CENTRO INTERDISCIPLINARIO DE Neurociencia de Valparaíso

Universidad de Valparaíso CHILE

CURRICULUM VITAE

Name: Juan C. Sáez, Ph.D.
Birthday: February 2, 1956
Citizenship: Chilean.

DEGREES:

1983-1986. M.Sci. and Ph.D. in Neuroscience, Albert Einstein Coll. Med., Yeshiva Universidad, Bronx, N.Y.
1974-1979. Biochemist (equivalent to M.Sci. in Biochemistry), Universidad de Concepción, Concepción. Chile.

ACADEMIC POSITIONS:

2018-present. Professor, Neurosci. Institute, Universidad de Valparaíso, Chile.
2004-2021. Professor, Dept. Physiology, Pontificia Universidad Católica de Chile, Santiago, Chile.
2007-present. Visiting Professor, Dept. Neuroscience, Albert Einstein College of Medicine, Yeshiva University, Bronx, N.Y., USA.
1994-Nov. 2004: Associate Professor, Dept. Physiology, Pontificia Universidad Católica de Chile, Santiago, Chile.
1994-2007: Visiting Associate Professor, Dept. Neuroscience, Albert Einstein College of Medicine, Yeshiva Universidad, Bronx, N.Y., USA.
1993-1994: Assistant Professor, Dept. Physiology, Pontificia Universidad Católica de Chile, Santiago, Chile.
1989-1993: Assistant Professor, Dept. Neuroscience, Albert Einstein College of Medicine, Yeshiva Universidad, Bronx, N.Y**.,** USA.
1987-1989: Instructor, Dept. Neuroscience, Albert Einstein College of Medicine, Yeshiva Universidad, Bronx, N.Y., USA.
1986-1987: Post-doctoral fellow, Dept. Neuroscience, AECOM, Yeshiva Universidad, Bronx, N.Y., USA.
1979 -1983: Instructor, Dept. Physiology, Universidad de Concepción, Chile.

ADMINISTRATIVE POSITIONS:

2022-present. Director of the Neuroscience Interdisciplinary Center of Valparaíso.
2017-2021. Deputy Director of the Neuroscience Interdisciplinary Center of Valparaíso.
2019-present. Member of the Human Capital Training Advisory Committee ANID.
2015-2021. Coordinator of Magister, Doctorate and Post-doctorate scholarships in Physiology and Biochemistry**.** CONICYT.
2018-2019. Honorary Professor in the School of Public Health of the University of Hong Kong.
2013-2019. Committee member of the Ph.D. program in Neuroscience. Pontificia Universidad Católica de Chile, Santiago, Chile.
2003-2014. Director of the Ph.D. Program in Physiological Sciences. Pontificia Universidad Católica de Chile, Santiago, Chile.
2009-2019. Subdirector of the Center for Neuroscience, Pontificia Universidad Católica de Chile.

AWARDS AND DISTINCTIONS:

2021-2023. Member of the Advisory Board of **USERN** (Universal Scientific and Research Network).
2019. International Member of the National Academy of Science **(NAS)** USA.
2017. Academic Member of the Latin American Academy of Science **(ACAL)**.

2017. Outstanding work in the field of transfer of research results, Directorate of Transfer and Development of the Vice-rectory for Research.
2014. Winner of the VII UC Patent Contest. "Identification, compositions and therapeutic uses of heterocyclic blockers of hemichannels formed by connexins".
2010. Winner of the II Competition of Intellectual Property, Pontificia Universidad Católica de Chile
2008, Chilean **Scopus price** given by Elsevier Editorial. The Chilean Scientist with the highest productivity and impact in Pharmacology, Biochemistry, Genetics and Molecular Biology.
1993, Glaxo Research Institute. Fellowship Award.
1987, Grass Fellowship to work as an independent Scientist at the Marine Biological Laboratory.
1980, Best Thesis work of the year given by the Society of Pharmacists and Biochemists of Concepción.

MEMBERSHIP OF SCIENTIFIC SOCIETIES:
1985-present Latin American Biophysical Society.
1990-1994 Biophysical Society
1990-2015 American Society for Cell Biology, USA
1994-present. Chilean Society for Physiology.
1994-present. Chilean Society for Biology.
1994-present. Chilean Society for Cell Biology.
2003-present. Chilean Society for Neuroscience.
2003-present. Free Radicals and Antioxidants Group-Chile.
2019-present. Society of General Physiology, USA

AD HOC EVALUATOR OF SCIENTIFIC JOURNALS:
Proceedings of the Academy of Science; Journal of Biological Chemistry; Journal of Cell Biology, Journal of Cell Physiology; American Journal of Physiology; Journal of Cell Science; Journal of Cell Biochemistry; Journal of Biological Chemistry; Journal of Immunology; FASEB Journal; Biochemical and Biophysical Acta; Biochemical and Biophysical Research Communication; Journal of Neuroscience; Neuroscience; Journal of Neurochemistry; Glia; Journal of Neuroscience Research; Cell Calcium; Hepatology; Experimental Lung Research; Experimental Neurology; Cell Adhesion and Communication; Journal of Cellular and Molecular Medicine; Journal of Experimental Medicine; Journal of Physiology; eLife; PLOS One; Cardiovascular Research; Microvascular Research; Nature Reviews Rheumatology; Nature Metabolism; Science Signaling; Human Molecular Genetics; Biomolecules; Biomedicine; International Journal of Molecular Science; Nature Communication; Frontiers in Cellular Neuroscience.

ORGANIZER OF SCIENTIFIC EVENTS

2020. Symposium on “Recent experimental designs to discover effective therapies to treat epilepsy”. Chilean Soc. of Neuroscience. Virtual format.
2018 Symposium on “Progress in epilepsy” Chilean Soc. of Biology/Chilean Soc. of Neuroscience, Pueto Varas, Chile.
2018. Latin American Training Program, funded by SfN and IBRO. Graduate students and post-doctoral fellows of Latin American countries attend a three-week course in the CINV, Valparaiso, Chile (Co-organized with A.D. Martínez).
2015. International Gap Junction Conference, Valparaíso-Chile (Co-organized with A.D. Martínez, Viviana M. Berthoud and Maria Dagli).
2015. Workshop; “Biophysics of hemichannels and gap junction channels: A theoretical and practical training”,Santiago-Valparaíso, Chile. (Co-organized with A.D. Martínez and M.A.

