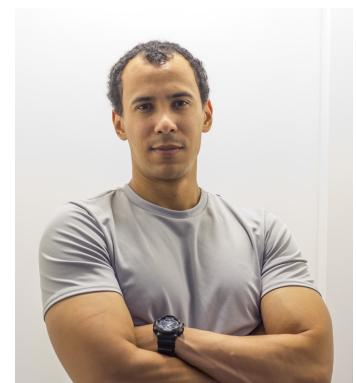


# JUAN C. SANCHEZ-ARIAS, MD, PHD

Trained as medical doctor and neuroscientist, I'm currently investigating the molecular and cellular mechanisms underlying cardiac arrhythmias and seizures associated with a novel genetic variant in an ion channel adapter protein combining model organism research, clinical genetics, bio-informatics, and computational modelling.



## EDUCATION

2020  
|  
2015

### Doctoral of Philosophy in Neuroscience

University of Victoria - Division of Medical Sciences

📍 Victoria, BC, Canada

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

2014  
|  
2007

### Doctor of Medicine (Medico y Cirujano)

Universidad del Valle - School of Medicine

📍 Cali, Valle, Colombia

- **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.
- **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.
- **Relevant Coursework:** Functional Neuroanatomy, Cerebral cortex cytoarchitectonics, Scientific Integrity, Biostatistics, Toxicology & Pharmacodependence, Systems Pathology.

## RESEARCH EXPERIENCE

Current  
|  
2020

### Postdoctoral Fellow

Division of Medical Sciences

📍 University of Victoria

- **Advisors:** Leigh Anne Swayne, PhD; Laura Arbour MSc, MD,
- **Area of study:** ankyrin adapter proteins, ion channels, calcium and voltage dysregulation in cardiomyocytes and neurons with ankyrin variants.
- Community medical genetics in inherited arrhythmias.
- Cardiomyocyte and neuronal calcium homeostasis
- Bioinformatics and computational modelling of cardiomyocyte physiology.

2020  
|  
2015

### Graduate Research Assistant

Division of Medical Sciences

📍 University of Victoria

- **Advisor:** Leigh Anne Swayne, PhD.
- **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.

## CONTACT

- ✉ [juansa@uvic.ca](mailto:juansa@uvic.ca)  
🐦 [juan\\_sanar](https://twitter.com/juan_sanar)  
🔗 [github.com/juansanar](https://github.com/juansanar)  
🔗 [juansanar.com](https://juansanar.com)  
🔗 [in/juancsanchezararias/](https://www.linkedin.com/in/juancsanchezararias/)

⬇ [PDF version of this CV](#)

## TECHNICAL SKILLS

- Project Management  
Scientific Writing  
Microscopy  
Cell culture  
Bio-image analysis  
Biostatistics  
R  
Python  
Bash  
MATLAB

Made with the R package  
[pagedown](#).

Source code forked from  
[nstrayer/datadrivencv](#) and  
available at  
[juansanar/datadrivencv](#).

Last updated on 2021-12-13.

2014  
I  
2013

### Research Medical Intern

Centro de Estudios Cerebrales

📍 Universidad del Valle

- **Advisors:** Martha Escobar, MSc; Hernan Pimienta, MSc, 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.
- Investigated diffuse traumatic brain injury using a weight-drop model, organotypical rat brain slices, fluorescent immunochemistry and microscopy.

2011  
I  
2010

### Undergraduate Medical Researcher

School of Public Health

📍 Universidad del Valle

- **Advisors:** Enrique A. Estevez, MD and Elsa P. Muñoz, MD, MPH
- **Area of study:** Cardiovascular 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 a standarized and regional survey in cardiovascular health.
- Led data management and prepared reports and presentations to share project results in local and national meetings.
- 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.

#### ⓘ Research interests

ⓘ Translational research

ⓘ Bio-image analysis

ⓘ Neuronal and cardiac physiology

ⓘ Bioinformatics

ⓘ Clinical genetics

ⓘ Open science.

#### ⓘ Teaching philosophy

I strive to foster an active learning and respectful environment for students in which each student has equal opportunity to exchange ideas and ask questions. I believe that discussing ideas is key for developing critical thinking, communication skills, and an inquisitive mind; while providing immediate feedback on students' understanding of the discussed topic.

