Juan C. Sanchez-Arias

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Research Interests include: Translational Research, Dendritic Spine Plasticity, Synapse and Neuronal Network Formation, and CNS & PNS Endogenous Repair Mechanisms.

Education

Academic Qualifications

- **PhD in Neuroscience** — **University of Victoria**
  Victoria, BC. Canada — *2015–2020 (expected)*
  - Dissertation title *(tentative)*: *Pannexin 1 regulates cortical dendritic spine formation*
  - GPA: 8.2/9.0
- **Doctor of Medicine** — **Universidad del Valle**
  Cali, Valle. Colombia — *2007–2014*
  - Internship: Hospital Universitario del Valle ESE - Universidad del Valle. Cali, Valle. Colombia.
  - Observership: Functional Neurosurgery. Department of Neurosurgery. University of Illinois Hospital. Chicago, IL. USA
  - Research Internship: Centro de Estudios Cerebrales (Centre for Brain Studies). Universidad del Valle
    - Area of study: Cerebral cortex cytoarchitectonics diffuse traumatic brain injury models, MCAO model in rats.
  - 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

- **University of Victoria**
  Developmental neurobiology, Tools for the study of ion channels.
- **Universidad del Valle**
  Functional Neuroanatomy, Cerbral cortex cytoarchitectonics, Scientific Integrity, Bio-statistics, Addictions and Pharmacodependence, Systems Pathology

Technical and Personal skills

- **Laboratory skills:** Confocal microscopy, Live cell microscopy, , Cell culture (HEK cells, N2a cells, primary cortical neurons), Transfection in cell lines, Immunohistochemistry and Immunocytochemistry, Brain sectioning (vibrotome, cryostat), Mouse handling (advanced), Photothrombotic stroke induction, Transgenic mouse colony management.
- **Software:** MS Office products (Advanced), GraphPad (Advanced), Adobe Creative Suite (Advanced), ImageJ (Advanced), MATLAB (Beginner).
- **Languages:** English (Fluent). Spanish (Native).

- **Programming language:** R (Beginner), MATLAB (Beginner), LaTeX(Intermediate), HTML (Intermediate).

Research experience

- **Graudate Fellow** — **University of Victoria**
  Victoria, BC. Canada — *2015–present*
  - Advisor: Dr. Leigh Anne Swayne, PhD.
  - Area of study: Pannexin channels, dendritic spine and synapse formation.
    - *In vivo*: Generation of conditional knockouts (Cre-Lox system), brain sectioning, immunohistochemistry, lipophilic dye tracing, sensorimotor behavioural testing. *Model*: Mouse
    - *In vitro*: Cell culture (lines and primary), transfection, immunocytochemistry.
    - *Imaging*: Confocal microscopy, live cell microscopy, Ca^{2+} imaging

- **Research Intern in Biomedical Sciences-Neuroscience Concentration** — **Universidad del Valle**
  Cali, Valle. Colombia — *Jan-July, 2014*
  - Advisor: Prof. Martha Escobar, MSc; Prof. Hernan Pimienta, MSc; Prof. Efrain Buritica, PhD.
  - Area of study: Cerebral cortex, traumatic brain injury, stroke, neuroprotection
    - *In vivo*: Severe diffuse traumatic brain injury models, organotypic slice culture, evaluation of the neuroprotective properties of metformin in stroke using a MCAO model. Microsurgery in rats, carotid artery dissection and ligation. Immunohistochemstry *Model*: rats.

- **Research Elective** — **Universidad del Valle**
  Cali, Valle. Colombia — *2010–2011*
  - Advisor: Dr. Enrique A. Estevez, MD; Dr. Elsa P. Muñoz, MD, MPH
  - Area of study: Cardiovascular risk factor assessment in spinal cord injured patient assisting to a tertiary-level hospital.
    - *Research*: Creation of databases, study design, data recording, data management, statistical analysis.
    - *Clinical*: Neurological evaluation of patients with spinal cord injury, spasticity assessment, rehabilitation prescription, follow-up and ancillary tests (X-rays, CT scans, MRI, kidney and bladder function), case discussion with attendings and residents.

Teaching experience

- **Foundations of Medical Practice II** — **Island Medical Program - University of British Columbia**
  Victoria, BC. Canada — *2017–2018*
  - 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)

Awards

- University of Victoria Fellowship Award — Jan-Aug, 2015
- University of Victoria Student Travel Grant — March, 2016
- University of Victoria Graduate Award — 2015, 2017, 2018
- James A. & Laurette Agnew Memorial Scholarship & Award — 2015, 2016, 2017
- Vera Allen Travel Award for Medical Sciences — 2016, 2017
- Donald Wagg Graduate Scholarship — 2017
- BC Regenerative Medicine Travel Award — 2018