Retamal).
2013. Symposium, co-organizer with Dr. AD Martínez: “Role and regulation of channels and hemichannels formed by connexin or pannexins in the nervous system” Reunión Anual de la Sociedad de Neurociencias de Chile, Valparaíso, Chile.
2013. Symposium, co-organizer with A.D. Martínez: “Cell Membrane Channels Made by Connexins or Pannexins are Key Players in Genetic and Acquired Diseases” presented during the XXVII Annual Meeting of the Chilean Society for Cell Biology. November, Pucón, Chile.
2012. Workshop organizer: “Structure and function of connexin, pannexin and other cellular transporters. October 20-30, Valparaíso, Chile.
2012. Symposium organizer: “Intercellular communication via pannexin- and connexin-based channels in health and disease”. Chilean meeting of the Society for Cell Biology. October, Puerto Varas, Chile.
2011. Symposium organizer. “Regulation of glial connexin channels: from the nucleus to the membrane”. Chilean congress of the Society for Physiology. La Serena, Chile.
2009. Mini Symposium Organizer. “El SIDA como una enfermedad neurodegenerativa”. Abril. Santiago, Chile.
2006. Symposium Organizer. “Gap junction hemichannels and mechanisms that regulate their functional state under physiological and pathological conditions” 2nd Congress of the Chilean Society for Neuroscience, September, Curicó, Chile**.**
2006. Workshop Co-organizer with Dr. M. Villalón. “Regulation and function of free intracellular Ca^{2+} and intercellular Ca^{2+} waves”, January, Santiago, Chile.
2003. Symposium Organizer. “Gap junction in the inflammatory response” del V Congreso IberoAmericano de Biofísica. Rio de Janeiro, Brazil.
2001. Workshop Organizer. “Chemical and electrical synapsis: theoretical and practical advances”. Pontificia Universidad Católica de Chile, Santiago, Chile.
1995. Workshop Co-organizer with Dr. Ramón Latorre. "From Ion Channels to Cell-to-Cell Conversations". CECS, Santiago, Chile.

REVIEW EDITOR

Biomolecules 2020-2023
eLife 2021- present
Fontiers in Neuroscience Neuroenergetics 2010-present
Frontiers in Physiology 2011-present

PRESENTATIONS TO SCIENTIFIC MEETINGS

420 abstracts have been presented in different Chilean, South American, and in International Meetings in the USA, Mexico, Canada, India, Japan, China, and Europe.

PUBLICATIONS (ISI) 222 Scientific publications (Google Scholar Total citations = 22.987, H= 76).

222. Balboa E, Saavedra F, Cea LA, Vargas AA, Regueira T, **Sáez JC**. Connexin hemichannels and early atrophic signaling in muscle during sepsis. **Frontiers in Physiol**. 2025 Feb 24;16:1514769. doi: 10.3389/fphys.2025.1514769.

221. Salgado M, Sepúlveda-Arriagada V, Konar-Nié M, García-Robles MA, **Sáez JC.** Poly

(I:C)- induced inflammation requires the activation of toll-like receptor 3/Ca^{2+}/CaMKII/pannexin 1-dependent signaling. **Theranostics** 2025; 15(6): 2470-2486. doi: 10.7150/thno.100687**.**

220. Vásquez W, Toro CA, Cardozo CP, Cea LA, **Sáez JC.** Pathophysiological role of connexin and pannexin hemichannels in neuromuscular disorders. **J. Physiol.** 2024 Aug 22. doi: 10.1113/JP286173.

219. Sáez, J.C., Burrell, J.C., Cahill, C., Cullen, D.K., Devi, L., Gilbert R.J., Gurvich, V.J., Havton, L.A., Iyengar, R., Khanna, R., Palermo, E., Siddiq, M., Toro, C.A., Zhao, W., Cardozo, C.P. Pharmacology of boldine: Summary of the field and update on recent advances. **Frontiers in Pharmacology** 2024 Sep 13;15:1427147. doi: 10.3389/fphar.2024.1427147.

218. Vásquez, W., Toro, C.A., Cardozo, C.P., Cea, L.A., **Sáez, J.C**. Pathophysiological role of connexin and pannexin hemichannels in neuromuscular disorders. **J. Physiol.** 2024 Aug 22. doi: 10.1113/JP286173.

217. Asencio C, Véliz L, Flores-Faúndez E, Azócar L, Echeverría CE, Torres-Estay V, Orellana V, Ramírez-Santelices C, Sotomayor P, Cancino J, Kerr B, Fernandez-Olivares A, Retamal MA, **Sáez JC**, Godoy AS. Lack of canonical activities of connexins in highly aggressive human prostate cancer cells. **Biol Res.** 2024 Dec 19;57(1):97. doi: 10.1186/s40659-024-00565-3.

216. Gómez G.I., García-Rodríguez, C., Marillán, J.E., Vergara S.A., Alvear, T.F., Farias-Pasten, A., **Sáez, J.C**., Retamal, M.A., Rovegno,M., Ortíz, F.C., Orellana, J.A. Acute activation of hemichannels by ethanol leads to Ca^{2+} -dependent gliotransmitter release in astrocytes. **Front, Cell Develop. Biol.** 2024 Jun 21;12:1422978. doi: 10.3389/fcell.2024.1422978.

215. Tichauer J.E., Lira M., Cerpa W., Orellana J.A., **Sáez J.C**., Rovegno M. Inhibition of astroglial hemichannels prevents synaptic transmission decline during spreading depression. **Biol. Res** 2024 Jun 12;57(1):39. doi: 10.1186/s40659-024-00519-9.

214. Salgado M., Márquez-Miranda V, Ferrada L., Rojas M, Poblete-Flores G, González-Nilo F.D., Ardiles A.O., **Sáez J.C.** Ca^{2+} permeation through C-terminal cleaved, but not full-length human pannexin1 hemichannels, mediates cell death. **Proc. Natl Acad. Sci USA** 2024. Vol. 121 No. 25 e2405468121. doi.org/10.1073/pnas.2405468121.

213. Gómez GI, Alvear TF, Roa DA, Farias-Pasten A, Vergara SA, Mellado LA, Martinez-Araya CJ, Prieto-Villalobos J, García-Rodríguez C, Sánchez N, **Sáez JC**, Ortíz FC, Orellana JA. Cx43 hemichannels and Panx1 channels contribute to ethanol-induced astrocyte dysfunction and damage. **Biological Research** 2024 Apr 4;57(1):15. doi: 10.1186/s40659-024-00493-2.

212. Maldifassi MC, Guerra-Fernández MJ, Ponce D, Alfonso-Bueno S, Maripillán J, Vielma AV, Báez-Matus X, Marengo FD, Acuña-Castillo C, **Sáez JC**, Martínez AD, Cárdenas AM. Autocrine activation of P2X7 receptor mediates catecholamine secretion in chromaffin cells. **British J Pharmacology** 2024 Aug;181(16):2905-2922. doi: 10.1111/bph.16371.