2020  
I  
2017



### TEACHING EXPERIENCE

#### Foundations of Medical Practice I and II

Island Medical Program

📍 University of Victoria

- **Courses:** MEDD412 (Year 1), MEDD421 (Year 2), MEDD422 (Year 2).
- TA for Neuroanatomy Bootcamp and Laboratories.
- **Subjects:** Cranial Nerves V & VII and Pain, Eye Movements and Brainstem, Cerebral Cortex, Functional Areas, and Blood Supply, Control of Movement and Cerebellum, Limbic System/Dementia

Current  
I  
2021



### SERVICE & LEADERSHIP

#### Who Can Become a Scientist?

Co-founder and Co-organizer

📍 University of Victoria

- “Who can become a scientist?” is a symposium for a high school age audience that discusses equity, diversity, and inclusion issues in science.
- It reflects on the stereotypical image of scientists and the importance of leveraging support from role models and mentors to increase diversity in STEM.

#### ⓘ Society memberships

Canadian Cardiovascular Society

Canadian Association of Neuroscience

Society for Neuroscience

Colegio Colombiano de Neurociencias - COLNE

Current  
I  
2018

#### Let's Talk Science

University of Victoria

📍 Victoria, BC, Canada

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

Current  
I  
2017

#### CIHR Brain Bee

Victoria Chapter

📍 Victoria, BC, Canada

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

2020  
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2017

- Neuroscience Graduate Student Association (NGSA)**  
University of Victoria 📍 Victoria, BC, Canada
- Student Representative - Division of Medical Sciences 2017-2018.
  - Contributed to organizing the Neuroscience Graduate Program Kick-Off.
  - Liaised and recruited keynote speakers for seminar lectures.

2019  
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2017

- BCREGMED Newsletter**  
Co-editor 📍 BCREGMED
- Involved in BC Regenerative Medicine Symposium organization, recruiting speakers and sponsors, and evaluating abstract submissions and posters.
  - Involved in brainstorming and organizing workshops for trainees.



## AWARDS

2024  
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2021

- Research Trainee Award**  
Michael Smith Foundation for Health Research
- Project: [The impact of the loss-of-function ankyrin-B p.S646F variant on cardiomyocyte and neuronal excitability: Implications for diagnosis and treatment of heart disease.](#)

2019  
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2019

- NB Gilula Star Award**  
International Gap Junction Conference
- Star Award and lecture for top-ranked abstracts.

2019  
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2019

- John & Myrtle Tilley Graduate Scholarship**  
University of Victoria - Faculty of Graduate Studies

2019  
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2016

- Vera Allen Travel Award for Medical Sciences,**  
University of Victoria - Faculty of Graduate Studies

2019  
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2015

- James A. & Laurette Agnew Memorial Scholarship & Award**  
University of Victoria - Faculty of Graduate Studies

2018  
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2018

- BC Regenerative Medicine Travel Award**  
BC Regenerative Medicine Network

2018  
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2017

- Donald Wagg Graduate Scholarship**  
University of Victoria - Faculty of Graduate Studies

2017  
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2015

- University of Victoria Graduate Award**  
University of Victoria - Faculty of Graduate Studies

2016  
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2016

- University of Victoria Student Travel Grant**  
University of Victoria - Faculty of Graduate Studies

2015  
|  
2015

- University of Victoria Fellowship Entrance Award**  
University of Victoria - Faculty of Graduate Studies

2014  
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2007

- School of Medicine Dean's List**  
Universidad del Valle - School of Medicine
- Years awarded: 2007, 2009, 2013, 2014

2007  
|  
2006

- Valle del Cauca Public High School Academic Excellence Scholarship**  
Infivalle-Colombia

## Selected presentations

2021

- COLNE - Tertulia Metodologica | Flujos de Trabajo para Analisis de Imagenes Adquiridas por Microscopia (Bio-image analysis workflows) | Talk**

- SfN Global Connectome 2021 | Pannexin 1 regulates dendritic protrusion dynamics in developing cortical neurons | Poster**

2020

- University of British Columbia 2<sup>nd</sup> Annual Tri-Cluster Research Day: The Future of Health | Pannexin 1 regulates dendritic protrusion dynamic in developing cortical neurons | Talk**

2019

- International Gap Junction Conference | Pannexin 1 regulates neuronal networks and dendritic spine formation in cortical neurons | Star Award Talk**

- Canadian Association of Neuroscience Meeting | Pannexin 1 regulates network ensembles and dendritic spine development in cortical somatosensory neurons | Poster**