Publications

- Xu, X., Wicki-Stordeur, L. E., **Sanchez-Arias, J. C.**, Liu, M., Weaver, M. S., Choi, C. S. W., Swayne, L. A. (2018). Probenecid Disrupts a Novel Pannexin 1-Collapsin Response Mediator Protein 2 Interaction and Increases Microtubule Stability. Frontiers in Cellular Neuroscience, 12, 124. PMID: 29867357 https://doi.org/10.3389/fncel.2018.00124
- Gunton A.N., **Sanchez-Arias, J. C.**, Carmona-Wagner E.O., Wicki-Stordeur L.E, Swayne L.A. (2017). Upregulation of inflammatory mediators in the ventricular zone after cortical stroke. Proteomics Clinical Applications. 2017 May 15. PMID: 28508575. https://doi.org/10.1002/prca.201600092
- **Sanchez-Arias, J. C.**, Wicki-Stordeur L.E., Swayne L.A. Perspectives on the role of Pannexin 1 in neural precursor cell biology. Neural Regeneration Research. 2016 Oct;11(10):1540-1544. Pubmed ID: 27904473. http://doi.org/10.4103/1673-5374.193221
- Swayne L.A., **Sanchez-Arias, J. C.**, Agbay A., Willerth S.M. What are brain 'stem' cells, and why are they important?. 2016. Frontiers for Young Minds. 4:20. http://doi.org/10.3389/frym.2016.00020
- Wicki-Stordeur, L.E., **Sanchez-Arias, J. C.**, Dhaliwal, J., Carmona-Wagner, E.O., Shestopalov, V.I., Lagace, D.C., Swayne, L.A. (2016). Pannexin 1 Differentially Affects Neural Precursor Cell Maintenance in the Ventricular Zone and Peri-Infarct Cortex. Journal of Neuroscience, 27 January 2016, 36 (4) 1203-1210. Pubmed ID: 26818508. https://doi.org/10.1523/JNEUROSCI.0436-15.2016

Oral presentations

- Near-death experiences: The mind *in extremis*. Night Shift: After life. Royal BC Museum. October 27th, 2018. Victoria, BC. Canada.
- Pannexin 1 regulates cortical dendritic spine formation. University of Victoria, Neuroscience Graduate Program Kick-Off. September 14th, 2018. Victoria, BC. Canada.
- Pannexin 1 in neuronal development. First BC Regenerative Medicine Symposium. May 10th, 2017. Vancouver, BC. Canada.

Poster Presentations

- **Sanchez-Arias, J. C.**, Shevtsova O., Liu M., Swayne L.A. Pannexin 1 regulates somatosensory pyramidal neuron dendritic spine density and sensorimotor function. Neuroscience 2018 (SfN 2018). San Diego Convention Center, San Diego, CA. November 3-7, 2018. Poster presentation.
- **Sanchez-Arias, J. C.**, Shevtsova O., Liu M., Weaver M.S., Swayne L.A. Pannexin 1: a novel regulator of dendritic spine development in the postnatal cerebral cortex. Canadian Association for Neuroscience Annual Meeting 2018. May 13-16, 2018. Vancouver, BC, Canada. Poster presentation.
- **Sanchez-Arias, J. C.**, Shevtsova O., Liu M., Weaver M.S., Swayne L.A. Pannexin 1: a novel regulator of dendritic spine development in the postnatal cerebral cortex. BC Regenerative Medicine Symposium. May 9, 2018. Vancouver, BC, Canada. Poster presentation.
- **Sanchez-Arias, J. C.**, Wicki-Stordeur L. E., Swayne L. A. A novel negative regulator of neurite development in the cerebral cortex. BC Regenerative Medicine Symposium, May 10, 2017. Vancouver, BC, Canada.
- **Sanchez-Arias, J. C.**, Wicki-Stordeur L. E., Swayne L. A. Wicki-Stordeur L.E, Swayne L.A. A pannexin 1 blocker modulates the development of dendritic spines in the postnatal cerebral cortex. Inaugural UVA Pannexin Conference. October 29, 2016. Charlottesville, VA, USA. Poster presentation.

- **Sanchez-Arias, J. C.**, Wicki-Stordeur L. E., Swayne L. A. A pannexin 1 blocker modulates the development of dendritic spines in the postnatal cerebral cortex. Neuroscience 2016 (SfN 2016). San Diego Convention Center, San Diego, CA. November 12-16, 2016. Poster presentation. Poster presentation.
- **Sanchez-Arias, J. C.**, Wicki-Stordeur L. E., Carmona-Wagner E. O., Swayne L. A. A Pannexin 1 blocker modulates dendrite formation in the early postnatal cerebral cortex. (Canadian Developmental Biology Conference 2016 – Satellite Symposium on Forebrain Neurogenesis: From Embryo to Adult. March 16-17, 2016. Banff, AB, Canada. Poster presentation.
- **Sanchez-Arias, J. C.**, Wicki-Stordeur L. E., Carmona-Wagner E. O., Dhaliwal J, Gunton A, Kim M. S, Boyce A. K. J., Shestopalov V. I., Lagace D. C., Swayne L. A. Investigation of Pannexin 1 in the response of developing neurons to stroke. Canadian Association for Neuroscience Annual Meeting 2015. May 24-27, 2015. Vancouver, BC, Canada.

Service

- BC Regenerative Medicine Symposium Organizing & Scientific Committee
- BC Regenerative Medicine Newsletter Co-editor
- Brain Bee Organizer - Victoria Chapter
- University of Victoria - Division of Medical Sciences Student Representative
- Neuroscience Graduate Program Kick-Off - Organizing Committee
- Let's Talk Science UVic Volunteer

Society Memberships

- Society for Neuroscience
- Canadian Association for Neuroscience
- BC Regenerative Medicine Initiative Trainee Steering Committee

References

- Available upon request