211. García-Rodríguez C, Duarte Y, Ardiles A, **Sáez JC**. The antiseizure medication valproate increases hemichannel activity in brain cells, which could worsen disease outcomes. **J Neurochem.** 2024 Jan 30. doi: 10.1111/jnc.16062. Online ahead of print.PMID: 38291613.

210. Li H, Guo A, Salgado M, **Sáez JC**, Lau CG. The novel connexin hemichannel inhibitor D4 produces rapid antidepressant-like effects in mice**. J Neuroinflammation** 2023 Aug 20;20(1):191. doi: 10.1186/s12974-023-02873-z.

209. Jiménez-Madrona E, Morado-Díaz CJ, Talaverón R, Tabernero A, Pastor Am, **Sáez JC,** Matarredona ER Antiproliferative effect of boldine on neural progenitor cells and on glioblastoma cells. **Frontiers Neurosc. Neurogenesis** 2023 Aug 16;17:1211467. doi: 10.3389/fnins.2023.1211467. eCollection 2023.

208. Güiza J, Solís F, Valenzuelab B, Arancibiab D, Zamoranob P, González J, Saavedrad J, Neely A, Salgado M, Martínez AD, **Sáez JC**, Vega JL. **U**nnexin is a protein subunit of a large-pore channel expressed by unicellular organisms. **Proc Natl. Acad. Sci. USA** 2023; (31)120, 1-8. doi.org/10.1073/pnas.2307898120. e2307898120.

207. Toro CA, Johnson K, Hansen J, Siddiq MM, Vásquez W, Zhao W, Graham ZA, **Sáez JC**, Iyengar R, Cardozo CP. Boldine modulates glial transcription and functional recovery in a murine model of contusion spinal cord injury. **Frontiers in Cellular Neuroscience**, Section Neuropathology. 2023 Jun 21;17:1163436. doi: 10.3389/fncel.2023.1163436. eCollection 2023.

206. García-Rodríguez C, Mujica P Illanes-González J, López A, Vargas C, **Sáez J.C.**, González-Jamett A, Ardiles A.O. Probenecid, an Old Drug with Potential New Uses for Central Nervous System Disorders and Neuroinflammation. **Biomedicine** 2023. May 24;11(6):1516. doi: 10.3390/biomedicines11061516.

205. Cea, LA, Vásquez W, Hernández-Salinas R, Vielma AZ, Castillo-Ruíz M, Velarde V, Salgado M, **Sáez JC**. Skeletal muscle atrophy induced by diabetes is mediated by non-selective channels and prevented by boldine. **Biomolecules** 2023 Apr 21;13(4):708. doi: 10.3390/biom13040708.

204. Abbott AC, García IE, Villanelo F, Flores-Muñoz C, Ceriani R, Maripillán J, Novoa-Molina J, Figueroa-Cares C, **Sáez JC**, Pérez-Acle TO, Sánchez HA, Martínez AD. Expression of KID syndromic mutation Cx26S17F produces hyperactive hemichannels in supporting cells of the organ of Corti. **Frontiers in Cell and Developmental Biol.** 2023 Jan 9;10:1071202. doi: 10.3389/fcell.2022.1071202. eCollection 2022.

203. Vega JL, Gutiérrez C, Rojas M, Güiza J, **Sáez JC**. Contribution of large-pore channels to inflammation induced by microorganisms. **Frontiers in Cell and Developmental Biol.** 2023 Jan 9;10:1094362. doi: 10.3389/fcell.2022.1094362. eCollection 2022.

202. Guo A, Zhang H, Li H, Chiu A, García-Rodríguez C, Lagos CF, **Sáez JC**, Lau CG. Inhibition of connexin hemichannels alleviates neuroinflammation and hyperexcitability in temporal lobe epilepsy. **Proc. Natl. Acad. Sci. USA**. 2022 Nov 8;119(45):e2213162119. doi: 10.1073/pnas.2213162119.

201. Lucero CM, Marambio-Ruiz L, Balmazabal J, Prieto-Villalobos J, León M, Fernández P, Orellana JA, Velarde V, **Sáez JC**, Gómez GI. TNF-α plus IL-1β induces opposite regulation of Cx43 hemichannels and gap junctions in mesangial cells through a RhoA/ROCK-dependent pathway **Int J Mol Sci.** 2022 Sep 3;23(17):10097. doi: 10.3390/ijms231710097.

200. Recabal A, López S, Salgado M, Palma A, Obregón AM, Elizondo-Vega R, **Sáez JC**, García-Robles MA. Short term sucrose diet impact cell proliferation of neural precursors in the adult hypothalamus. **Nutrients** 2022 Jun 21;14(13):2564. doi: 10.3390/nu14132564**.**

199. Palacios-Prado N, Soto PA, López X, Choi EJ, Marquez-Miranda V, Rojas M, Duarte Y, Lee J, González-Nilo FD, **Sáez JC**. Endogenous pannexin1 channels form functional intercellular cell-cell channels with characteristic voltage-dependent properties. **Proc Natl Acad Sci U S A**. 2022 May 3;119(18):e2202104119. doi: 10.1073/pnas.2202104119. Epub 2022 Apr 29.PMID: 35486697.

198. Arredondo C, Cefaliello C, Dyrda A, Jury N, Martinez P, Diaz KI, AmaroA, Tran H, Morales D, Pertusa M, Stoica E, Fritz E, Corvalán D, Abarzua S, Méndez-Ruette M, Fernández P, Rojas F, Kumar MS, Aguilar R, Almeida S, Weiss A, Bustos FJ, González-Nilo F, Otero C, Tevy F, Bosco DA, **Sáez JC**, Kähne T, Gao F-B, Berry J-D, NicholsonK, Sena-Esteves M, Madrid R, Varela D, Montecino M, Brown RH, van Zundert B. Non-cell autonomous toxicity of ALS/FTD astrocytes to motoneurons is mediated by an excessive release of inorganic polyphosphate. **Neuron** 2022(10)1656-1670, May 12, 2022. doi:10.1016/j.neuron.2022.02.010.

197. González-Jamett A, Vásquez W, Cifuentes-Riveros G, Martínez-Pando R, **Sáez JC**, Cárdenas AM. Oxidative stress, inflammation and connexin hemichannels in muscular dystrophies. **Biomedicines**. 2022 Feb 21;10(2):507. doi: 10.3390/biomedicines10020507.

196. García-Rodríguez C, Bravo-Tobar ID, Duarte Y, Barrio LC, **Sáez JC**. Contribution of non-selective membrane channels and receptors in epilepsy. **Pharmacol Ther**. 2022 Mar;231:107980. doi: 10.1016/j.pharmthera.2021.107980.