2018

- Society for Neuroscience | Pannexin 1 regulates somatosensory pyramidal neuron dendritic spine density and sensorimotor function | Poster**

2017

- BC Regenerative Medicine Symposium | Pannexin 1 regulates cortical dendritic spine formation | Talk**

## PUBLICATIONS

2021  
|  
2021

### A systematic, open-science framework for quantification of cell-types in mouse brain sections using fluorescence microscopy

Frontiers in Neuroanatomy

- Juan C. Sanchez-Arias, Micael Carrier, Simona D. Frederiksen, Olga Shevtsova, Chloe McKee, Emma van der Slagt, Elisa Gonçalves De Andrade, Hai Lam Nguyen, Penelope A. Young, Marie-Ève Tremblay, Leigh Anne Swayne.
- DOI: [10.3389/fnana.2021.722443](https://doi.org/10.3389/fnana.2021.722443).
- Type: Original research article.

2021  
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2021

### Purinergic signaling in nervous system health & disease: Focus on pannexin 1

Pharmacology & Therapeutics

- Juan C. Sanchez-Arias, Emma Slagt, Haley A. Vecchiarelli, Rebecca C. Candlish, Nicole York, Penelope A. Young, Olga Shevtsova, Afnan Juma, Marie-Ève Tremblay, Leigh Anne Swayne.
- DOI: [10.1016/j.pharmthera.2021.107840](https://doi.org/10.1016/j.pharmthera.2021.107840).
- Type: Review article.

2020  
|  
2020

### ATP Triggers Macropinocytosis That Internalizes and Is Regulated by PANX1

bioRxiv

- Andrew K. J. Boyce, Emma Slagt, Juan C. Sanchez-Arias, Leigh Anne Swayne.
- DOI: [10.1101/2020.11.19.389072](https://doi.org/10.1101/2020.11.19.389072).
- Type: Original research article.

2020  
|  
2020

### Pannexin 1 Regulates Dendritic Protrusion Dynamics in Immature Cortical Neurons

eNeuro

- Juan C. Sanchez-Arias, Rebecca C. Candlish, Emma Slagt, Leigh Anne Swayne.
- DOI: [10.1523/ENEURO.0079-20.2020](https://doi.org/10.1523/ENEURO.0079-20.2020).
- Type: Original research article.

2020  
|  
2020

### PANX1 in Inflammation Heats up: New Mechanistic Insights with Implications for Injury and Infection

Cell Calcium

- Juan C. Sanchez-Arias, Leigh E. Wicki-Stordeur, Rebecca C. Candlish, Emma Slagt, Irina Paci, Praveen P. N. Rao, Brian A. MacVicar, Leigh Anne Swayne.
- DOI: [10.1016/j.ceca.2020.102253](https://doi.org/10.1016/j.ceca.2020.102253).
- Type: Review article.

2020  
|  
2020

### Consideration of Pannexin 1 Channels in COVID-19 Pathology and Treatment

American Journal of Physiology-Lung Cellular and Molecular Physiology

- Leigh Anne Swayne, Scott R. Johnstone, Chen Seng Ng, Juan C. Sanchez-Arias, Miranda E. Good, Silvia Penuela, Alexander W. Lohman, Abigail G. Wolpe, Victor E. Laubach, Michael Koval, Brant E. Isakson.
- DOI: [10.1152/ajplung.00146.2020](https://doi.org/10.1152/ajplung.00146.2020).
- Type: Perspective article.

2020  
|  
2020

### Ankyrin-B p.S646F undergoes increased proteasome degradation and reduces cell viability in the H9c2 rat ventricular cardiomyoblast cell line

Biochemistry & Cell Biology

- Lena Chen, Catherine S. W. Choi, Juan C. Sanchez-Arias, Laura T. Arbour, Leigh Anne Swayne.
- DOI: [10.1139/bcb-2019-0082](https://doi.org/10.1139/bcb-2019-0082).
- Type: Original research article.

2020  
|  
2020

**Ankyrin B and Ankyrin B variants differentially modulate intracellular and surface Cav2.1 levels**

Molecular Brain

- Catherine S. W. Choi, Ivana A. Souza, Juan C. Sanchez-Arias, Gerald W. Zamponi, Laura T. Arbour, Leigh Anne Swayne.
- DOI: [10.1186/s13041-019-0494-8](https://doi.org/10.1186/s13041-019-0494-8).
- Type: Original research article.

