold allodynia. Ion channels in the valley. Montegrande, Chile.

- Herrera Pacheco G., Olivares E, Madrid R, Orio P Modeling The Sensitivity Of Cold Thermoreceptor Neurons and Cold Nociceptors In Terms Of ITRPM8 And IKd Current Expression. XI Reunión Anual de la Sociedad Chilena de Neurociencia. Coquimbo, Chile. Septiembre 2015
- Caviedes M, Maidana JP, Quero D, Aguirre P, Orio P. Characterization of chaos in a bursting neuronal model and its interaction with noise. XI Reunión Anual de la Sociedad Chilena de Neurociencia. Coquimbo, Chile. Septiembre 2015.
- Salgado S, Castro S,Escobar MJ, Orio P. Direction seletivity in a network of non-homogeneous Starbust Amacrine Cells (SAC). XI Reunión Anual de la Sociedad Chilena de Neurociencia. Coquimbo, Chile. Septiembre 2015.
- Palma-Espinosa J, Orio P, Rojas P. Change in the position of the action potential initiation site in Granule Cells of the Dentate Gyrus during repetitive firing. XI Reunión Anual de la Sociedad Chilena de Neurociencia. Coquimbo, Chile. Septiembre 2015.
- Piñeiro M, Mena W, Orio P, Ewer J. Properties of the neural circuit associated to the CCAP AN1-AN4 and motoneurons during the ecdysis into pupa of the Drosophila melanogaster. XI Reunión Anual de la Sociedad Chilena de Neurociencia. Coquimbo, Chile. Septiembre 2015.
- Maidana, JP; Caviedes, M.; Gatica, M; Orio P. Unique effects of Channel Noise in a conductance-based model of slow wave parabolic bursting.. 1st International Conference on Mathematical Neuroscience. Antibes (France) June 2015.
- Caviedes M., Orio P. Caos en un modelo matemático de terminación nerviosa sensible a frío. XIX Simposio Chileno de Física. Concepción, November 2014
- Castro, S.; Salgado, S.; Escobar, MJ; Orio, P. BUILDING A MATHEMATICAL MODEL OF THE DIRECTION SELECTIVITY IN A STARBURST AMACRINE CELLS NETWORK. X Annual Meeting Sociedad Chilena de Neurociencia. Valdivia, October 2014
- Madrid, R., Restrepo, C., Ugarte, G., González, A., Piña, R., Herrera, G., Orio, P. and Pertusa, M. 2014. Role of IKD current in painful hypersensitivity to cold induced by chronic peripheral nerve injury. IX Fens Forum of Neuroscience, Milan, Italy.
- Herrera-Pacheco, G.; Maidana, J.; Olivares, E.; Madrid, R.; Orio, P. Balance between TRPM8 and Kv1.1-1.2 conductances sets the threshold for cold detection. A modeling study on cold sensitive nerve endings. X Annual Meeting Sociedad Chilena de Neurociencia. Valdivia, October 2014.
- González, A.; Parra, A.; Acosta, MC; Ugarte, G.; Piña, R.; Pertusa, M.; Orio, P.; Viana, F.; Gallar, J.; Belmonte, C.; Madrid, R. Título (Idioma original) : INCIDENCE AND FUNCTIONAL CHARACTERISTICS OF TRIGEMINAL COLDSENSITIVE NEURONS WITH PARADOXICAL RESPONSE TO HEAT. X Annual Meeting Sociedad Chilena de Neurociencia. Valdivia, October 2014
- Building A Mathematical Model Of The Direction Selectivity In A Starburst Amacrine Cells Network. Castro S, Salgado S, Escobar MJ, Orio, P. Reunión Anual de la Sociedad Chilena de Neurociencia. Valdivia, Chile. (Octubre 2014)
- Different ion channels involved in cold transduction: how do we put them together? Orio P, Olivares E, Herrera G, Madrid R. Reunión Anual de la Sociedad Chilena de Neurociencia. Valdivia, Chile. (Octubre 2014)
- The Role Of IKD Current In Painful Hypersensitivity To Cold Induced By Chronic Peripheral Nerve Injury González A, Ugarte G, Restrepo C, Herrera G, Piña R,Pertusa M,Orio P, Madrid, R. Reunión Anual de la Sociedad Chilena de Neurociencia. Valdivia, Chile. (Octubre 2014)