195. Güiza J, García A, Arriagada J, Gutiérrez C, González J, Márquez-Miranda V, Alegría-Arcos M, Duarte Y, Rojas M, González-Nilo F, **Sáez JC**, Vega JL. Unnexins: Homologs of innexin proteins in Trypanosomatidae parasites. **J Cell Physiol.** 2022 Feb;237(2):1547-1560. doi: 10.1002/jcp.30626.

194. Wang Y, Su Y, Yu G, Wang X, Chen X, Yu B, Cheng Y, Li R, **Sáez JC**, Yi C, Xiao L, Niu J. Reduced Oligodendrocyte Precursor Cell Impairs Astrocytic Development in Early Life Stress. **Adv Sci** (Weinh). 2021 Aug;8(16):e2101181. doi: 10.1002/advs.202101181.

193. Bravo-Tobar ID, Fernández P, **Sáez JC**, Dagnino-Subiabre A. Long-term effects of stress resilience: Hippocampal neuroinflammation and behavioral approach in male rats. **J Neurosci Res**. 2021 Oct;99(10):2493-2510. doi: 10.1002/jnr.24902.

192. López X, Palacios-Prado N, Güiza J, Escamilla R, Fernández P, Vega JL, Rojas M, Marquez-Miranda V, Chamorro E, Cárdenas AM, Maldifassi MC, Martínez AD, Duarte Y, González-Nilo FD, **Sáez JC**. A physiologic rise in cytoplasmic calcium ion signal increases pannexin1 channel activity via a C-terminus phosphorylation by CaMK II. **Proc Natl Acad Sci USA** August 10, 2021 118 (32) e2108967118; https://doi.org/10.1073/pnas.2108967118.

191. Güiza J, Arriagada J, Rodríguez L, Gutiérrez C, Duarte Y, **Sáez JC**, Vega JL.Anti-parasitics

drugs that modulate the non-selective channels formed by connexins or pannexins. **BBA - Molecular Basis of Disease** 2021 Oct 1;1867(10):166188. doi: 10.1016/j.bbadis.2021.166188.

190. Salgado M, García-Robles MÁ, **Sáez JC**. Purinergic signaling in tanycytes and its contribution to nutritional sensing. **Purinergic Signaling**. May 21. doi: 10.1007/s11302-021-09791-w.

189. Harcha PA, Garcés P, Arredondo C, Fernández G, **Sáez JC**, van Zundert B.Int J Mol Sci. Mast Cell and Astrocyte Hemichannels and Their Role in Alzheimer's Disease, ALS, and Harmful Stress Conditions. **Int J Molec Sci** 2021 Feb 15;22(4):1924. doi: 10.3390/ijms22041924.

188. López X, Escamilla R, Fernández P, Duarte Y, González-Nilo F, Palacios-Prado N, Martínez AD, **Sáez JC**. Stretch-induced activation of pannexin 1 channels can be prevented by PKA-dependent phosphorylation. **Int J Molec Sci** 2020 Dec 2;21(23):E9180. doi: 10.3390/ijms21239180.

187. Choi EJ, Palacios-Prado N, **Sáez JC**, Lee J. Identification of Cx45 as a major component of gap junctions in HeLa cells. **Biomolecules**. 2020 Sep 29;10(10):E1389. doi: 10.3390/biom10101389.

186. Recabal A, Fernández P, López S, Ordenes P, Elizondo R, Farkas C, Uribe E, Caprile T, **Saéz JC**, García-Robles MA. FGF2-induced tanycyte proliferation involves a connexin 43-hemichannel/purinergic pathway**. J. Neurochem**. 2021 Jan; 156(2):182-199. doi: 10.1111/jnc.15188.

185. Cea LA, Fernández G, Arias GB, Castillo-Ruiz M, Brañes MC, **Sáez JC.** Blockade of hemichannels normalizes the differentiation fate of myoblasts and features of skeletal muscles from dysferlin-deficient mice. **Int J Molec Sci.** 2020 Aug 21;21(17):E6025.

184. Balboa E., Saavedra F., Cea L.A., Ramírez V., Escamilla R., Vargas A., Regueira R., **Sáez J.C.** Vitamin E blocks connexin hemichannelsand prevents deleterious effects of glucocorticoid treatment on skeletal muscles. **Int. J. Molec. Sci**. 2020, Jun 8;21(11):E4094. doi: 10.1016/j.bbadis.2016.07.003.

183. Sáez J.C., Vargas A.A., Ortiz F.C., D.E., Giaume C., Orellana J.A. Permeation of molecules through astroglial connexin 43 hemichannels is modulated by cytokines with parameters depending on the permeant species. **Int. J. Molec. Sci.** 2020, Jun 1;21(11):E3970. doi: 10.3390/ijms21113970.

182. Fernández G., Arias G.B., Bevilacqua J.A., Castillo M., Caviedes P, **Sáez J.C**., Cea L.A. Myofibers deficient in connexins 43 and 45 expression protect mice from skeletal muscle and systemic dysfunction promoted by a dysferlin mutation. **Biochem. Biophys. Acta- Molecular Basis of Disease** 1866 (8) 165800. (2020). doi: 10.1016/j.bbadis.2020.165800.

181. **Sáez J.C.**, Contreras-Duarte S., Labra V.C., Santibañez C.A., Mellado L.A., Inostroza C.A., Alvear T.F., Retamal M.A., Velarde V, Orellana J.A. Interferon-γ and high glucose-induced opening of Cx43 hemichannels causes endothelial cell dysfunction and damage. **Biochem. Biophys. Acta. Molecular Cell Research** 14;1867(8):118720 (2020). doi:

10.1016/j.bbamcr.2020.118720.

180. Cisterna CB., Vargas AA, Puebla C., Lagos C.F, Escamilla R, Matus M-F, Vilos C, Cea LA, Barnafi E, Gaete H, Escobar DF, Cardozo C, **Sáez JC.** Active acetylcholine receptors prevent the atrophy of skeletal muscles and favor reinnervation. **Nature Comm.** 11: 1073, (2020). doi: 10.1038/s41467-019-14063-8.

179. Li T, Niu J, Ezan P., Koulakoff A., Yi C., **Sáez JC**, Giaume C., Xiao L. The deletion of connexin 43 in astrocytes promotes CNS remyelination by inhibiting local inflammation. **Glia** 68(6):1201-1212 (2020). doi: 10.1002/glia.23770.

178. Giaume C., Naus C, **Sáez JC**, Leybaert L. Glial connexins and pannexins in healthy and diseased brain. **Physiol Rev.** 2021: 101(1):93-145. doi: 10.1152/physrev.00043.2018.

