Juan C. **Sanchez-Arias**

PhD Candidate · Neuroscience

545-4678 Elk Lake Drive, Victoria BC, Canada, V8Z 5M1

(+1) 250-885-9486 | juan@juansanar.com | www.juansanar.com | juansamdphd | juancsanchezarias | @juan_sanar |

"Any man could, if he were so inclined, be the sculptor of his own brain." Santiago Ramon y Cajal

Education

University of Victoria

Victoria, BC. Canada

PhD in Neuroscience *Jan. 2015 - April. 2020*

- **Dissertation**: Pannexin 1 regulates dendritic spine formation.
- **GPA**: 8.2/9.0.
  - **Relevant Coursework:** Developmental neurobiology, Tools for the study of ion channels.

Universidad del Valle - School of Medicine

Cali, Valle. Colombia

Doctor of Medicine *Aug. 2007 - Oct. 2014*

- **Pre-Diploma Rotatory Internship**: Hospital Universitario del Valle ESE - Universidad del Valle. Cali, Valle. Colombia.
- **Research Internship**: Centro de Estudios Cerebrales (Centre for Brain Studies). Universidad del Valle. Cali, Valle. Colombia
  - *Area of study*: Cerebral cortex cytoarchitectonics, functional neuronatomy, diffuse traumatic brain injury and ischemic stroke models in rats. Supervisors: Prof. Hernan Pimienta, Prof. Marhta Escobar, and Prof. Efrain Buritica.
- **Observership**: Functional Neurosurgery. Department of Neurosurgery. University of Illinois Hospital & Health Sciences System. University of Illinois at Chicago. Chicago, IL. USA. Supervisor: Dr. Konstantin Slavin.
- **Professional elective**: Neurosurgery and Neurocritical Care. Department of Neurosurgery.Hospital Universitario del Valle ESE - Universidad del Valle. Cali, Valle. Colombia.
- **GPA**: 4.4/5.0.
  - **Relevant Coursework:** Functional Neuroanatomy, Cerebral cortex cytoarchitectonics, Scientific Integrity, Bio-statistics, Addiction and Pharmacology, Systems Pathology

Skills

Research	Project management, experimental design, data management, statistical analysis and modeling, scientific writing, delivery of reports and presentation of results to specialized and lay audiences.
Laboratory	Confocal and Stimulated-emission-depletion (STED, super-resolution) microscopy, live cell microscopy, cell culture and transfection (cell lines and primary neurons), immunocyto(histo)chemistry, transgenic mouse colony management and generation of conditional knockouts (Cre-Lox), rodent surgery (stroke induction and viral vector injection), rodent behavioural testing
Programming	R, Python, ImageJ Macro Language (IJM), HTML, Markdown, LaTeX
Software	Microsoft Office Suite, Adobe Creative Suite, GraphPad, ImageJ/FIJI, MATLAB, RStudio
Languages	English (fluent), Spanish (native)

Research Experience

University of Victoria

Victoria, BC. Canada

Graduate Fellow in Neuroscience *Jan. 2015 - Apr. 2020*

- Advisor: Leigh Anne Swayne, PhD.
- Area of Study: Area of study: Pannexin 1 channels, dendritic spine plasticity, synapse formation, channel trafficking, neuronal cytoskeleton dynamics, neural stem cells, advanced microscopy for cell biology.
  - Generated conditional and conditional-inducible knockout models for the study of cerebral cortex development.
  - Optimized protocols to generate primary neuronal cultures from neonatal mice suitable for network analysis.
  - Developed methods to visualize dendritic spines and filopodia in tissue sections and living primary neurons.
  - Established immunocyto(histo)chemistry protocols that preserve the neuronal cytoskeleton.

Centro de Estudios Cerebrales - Universidad del Valle *Cali, Valle. Colombia*

Research Intern in Biomedical Sciences - Neuroscience Concentration *Feb. 2014 - Jun. 2014*

- Advisors: Prof. Martha Escobar, MSc; Prof. Hernan Pimienta, MSc, Prof. Efrain Buritica, PhD.
- Area of study: functional neuroanatomy, cerebral cortex organization, traumatic brain injury, stroke, neuroprotection.
- Performed carotid ligation in Whistar rats using microsurgery techniques.
- Used the weight-drop model of diffuse traumatic brain injury to generate organotypic slice cultures from rats.
- Optimized immunohystochemistry for neuronal and astrocytic markers in thick rat brain tissue sections.