2019  
|  
2019

**A novel motif in the proximal C-terminus of Pannexin 1 regulates cell surface localization**

Scientific Reports

- Anna L. Epp, Sarah N. Ebert, Juan C. Sanchez-Arias, Leigh E. Wicki-Stordeur, Andrew K. J. Boyce, Leigh Anne Swayne.
- DOI: [10.1038/s41598-019-46144-5](https://doi.org/10.1038/s41598-019-46144-5).
- Type: Original research article.

2019  
|  
2019

**Exploring the Pannexin 1 interactome: In silico cross-analyses with postsynaptic proteins and neuropsychiatric disorder susceptibility genes**

bioRxiv

- Simona D. Frederiksen, Leigh E. Wicki-Stordeur, Juan C. Sanchez-Arias, Leigh Anne Swayne.
- DOI: [10.1101/801563](https://doi.org/10.1101/801563).
- Type: Original research article.

2019  
|  
2019

**Pannexin 1 Regulates Network Ensembles and Dendritic Spine Development in Cortical Neurons**

eNeuro

- Juan C. Sanchez-Arias, Mei Liu, Catherine S. W. Choi, Sarah N. Ebert, Craig E. Brown, Leigh Anne Swayne.
- DOI: [10.1523/ENEURO.0503-18.2019](https://doi.org/10.1523/ENEURO.0503-18.2019).
- Type: Original research article.

2018  
|  
2018

**Probenecid Disrupts a Novel Pannexin 1-Collapsin Response Mediator Protein 2 Interaction and Increases Microtubule Stability**

Frontiers in Cellular Neuroscience

- Xiaoxue Xu, Leigh E. Wicki-Stordeur, Juan C. Sanchez-Arias, Mei Liu, Maria S. Weaver, Catherine S. W. Choi, Leigh A. Swayne.
- DOI: [10.3389/fncel.2018.00124](https://doi.org/10.3389/fncel.2018.00124).
- Type: Original research article.

2017  
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2017

**Upregulation of inflammatory mediators in the ventricular zone after cortical stroke**

PROTEOMICS - Clinical Applications

- Adrianna N. Gunton, Juan C. Sanchez-Arias, Esther O. Carmona-Wagner, Leigh E. Wicki-Stordeur, Leigh Anne Swayne.
- DOI: [10.1002/prca.201600092](https://doi.org/10.1002/prca.201600092).
- Type: Original research article.

2016  
|  
2016

**Perspectives on the role of Pannexin 1 in neural precursor cell biology**

Neural Regeneration Research

- Juan C. Sanchez-Arias, Leigh E. Wicki-Stordeur, Leigh Anne Swayne.
- DOI: [10.4103/1673-5374.193221](https://doi.org/10.4103/1673-5374.193221).
- Type: Review article.

2016  
|  
2016

### **What Are Neural Stem Cells, and Why Are They Important?**

Frontiers for Young Kids

- Leigh Anne Swayne, **Juan C. Sanchez-Arias**, Agbay Andrew, Stephanie M. Willerth.
- DOI: [10.3389/frym.2016.00020](https://doi.org/10.3389/frym.2016.00020).
- Type: Review article.

2016  
|  
2016

### **Pannexin 1 Differentially Affects Neural Precursor Cell Maintenance in the Ventricular Zone and Peri-Infarct Cortex**

Journal of Neuroscience

- Leigh E. Wicki-Stordeur, **Juan C. Sanchez-Arias**, J. Dhaliwal, Esther O. Carmona-Wagner, Valery I. Shestopalov, Diane C. Lagace, Leigh Anne Swayne.
- DOI: [10.1523/JNEUROSCI.0436-15.2016](https://doi.org/10.1523/JNEUROSCI.0436-15.2016).
- Type: Original research article.

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



## DATASETS

2021  
|  
2021

### **PFIA - Pipeline for Image Analysis of Cell Density in Mouse Brain Sections**

Scholars Portal Dataverse

- **Juan C. Sanchez-Arias**, Micael Carrier, Simona D. Frederiksen, Olga Shevtsova, Chloe McKee, Emma van der Slagt, Elisa Gonçalves De Andrade, Hai Lam Nguyen, Penelope A. Young, Marie-Ève Tremblay, Leigh Anne Swayne.
- DOI: [10.5683/SP2/KRGFTC](https://doi.org/10.5683/SP2/KRGFTC)
- Test Image Files and [Associated Scripts](#)