177. Harcha PA., López X, Sáez PJ, Fernández P, Barría I, **Sáez JC.** Pannexin-1 channels are essential for mast cell degranulation triggered during Type I hypersensitivity reactions. **Frontiers Immunol**, 29 November 2019 https://doi.org/10.3389/fimmu.2019.02703.

176. Asencio-Barría C, Defamie N, **Sáez JC**, Mesnil M, Godoy AS. Direct Intercellular Communications and Cancer: A Snapshot of the biological roles of connexins in prostate Cancer. **Cancers** (Basel). 2019 Sep 14;11(9). pii: E1370. doi: 10.3390/cancers11091370.

175. Gómez GI, Velarde V, Sáez JC. Role of a RhoA/ROCK-Dependent Pathway on Renal Connexin43 Regulation in the Angiotensin II-Induced Renal Damage. **Int J Mol Sci.** 2019 Sep 7;20(18). doi: 10.3390/ijms20184408.

174. Eugenín EA, Valdebenito S, Gorska AM, Martínez AD, Bitran M, **Sáez JC**. Gap junctions coordinate the propagation of glycogenolysis induced by norepinephrine in the pineal gland. **J Neurochem**. 2019 Aug 5. doi: 10.1111/jnc.14846.

173. Cea LA, Balboa E, Vargas AA, Puebla C, Brañes MC, Escamilla R, Regueira T, **Sáez JC.** De novo expression of functional connexins 43 and 45 hemichannels increases sarcolemmal permeability of skeletal myofibers during endotoxemia. **Biochim Biophys Acta Mol Basis Dis.** 2019 Oct 1;1865(10):2765-2773. doi: 10.1016/j.bbadis.2016.07.003.

172. Wellmann M, Álvarez-Ferradas C, Maturana CJ, **Sáez JC**, Bonansco C. Astroglial Ca^{2+} hyperactivity requires $P2Y_1$ purinergic receptors and pannexin-1 channel activation in a chronic model of epilepsy. **Frontiers Cell Neurosci**. 2018, Oct 11;9:1414. doi: 10.3389/fncel.2018.00446.

171. Sáez JC, Contreras-Duarte S, Gómez GI, Labra VC, Santibañez C.A, Gajardo-Gómez R., Avendaño B.C., Díaz E.F., Montero T.D., Velarde V. Orellana JA. Connexin 43 hemichannel activity promoted by pro-Inflammatory cytokines and high glucose alters endothelial cell function. **Front Immunol.** 2018 Aug 15;9:1899. doi: 10.3389/fimmu.2018.01899

170. Güiza J, Barría I, **Sáez JC,** Vega JL. Innexins: Expression, Regulation and Functions. **Front Physiol** 2018 Oct 11;9:1414. doi: 10.3389/fphys.2018.01414.

169. Sáez PJ, **Sáez JC**, Lennon-Duménil A-M, Vargas P. Role of calcium permeable channels in

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16. Barrio, L.C., Beyer, E.C. and **Sáez, J.C.** Comparison of voltage dependence of chick connexin45 and 42 channels expressed in pairs of Xenopus oocytes. In: Progress in Cell Research (Kanno, Y., Katoaka, K., Shiba, Y., Shibata, Y. and Shimazu, T., eds.) vol. 4, Elsevier Science B.V. (Amsterdam). pp. 391-394 (1995).

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11. Sáez, J.C., Berthoud V.M., Moreno A.P., Spray D.C. Gap junctions: Multiplicity of controls in differentiated and undifferentiated cells and possible functional implications. In: Advances in Second Messenger and Phosphoprotein Research (Shenolikar, S. and Nairn, A.C., eds.) Vol. 27. Raven Press, New York., pp. 257-262 (1993).

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8. Sáez, J.C. and Spray, D.C. Cell Junctions. In: Encyclopedia of Human Biology. Academic Press, Inc. Pp.267-278 (1991).

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6. Spray, D.C., **Sáez, J.C.** and Hertzberg, E.L. Junctions between hepatocytes: Structural and regulatory factors. In: The Liver: Biology and Pathobiology (Eds, I.M. Arias, W.B. Jakoby, H. Popper, D. Schachter and D.A. Shafritz), Raven Press Ltd., New York, Second edition, pp. 851-866 (1988).

5. Spray, D.C. and **Sáez, J.C.** Agents that regulate gap junctional conductance: Sites of action and specificities. In: Biochemical Regulation of Intercellular Communication. Advances in Modern Environmental Toxicology (Series Editor, Vol.XIV, M.A.Mehlman) pp. 1-27 (1988).

4. Spray, D.C., **Sáez, J.C.** Burt, J.M., Watanabe, T., Reid, L.M., Hertzberg, E.L. and Bennett, M.V.L. Gap junctional conductance: multiple sites of regulation. In: Gap junctions. (Modern Cell Biology. (Series Editor Vol. 7, B. Satir) (eds., E.L. Hertzberg and R.G. Johnson) Alan R. Liss., NY, pp.-227-244 (1988).

3. Bennett, M.V.L., **Sáez, J.C.** and Spray, D.C. Multiplicity of controls of gap junctional communication. Puerto Rico Health Sci. J**.** 7, 126-132 (1988)

2. Fujita, M., Spray, D.C., Choi, H., **Sáez, J.,** Jefferson, D.M., Hertzberg, E., Rosenberg, L.C. and Reid, L.M. Extracellular matrix regulation of cell-cell communication and tissue specific gene expression in primary liver cultures. In: Cellular Endocrinology: Hormonal Control of Embryonic and Cellular Differentiation. Prog. Clin. Biol. Research. Alan R. Liss, Inc. pp. 333-360 (1986).

1. Kessler, J.A., Spray, D.C., **Sáez, J.C.** and Bennett, M.V.L. Development and regulation of electrotonic coupling between cultured sympathetic neurons. In: Gap Junctions, (Eds., M.V.L. Bennett and D.C. Spray) Cold Spring Harbor Laboratory, Cold Spring Harbor, NY, pp. 231-240 (1985).