School of Public Health - Universidad del Valle *Cali, Valle. Colombia*

Student Researcher *Aug. 2010 - Feb. 2011*

- Advisors: Enrique A. Estevez, MD and Elsa P. Muñoz, MD, MPH
- Area of study: ardiovascular risk factor assessment in spinal cord injured patient assisting to a tertiary-level hospital.
  - Prepared a research project proposal, liaised with ethical boards, and established a network of collaborators to complete using a standarized survey.
  - Prepared reports and presentations to share project results in local and national meetings.
  - Created a database in EpiInfo 7 for data collection, data management, and statistical analysis.
  - Contributed to the assessment and management of patients with chronic spinal cord injury, including prescribing rehabilitation plans and ordering of radiological and laboratory ancillary tests. Discussed cases with Physical Medicine and Rehabilitation attendings and residents.

Teaching Experience

University of Victoria - Division of Medical Sciences *Victoria, BC. Canada*

Teaching Assistant *Spring 2017, Fall 2018, Spring 2020*

- Course: Foundations of Medical Practice I and II
- Program: Island Medical Program - University of British Columbia
  - MEDD412 - Neuroanatomy Bootcamp #1 (Year 1).
  - MEDD412 - Neuroanatomy Lab on Cranial Nerves V & VII and Pain (Year 1).
  - MEDD412 - Neuroanatomy Lab on Eye Movements and Brainstem (Year 1).
  - MEDD421 - Neuroanatomy Lab on Cerebral Cortex, Functional Areas, and Blood Supply (Year 2).
  - MEDD421 - Neuroanatomy Lab on Control of Movement and Cerebellum (Year 2).
  - MEDD422 - Neuroanatomy Lab on Limbic System/Dementia (Year 2).

Service & Leadership

BC Regenerative Network (BCREGMED) *Victoria & Vancouver, BC. Canada*

Trainee Steering Committee *Feb. 2017 - PRESENT*

- Co-editor for the BC Regenerative Medicine Network Newsletter.
- Member of the BCREGMED Symposium Organizing and Scientific committee.

CIHR Brain Bee - Victoria Chapter *Victoria, BC. Canada*

Organizer *2017 - PRESENT*

- Organized and coordinated social media for the Victoria Brain Bee. Mentored high school students from the Greater Victoria Area who participated in the Brain Bee competition.
- Secured funding to sponsor Victoria Brain Bee winners traveling to the CIHR National Brain Bee.

Neuroscience Graduate Student Association (NGSA) *Victoria & Vancouver, BC. Canada*

Student Member *2017 - PRESENT*

- Student Representative - Division of Medical Sciences.
- Member of the Organizing Committee for the Neuroscience Graduate Program Kick-Off. Liased and recruited keynote speakers for seminar lectures.

Let's Talk Science - UVic *Victoria, BC. Canada*

Volunteer *Oct 2018 - PRESENT*

- Involved in Neuroscience Outreach talks and high school science excursions at the University of Victoria - Division of Medical Sciences.

Lecturio GmbH *Leipzig, Germany*

Freelance Medical Writer *Jun. 2017 - Oct. 2018*

- Produced, edited and copyedited medical exam- and licensing exam-like questions (USMLE Step1 and Step 2CK style questions).

UVic's Women in Science) *Victoria, BC. Canada*

Volunteer *Jan. 2020 - PRESENT*

- Involved in the Peer-Mentorship Program as Graduate Mentor.

Honors & Awards

University of Victoria Fellowship Award, 2015	*UVic-FGS*
University of Victoria Student Travel Grant, 2016	*UVic-FGS*
University of Victoria Graduate Award, 2015 2017 2018 2019	*UVic-FGS*
James A. & Laurette Agnew Memorial Scholarship & Award, 2015 2016 2017 2018 2019	*UVic-FGS*
Vera Allen Travel Award for Medical Sciences, 2016 2017 2018 2019	*UVic-FGS*
Donald Wagg Graduate Scholarship, 2017 2018	*UVic-FGS*
BC Regenerative Medicine Travel Award, 2018	*BCREGMED*
International Gap Junction Conference NB Gilula Star Award, 2019	*IGJC2019*
John & Myrtle Tilley Graduate Scholarship, 2019	*UVic-FGS*

Publications

Journal Articles

Ankyrin-B p.S646F undergoes increased proteasome degradation and reduces cell viability in the H9c2 rat ventricular cardiomyoblast cell line
Lena Chen, Catherine S. W. Choi, **Juan C. Sanchez-Arias**, Laura T. Arbour, Leigh Anne Swayne
Biochemistry and Cell Biology (Dec. 2019). doi: 10.1139/bcb-2019-0082

Ankyrin B and Ankyrin B variants differentially modulate intracellular and surface Cav2.1 levels
Catherine S. W. Choi, Ivana A. Souza, **Juan C. Sanchez-Arias**, Gerald W. Zamponi, Laura T. Arbour, Leigh Anne Swayne
Molecular Brain 12.1 (Sept. 2, 2019) p. 75. doi: 10.1186/s13041-019-0494-8

A novel motif in the proximal C-terminus of Pannexin 1 regulates cell surface localization
Anna L. Epp, Sarah N. Ebert, **Juan C. Sanchez-Arias**, Leigh E. Wicki-Stordeur, Andrew K. J. Boyce, Leigh Anne Swayne
Scientific Reports 9.1 (July 5, 2019) p. 9721. doi: 10.1038/s41598-019-46144-5

Exploring the Pannexin 1 interactome: In silico cross-analyses with postsynaptic proteins and neuropsychiatric disorder susceptibility genes
Simona D. Frederiksen, Leigh E. Wicki-Stordeur, **Juan C. Sanchez-Arias**, Leigh Anne Swayne
bioRxiv (Oct. 11, 2019) p. 801563. doi: 10.1101/801563

Pannexin 1 Regulates Network Ensembles and Dendritic Spine Development in Cortical Neurons
Juan C. Sanchez-Arias, Mei Liu, Catherine S. W. Choi, Sarah N. Ebert, Craig E. Brown, Leigh Anne Swayne
eNeuro 6.3 (May 22, 2019) ENEURO.0503–18.2019. doi: 10.1523/ENEURO.0503-18.2019

Probenecid Disrupts a Novel Pannexin 1-Collapsin Response Mediator Protein 2 Interaction and Increases Microtubule Stability
Xiaoxue Xu, Leigh E. Wicki-Stordeur, **Juan C. Sanchez-Arias**, Mei Liu, Maria S. Weaver, Catherine S. W. Choi, Leigh A. Swayne
Frontiers in Cellular Neuroscience 12 (May 11, 2018). doi: 10.3389/fncel.2018.00124

Upregulation of inflammatory mediators in the ventricular zone after cortical stroke
Adrianna N. Gunton, **Sanchez-Arias, Juan C.** Esther O. Carmona-Wagner, Leigh E. Wicki-Stordeur, Leigh Anne Swayne
PROTEOMICS – Clinical Applications 11.9 (May 15, 2017) p. 1600092. doi: 10.1002/prca.201600092

Perspectives on the role of Pannexin 1 in neural precursor cell biology
Juan C. Sanchez-Arias, Leigh E. Wicki-Stordeur, Leigh Anne Swayne
Neural Regeneration Research 11.10 (Nov. 4, 2016) pp. 1540–1544. doi: 10.4103/1673-5374.193221

What Are Neural Stem Cells, and Why Are They Important?
Leigh Anne Swayne, **Juan C. Sanchez-Arias**, Andrew Agbay, Stephanie M. Willerth
Frontiers for Young Minds 4.20 (Sept. 22, 2016) p. 7. Frontiers, doi: 10.3389/frym.2016.00020

Pannexin 1 Differentially Affects Neural Precursor Cell Maintenance in the Ventricular Zone and Peri-Infarct Cortex
Leigh E. Wicki-Stordeur, **Juan C. Sanchez-Arias**, J. Dhaliwal, Esther O. Carmona-Wagner, Valery I. Shestopalov, Diane C. Lagace, Leigh Anne Swayne
Journal of Neuroscience 36.4 (Jan. 27, 2016) pp. 1203–1210. doi: 10.1523/JNEUROSCI.0436-15.2016

Presentations

Oral Presentations

International Gap Junction Conference *Victoria, BC. Canada*

Star Award Talk: Pannexin 1 regulates neuronal networks and dendritic spine formation in cortical neurons *July 27-31, 2019*