SCIENTIFIC LECTURES (INVITED)

Forty nine scientific lectures in different Chilean Universities and Research Institutes, Institutions of USA (Yale University, UMDNJ, John Hopkins School of Medicine, NIH, Albert Einstein College of Medicine, University of Chicago and Mayo Clinic) in Mexico (UNAM), Spain (Instituto Ramón y Cajal and Hospital Ramón y Cajal), Brazil (Universidad de Sao Paulo and Instituto de Biofísica de Rio de Janeiro), France (Unité INSERM-Laboratoire de Neurobiologie Pharmacologique, Collège de France), Uruguay (Universidad de la República de Uruguay), Mexico (UNAM), Chile (Universidad de Chile, Universidad de Concepción, Universidad Austral de Chile, Universidad de Santiago de Chile). Universidad de Chile en Valparaíso, Universidad Católica de Valparaíso. Universidad de Chile. Jichi Medical School, Japan; Gunma University, Japan; University of San Antonio, Texas Tech in Lubbock. Down State University, Brooklyn, NY, USA. University of British Columbia, Canada. University of Leuven, Belgium. Fundación Ciencia & Vida-Santiago, Chile; Barcelona University. Universidad Javeriana, Bogotá, Colombia. Vatican-Rome; University of Hong Kong,City University of Hong Kong, UTMB Galveston, Virginia Tech.

Inaugural Conferences

- Milestones, science with history "-" A long trajectory to advance the understanding of the inflammatory response in chronic diseases "Masterclasses in Sciences. Universidad de Valparaíso. **27 de Agosto 2019.**

-Opening lecture (Conference Dr. Luis Izquierdo) Plenary lecture at the joint meeting of the Chilean Physiology Soc. And the Chilean Pharmacology Soc.**(October 2015).**

-Ist National Contest of Science, Technology and Innovation Camps EXPLORA Scientific Camp Chile Va! "Conversations with the Master of Sciences" of the project entitled "A Scientific, Technological and Innovative Look at the Tarapacá Region", Iquique **(Decembre, 2014).**

- Brain Week, Montevideo, Uruguay, "A healthier life with the brain clock on time" **(March, 2014).**

-Opening lecture of the Academic year. Graduate program in Physiology and Neuroscience. University of Sevilla, Spain, Discovering the hemichannels and their functions in the nervous system and peripheral tissues

(September 2014).

-Opening of the Academic Year. Graduate programs of the Faculty of Cell Biology, Universidad de Concepción. “A Personal Opinion on Postgraduate Studies from Vocation to Country Commitment” **(March 30, 2012).**

- Opening of the Academic Year. Graduate programs of the Faculty of Health Sciences at the Universidad de Antofagasta. "The vocation: a personal experience in search of a contribution to the service of the country" **(May 9, 2013).**

MENTOR OF UNDERGRADUATE THESIS.

2025-present. Catalina Nova. Liceniversidad de Valparaíso.

2018-2019. Catalina A. Ascencio Barría. (Co-mentor with Dr. Alejandro Godoy). “Analysis of the expression and performance status of connexins in prostate cancer”.

2017-2019. Camila Aravena. Biochemist, Pontificia Universidad Católica de Chile. “Role of glial hemichannels in epilepsy”.

2015-2016. Fijiko Saveedra. “Participation of hemichannels formed by connexins in atrophy of adult fast skeletal muscles produced by denervation”. Bioquímico. Pontificia Universidad Católica de Valparaiso.

2014. Angélica Benvenuto. Biochemist, Pontificia Universidad Católica de Chile. Pathway of intercellular communication formed by connexins and pannexins in adipose tissue

2011. Mauricio A. Lillo (Co-mentor with Dr. Xavier Figueroa) Biochemist, Pontifica Universidad Católica de Chile. Involvement of hemichannels formed by connexins or pannexins in NO transport across the plasma membrane in the vascular wall.

2009. Aníbal Vargas. Lic. Biología, Pontificia Universidad Católica de Chile. Characterization of antimycin A as inhibitor of hemichannels formed by connexins.

2009. Daniela P. Salas. (Co-mentor with Dr. Sergio Lavandero). Biochemist, Universidad de Chile. Hemichannels formed by connexins in volume regulation in myocardiocytes exposed to hyposmotic stress.

2009. Paola Soto. Biologist, Pontificia Universidad Católica de Chile. Study on channels formed by connexin32 in a cell line derived from oligodendrocytes.

2008. Marlene Arismendi, Industrial Chemist, UTEM, Purification and biological activity of compounds derived from Boldo on channels formed by connexins.

2008. Diego Hernández, Biologist, Pontificia Universidad Católica de Chile. Regulation of astroglial and neuronal channels formed by connexins in neurodegenerative processes.

2009. Natalia Vega, Biochemist, Pontificia Universidad Católica de Chile. Regulation of cell membrane permeability by phosphorylation of hemichannels formed by connexin43 via protein kinase C (PKC).

2008. Paloma Harcha, Biologist, Pontificia Universidad Católica de Chile. D2SC1 cells express functional hemichannels formed by pannexin1.
2006. Ariel Orellana. Biologist, Pontificia Universidad Católica de Chile. Acquisition of myogenic commitment of reserve C2C12 cells requires activation of P2X receptors.
2006. Pablo J. Sáez, Biologist, Pontificia Universidad Católica de Chile. ATP and TNF-α induce formation gap junction channels in microglia.
2006. Kenji Shoji, Biologist, Pontificia Universidad Católica de Chile. The redox sensor of hemichannels formed by connexin43 is located in the carboxyl terminus of the protein subunit.
2005. Juan A. Orellana, Biologist, Pontificia Universidad Católica de Chile. Chlorpromazine inhibits the intercellular communication mediated by gap junctions in Gn-11 cells and astrocytes.
2005. Constanza J. Cortés, Biologist, Pontificia Universidad Católica de Chile. Opening of Cx43 hemichannels in mediated by oxidative mechanisms in astrocytes".
2005. Nicolás Palacios, Biologist, Pontificia Universidad Católica de Chile. Modulation of the functional state of connexin-based channels by sexual hormones and tamoxifen in a cells line derived from human breast cancer.
2002-2003. Manuel Riquelme-Biochemist, Pontificia Universidad Católica de Chile. P2X receptors and conneixn-based channels are needed for acquisition of myogenic commitment.
1998-1999. Patricio Orio-Biochemist, Universidad de Chile. Molecular characterization and function gap junctions Express by Peripherals huma lymphocytes.
1997. Alejandro Sepúlveda-Biochemist, Universidad Austral de Chile. Gap junctions between antigen presenting cells and T cells: characterization and regulation of connexins.
1997. Eliseo Eugenín-Biochemist, Universidad Austral de Chile. Regulation of glycogen stores by norepinephrine in rat pineal gland: role of gap junctions.
1994-1995. Francisco Scheihing- Biochemist, Universidad Católica de Valparaíso. Effect of leptocarpin on gap junctions of epithelial cell lines.
1996. Erwin Strahsburger-Biochemist, Universidad Austral de Chile. Regulation of gap junctional Communications in astroglial cells of the pineal gland.