University of Victoria - Neuroscience Graduate Program Kick-Off *Victoria, BC. Canada*

Pannexin 1 regulates cortical dendritic spine formation *September 14, 2018*

BC Regenerative Medicine Symposium *Vancouver, BC. Canada*

Pannexin 1 in neuronal development *JMay 10, 2017*

Poster Presentations

Pannexin 1 regulates network ensembles and dendritic spine development in cortical somatosensory neurons
Juan C. Sanchez-Arias, Mei. Liu, Catherine S.W. Choi, Sarah N. Ebert, Ana DeLucas-Rius, Craig E. Brown, Leigh Anne Swayne
Canadian Association for Neuroscience Meeting, 2019, May, Toronto, ON. Canada

Pannexin 1 regulates neuronal networks and dendritic spine formation in cortical neurons
Juan C. Sanchez-Arias, Mei. Liu, Catherine S.W. Choi, Sarah N. Ebert, Ana DeLucas-Rius, Craig E. Brown, Leigh Anne Swayne
International Gap Junction Conference, 2019, July, Victoria, BC. Canada

Pannexin 1: a novel regulator of dendritic spine development in the postnatal cerebral cortex
Juan C. Sanchez-Arias, Olga Shetsova, Mei Liu, Weaver Maria S. Leigh Anne Swayne
BC Regenerative Medicine Symposiun, 2018, May, Vancouver, BC. Canada

Pannexin 1: a novel regulator of dendritic spine development in the postnatal cerebral cortex
Juan C. Sanchez-Arias, Olga Shetsova, Mei Liu, Weaver Maria S. Leigh Anne Swayne
Canadian Association for Neuroscience Meeting, 2018, May, Vancouver, BC. Canada

Pannexin 1 regulates somatosensory pyramidal neuron dendritic spine density and sensorimotor function
Juan C. Sanchez-Arias, Olga Shetsova, Mei Liu, Leigh Anne Swayne
Society for Neuroscience Meeting, 2018, Nov., San Diego, CA. USA

A novel negative regulator of neurite development in the cerebral cortex
Juan C. Sanchez-Arias, Wicki-Stordeur Leigh E. Leigh Anne Swayne
BC Regenerative Medicine Symposiun, 2017, May, Vancouver, BC. Canada

A pannexin 1 blocker modulates the development of dendritic spines in the postnatal cerebral cortex
Juan C. Sanchez-Arias, Wicki-Stordeur Leigh E. Carmona-Wagner Esther O. Leigh Anne Swayne
Canadian Developmental Biology Conference – Satellite Symposium on Forebrain Neurogenesis: From Embryo to Adult, 2016, Mar., Banff, AB. Canada

A pannexin 1 blocker modulates the development of dendritic spines in the postnatal cerebral cortex
Juan C. Sanchez-Arias, Wicki-Stordeur Leigh E. Leigh Anne Swayne
Inaugural University of Virginia Pannexin Conference, 2016, Oct., Charlottesville, VA. USA

A pannexin 1 blocker modulates the development of dendritic spines in the postnatal cerebral cortex
Juan C. Sanchez-Arias, Wicki-Stordeur Leigh E. Leigh Anne Swayne
Society for Neuroscience Meeting, 2016, Nov., San Diego, CA. USA

Science Communication

BC Regenerative Medicine Network Newsletter *BCREGMED*

Editor & Writer *2018 - PRESENT*

- Contributor to the Translational Research Highlights Section

Neuroscience Graduate Program TEDx Series *Victoria, BC. Canada*

Speaker *Oct. 31, 2019*

- Talk title: Your brain is like play-dough on superpowers, so play with it!

Cafe Scientifique - UVic Centre for Biomedical Research *Victoria, BC. Canada*

Speaker *Mar. 19, 2019*

- Talk title: The developing brain: a shape-shifting powerhouse

Night Shift: After life - Royal BC Museum *Victoria, BC. Canada*

Speaker *Oct. 27, 2018*

- Talk title: Near-death experiences: The mind *in extremis*

Society Membership

Active	Student Member, Canadian Association for Neuroscience	*2015 - Present*
Active	Student Member, Society for Neuroscience	*2016 - Presdent*
Active	Member, Trainee Steering Committee - BC Regenerative Medicine Network	*2017 - Present*