MENTOR OF GRADUATE THESIS

2025-present. Andrea Lira. Ph.D. in Science and Engineering for Health. Universidad de Valparaíso. Efficacy of human amniotic membrane extract combined with boldine in the treatment of painful bladder syndrome: In vitro and in vivo model studies.

2024-present. Nicolás B. Bravo. Ph.D. In Sciences, mention in Biophysics and Computational Biology. Permeation and selectivity in panexons: a molecular dynamics study.

2023-present. Francisco Ocaranza. Ph.D. in Neurosciences, Instituto de Neurociencias. Universidad de Valparaíso. "Importance of neuroinflammation initiated during pregnancy on the development of neuropsychiatric diseases in the offspring".

2022-present. Walter Vásquez. Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Participation of hemichannels formed by connexin of myoblasts in the change from myogenic commitment to adipogenic commitment in chronic inflammatory diseases".

2021-2022. Juan Guiza. Ph.D. in Molecular and Cell Biology. Universidad de Antofagasta." Identification and characterization of a non-selective channel formed by the unnexin of the pathogenic

protozoan Trypanosoma cruzi". **(Best Ph.D. Thesis award by the Chilean Academy of Science 2023).**

2020-2023. Claudia García. Ph.D. in Neurosciences, Instituto de Neurociencias. Universidad de Valparaíso. **"**Improving current treatment of epilepsy considering hemichannel-mediated neuroinflammation.

2012-2021. Elsa Fritz (Co-mentor with Dr. Jorge Campusano) Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Role of innexins in behavior coordinated by the circadian cycle of Drosophila melanogaster".

2012-2020. Ximena López. Ph.D. in Physiological Sciences. "Role of hemichannels formed by Pannexin 1 in the inhibition of CD4+ T lymphocyte activation by adenosine".

2011-2016. Bruno Cisterna.Doctor Ciencias Fisiológicas, Pontificia Universidad Católica de Chile. "Role of connexin hemichannels in muscle atrophy induced by denervation".

2013-2017. Gonzalo Gómez, Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile." The RhoA/ROCK pathway regulates the activity of hemichannels and gap junction channels formed by Cx43 in renal injury due to Angiotensin II"

2013-2018. Dusan Rancordón, (Co-mentor with Dr. Gareth Owen) Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Purinergic signaling in the vasculogenic imitation process".

2009-2016. Carola Maturana, Ph.D. in Physiological Sciences. "Participation of hemichannels formed by pannexin 1 of oligodendrocytes in unmyelination during prenatal stress".

2011-2018. Aníbal Vargas, Ph.D. in Physiological Sciences. "Participation of Hemichannels formed by Connexins in muscle atrophy induced by cachexia".

2009-2017. Paloma Hacha, Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Participation of Pannexin 1 hemichannels in the activation of murine mast cells".

2012-2014. Carolina Urrutia- Activation of hemichannels formed by connexins promotes Ca^{2+} influx, oxidatve stress and cell neath, which is prevented by antioxidant agents that block hemichannles". Master in Science: Free Radicals and Biomedicine". University of Valparaíso.

2009-2013. Maximiliano Rovegno. (Co-mentor with Dr. Rommy von Benhardi). Ph.D. in Medical Sciences, Pontificia Universidad Católica de Chile. "Inflammatory activation in astrocytes induced by ATP released via hemichannels formed by connexin, in an in vitro study model of brain trauma (TBI)".

2009-2013. Raúl Lagos Cabré. (Co-mentor with Dr. Ricardo Moreno). Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Modulation of ADAM family proteins by xenoestrogens induces apoptosis in male germ cells".

2009-2014. Daniela Salas. (Co-mentorship with Dr. Sergio Lavandero). "Ph.D. in Biochemistry, Universidad de Chile. "Regulation of cardiac Cx43 by insulin".

2008-2012. Pablo J. Sáez. Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Regulation and function of hemichannels and gap junctions in the interaction of dendritic cells and T lymphocytes".

2009-2012. Vania Figueroa. (Co-mentor with Dr. Agustín Martínez**)**. Ph.D. in Neuroscince, Universidad de Valparaíso. **"**Activation of hemichannels formed by hCx26 and hPx1, in physiological and pathological conditions and its possible role in the etiopathogenesis of deafness".

2008-2012. Luis A. Cea. Doctor Ciencias Fisiológicas, Pontificia Universidad Católica de Chile. "Muscle activity controls the levels of connexins 39, 43 and 45 in rat skeletal muscle".

2008-2011. Kenji Shoji. Doctor Ciencias Fisiológicas, Pontificia Universidad Católica de Chile." T lymphocytes present hemichannels formed by Panx1 coupled to $P2X_7$ receptors and mediate lymphocyte death initiated by extracellular ATP".

2008-2013. Romina Hernández (Co-mentor with Dr. M.V. Velarde). Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Effect of boldine on diabetic nephropathy in rats".

2008-2010. Juan A. Orellana. Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Role and regulation of astroglial channels formed by connexin43 in neuronal death induced by hypoxia in high glucose: potentiation by neurodegenerative agents". (Best Ph.D. Thesis award by the Chilean Academy of Science 2011).

2005-2010. Manuel A. Riquelme. Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Role of hemichannels formed by Pannexin1 and extracellular ATP during the acquisition of myogenic commitment and the enhancement of adult skeletal muscle contraction".

2003-2008. Carolina Gatica de la Puente. Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Role of hemichannels and gap junction channels in neuronal differentiation and in the acquisition of myogenic commitment in cell lines".

2005-2008. Helmuth Sánchez. Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Participation of channels formed by connexin32 in cellular responses of two in-vitro ischemia-reperfusion models".

2007-2008. Kurt A. Schalper. Ph.D. in Medical Sciences, Pontificia Universidad Católica de Chile. "Functional modulation of hemichannels formed by connexins by stimuli of different nature".

2003-2005. Mauricio A. Retamal. Ph.D. in Physiological Sciences. Pontificia Universidad Católica de Chile. "Hemichannels formed by connexin43 are sensitive to changes in redox potential".

2003-2005. Mauricio Garré (Co-mentor with Dr. V. Abudara). Master in Neuroscience. PEDECIBA, Uruguay. "Effects of fibroblast factor FGF-1 on intercellular communication through gap junctions in the neurotoxic reactive phenotype of spinal astrocytes".

2001-2005. Loreto P. Véliz. (Co-mentor with Dr. M. Boric) Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Expression and function of gap junctions between leukocytes and endothelial cells during inflammation".

1999-2003. Sra. Liliana Corvalán. Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Gap junctions at contacts between dendritic cells and between dendritic cells and T lymphocytes".

1999-2003. Dr. Jorge Contreras. Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Biophysical properties and mechanisms of action of the hemichannels formed by connexin 43: possible participation in ischemia-induced cell death".

1999-2004. Roberto Araya. Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Role of purinergic receptors and gap junctions in the differentiation process of skeletal muscle".

1998-2001. Dr. Eliseo A. Eugenín. Ph.D. in Physiological Sciences, Pontificia Universidad Católica de Chile. "Gap junctions between macrophages: identification of connexins, regulation of their expression and their function in metabolic and cellular processes".

1997-2000. Dr. María C. Brañes. Ph.D. in Molecular and Cell Biology. Pontificia Universidad Católica de Chile. "Neutrophils and endothelial cells form homo- and heterocellular gap junctions regulated by proinflammatory factors".

1996-1998. Dr. Hernán González. Ph.D. in Medical Sciences. Pontificia Universidad Católica de Chile. "Efecto de la endotoxemia sobre las uniones en hendidura del hígado de la rata".

1996-1999. Dr. Agustín Martínez. Ph.D. in Physiological Sciences. Pontificia Universidad Católica de Chile. "In vitro regulation of glial cell gap junctions in response to conditions that trigger an inflammatory process and mediators of the inflammatory response".

1989-1992. Dr. Viviana M. Berthoud, Ph.D. in Sciences. "Regulation of Gap Junctions". Department of Neuroscience, Albert Einstein College of Medicine, Nueva York, USA.

MENTOR OF POSTDOCTORAL FELLOWS:

Dr. Magdiel A. Salgado. "Role of Panx1-formed channels in the formation of a viral-virus endosome SARS-CoV-2 as a study model''. (2021-2024).
Dr. Nicolás Palacios-Prado. Endogenous Pannexin1 forms functional gap junction channels with unique biophysical properties (2018-2021).
Dr. Iván Bravo. Involvement of connexin hemichannels expressed by glial cells in depression (2018-2020).
Dra. Elisa Balboa. Proyecto Fondecyt. "Relevance of oxidative stress, mitochondrial dysfunction and expression of connexins in the induction of muscle atrophy by dexamethasone". (2014-2017).
Dr. Carlos Puebla. Role of hemichannels in membrane transport and regulation by PUFAs. (2011-2014).
Dr. Adam Aguirre. Regulation of hemichannels in brain cells by viral infections (2012-2016).
Dr. José L. Vega. Regulation of hemichannels by protein phosphorylation (2011-2013).
Dr. Luis A. Cea. Regulation and function of hemichannels in diseases of skeletal muscles (2012-2013).
Dr. Juan A. Orellana. Role of hemichannels in HIV infections (2010-2011).
Dr. Mauricio Retamal Regulation of connexin-based channels by inflammatory conditions (2006-2007).
Dr. Claudia G. Sáez. Regulation of hepatic gap junction by chronic fibrosis (1993-1996).

PREVIOUS FUNDING:
Continuously funded by NIH (1988-1996).
Continuously funded by Fondecyt (1993-present).
INSERM-CONICYT (2007-2008).
ECOS-CONYCT, (2011-2013).
DAAD-CONICYT (2010-2011)

National Institute of Neurological Disorders and Stroke (2008-2012) (Co-investigator). Project Title: Cx43 Hemichannels: Gating Modification and Functions

Nucleo Milenio Inmunología e inmunoterapia. P04/030F (2006-2008) renovation approved (2009-2011) (Co-investigator).

-CONICYT (2010-2011) Biological functions of connexin45 and pannexin1 hemichannels for contraction and inflammatory response of skeletal muscles in mice.

Proyecto Anillo ACT71 (2010-2013) (Director). Pro-inflammatory conditions increase the cell membrane permeability through pathways that offer new therapeutic target for human diseases.

FONDEF D07I1086 (2008-2013) (PI). “Improvement of molecular inhibitors for hemichannels for use as anti-inflammatory compounds in human diseases.

As co-investigator of FONDECYT projects.

01-04-2016/31-03-2020 PI: JA Orellana.
Co-inv.: Sáez, J.C., Stehberg, J., Quintanilla, R.A., Von Bernhardi, R.
Disentangling the role of hemichannels and pannexons on astroglial and neuronal dysfunction induced by heavy ethanol exposure.

01-04-2021/31-03-2025 JA Orellana.
Co-inv.: Sáez, J.C., Cerpa, W., Quintanilla, R.A., Von Bernhardi, R.
An independent grant focused on understanding the role of hemichannels and pannexons in the alcohol-induced dysfunction of astrocytes and neurons in culture cells, brain slices and animal models.

Current Funding

ANID Regular 1231523 (Principal Investigator) 2023-2027). Functional properties and phosphorylation-dependent regulation of Cx36 hemichannels.

ANID Regular 1210375 (Co-Investigator) (2021-2025). Distilling the role of hemichannels and pannexons on astroglial and neuronal dysfunction induced by heavy ethanol exposure.

ANID Regular 1240695 (Co-investigator) (2024-2028). Unveiling the potential of sulfonamide-quinoline derivatives: integration of experimental and in silico combinatorial strategies for designing and synthesizing selective innexin-2 gap junction inhibitors”.

FONDEF ID24I10165 (Sub Director) (2024-2026). Tratamiento complementario de origen natural para mejorar el estado inflamatorio, antioxidante y convulsivante en perros epilépticos.

Millenium Institute, Centro Interdisciplinario de Neurociencias de Valparaíso. P09-022-F (2011-2021) Associate Investigator.

GRANTED PATENT

United States Patent (10) Patent No.: US 11,707,459 B2
Method for treating nervous system injuries using boldine and derivatives and thereof.
Inventors: Christopher Cardozo, Bronx, NY (US); Carlos A. Toro Chacon, Bronx, NY (US); Zachary Graham, Birmingham, AL (US); Wei Zhao, Bronx, NY (US); Juan C. Sáez, Vina del Mar (CL)

PATENT APPLICATIONS

-Sáez JC, Maturana C y Lagos C.
"Inhibidores selectivos de hemicanales formados por conexinas para el tratamiento de la epilepsia." en nombre de Pontificia Universidad Católica de Chile, de acuerdo a la siguiente información:

Número de Solicitud: **US 62/129432**
Fecha de presentación: **06-03-2015**

-Sáez JC, Lagos C.
Solicitud de patente "Nuevos moduladores de hemicanales de conexinas" en nombre de Pontificia Universidad Católica de Chile, de acuerdo con la siguiente información:

Número de Solicitud: **PCT/CL2015/050012**
Fecha de presentación: **14-04-2015**

-Sáez JC, Lagos C
"Moduladores específicos de hemicanales de conexinas"
INAPI Solicitud **2014:01556.**

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