Raymond Sanchez, PhD

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Education

2015-2020 **The University of Washington** Seattle, Washington
PhD, Graduate Program in Neuroscience
Lab of Horacio de la Iglesia, Department of Biology

2011-2015 **The University of Arizona** Tucson, Arizona
Bachelor of Science
Neuroscience & Cognitive Science. Minors in Information Science, Entrepreneurship

Research Experience

Department of Biology, University of Washington
Postdoctoral Fellow, August 2020 – March 2021

Adviser: Horacio de la Iglesia, PhD

- Amygdala encoding of cyclic environmental fear
- Using wearable devices to improve sleep quality and monitoring in pediatric ICU patients
- Using wearable devices and metadata on technology use habits to understand how sleep, mood and behavior have changed during the COVID-19 pandemic

Program in Neuroscience and Department of Biology, University of Washington
PhD Student, September 2015 – August 2020
Dissertation: Neural Mechanisms of Sleep Regulation and Sleep Disturbances in Dravet Syndrome
Advisor: Horacio de la Iglesia, PhD
Thesis Committee: Ethan Buhr, William Catterall, David Gire, Franck Kalume, Richard Palmiter

Department of Neuroscience, University of Arizona
Research Assistant, January 2013 – May 2015
Thesis: A novel EEG device for long-term monitoring of sleep in humans
Advisor: Charles Higgins, PhD

Department of Psychology, University of Arizona
Research Volunteer, June 2014 – May 2015
Striatal dopamine release in the rat engaged in goal-directed navigation
Advisor: Stephen Cowen, PhD

Research Techniques
Laboratory: Rodent survival surgery (cortical and depth electrode implantation, cannula implantation, viral vector injection, ovariectomies), rodent behavioral testing, wireless optogenetics, immunohistochemistry, PCR for mouse genotyping, cardiac perfusion, ex vivo brain slice luminescence imaging, human actimetric data collection and analysis
Computing: R, MATLAB, Python, GraphPad Prism, Microsoft Office Suite

Peer-Reviewed Publications

Bussi, I., **Sanchez, R.**, de la Iglesia, H.O. (2020). Vasopressin Neurons: Master Integrators of Time and Homeostasis. *Trends in Neurosciences, in press*

Sanchez, R., Bussi, I., Ben-Hamo, M., Caldart, C., Catterall, W., de la Iglesia, H. O. (2019). Circadian regulation of sleep in a pre-clinical model of Dravet syndrome: Dynamics of sleep stage and siesta re-entrainment. *SLEEP, July 2019*

Padilla, S., Perez, J., Ben-Hamo, M., Johnson, C., **Sanchez, R.,** Bussi, I., Palmiter, R., de la Iglesia, H. O. (2019). Kisspeptin Neurons in the Arcuate Nucleus of the Hypothalamus Orchestrate Circadian Rhythms and Metabolism. *Current Biology, February 2019*

Pre-prints

Sanchez, R.*, Caldart, C.*, Beck, A., Ben-Hamo, M., Weil, T., Perez, G., Kalume, F., Brunton, B., de la Iglesia, H. O. (2020). Sleep Identification Enabled by Supervised Training Algorithms (SIESTA): An open-source platform for automatic sleep staging of rodent polysomnographic data. *biorXiv, July 2020*
Indicates co-first authorship

Conference Presentations and Contributed Abstracts

May 2020	**Sanchez, R.,** Bussi, I., Catterall, W., de la Iglesia H.O. "The role of $Na_V1.1$ sodium channel expression in the suprachiasmatic nucleus in circadian behavior and sleep regulation." Society for Research on Biological Rhythms Virtual Meeting
May 2020	Caldart, C., **Sanchez, R.**, Brunton, B., de la Iglesia, H. O. "SIESTA: A machine learning approach to automated sleep-stage scoring in rodents." Society for Research on Biological Rhythms Virtual Meeting
May 2020	Casiraghi, L., Dalvi, R., **Sanchez, R.,** Bard, A., de la Iglesia, H.O., Kalume, F. "Testing environmental circadian interventions on a Dravet Syndrome Mouse Model." Society for Research on Biological Rhythms Virtual Meeting
May 2020	Beck, A., **Sanchez, R.,** de la Iglesia, H.O. "Epileptic activity in a mouse model of Dravet syndrome is regulated by time of day and sleep stage." Society for Research on Biological Rhythms Virtual Meeting
May 2020	Bussi, I., Neitz, A., **Sanchez, R.,** Kunda, D., Allen, C., de la Iglesia H.O. "Deletion of the vesicular GABA transporter from Neuromedin-S+ neurons impairs behavioral circadian rhythms." Society for Research on Biological Rhythms Virtual Meeting
October 2019	Caldart, C., **Sanchez, R.**, Brunton, B., de la Iglesia, H. O. "SIESTA: A machine learning approach to automated sleep scoring in mice." XV Latin American Symposium on Chronobiology, Colonia del Sacramento, Uruguay
October 2019	**Sanchez, R.,** Bussi, I., Ben-Hamo, M., Caldart, C., Catterall, W., de la Iglesia, H. O. "Circadian regulation of sleep in a pre-clinical model of Dravet syndrome: Dynamics of sleep stage and siesta re-entrainment." XV Latin American Symposium on Chronobiology, Colonia del Sacramento, Uruguay
November 2018	**Sanchez, R.,** Bussi, I., Ben-Hamo, M., de la Iglesia, H. O. "Circadian regulation of sleep in a mouse model of Dravet syndrome". Society for Neuroscience, San Diego, CA
November 2018	Aloi, M., Prater, K., Hu, R., **Sanchez, R.,** Davidson, S., de la Iglesia, H. O., Jayadev, S., Garden, G. "microRNA miR-155 modulates inflammation in Alzheimer's disease". Society for Neuroscience, San Diego, CA
May 2018	**Sanchez, R.,** Bussi, I., Ben-Hamo, M., de la Iglesia, H. O. "Circadian regulation of sleep in a mouse model of Dravet syndrome". Society for Research on Biological Rhythms, Amelia Island Florida.

May 2018	Bussi, I., **Sanchez, R.,** Conceicao, L., Catterall, W., de la Iglesia, H.O. "Using region-specific mutagenesis to understand the neural basis of circadian deficits in Dravet syndrome". Society for Research on Biological Rhythms, Amelia Island, Florida.
November 2017	**Sanchez, R.,** Bussi, I., Ben-Hamo, M., de la Iglesia, H. O. "Jet lag induces a transient misalignment in the circadian timing of sleep stages in the mouse". Society for Neuroscience, Washington, D.C.
November 2017	Bussi, I., **Sanchez, R.,** Ben-Hamo, H., de la Iglesia, H.O. "Characterization of circadian behavior and sleep architecture in a mouse model of epilepsy". XIV Latin American Symposium on Chronobiology, Valparaiso, Chile.
November 2016	**Sanchez, R.,** de la Iglesia, H. O. "Sleep architecture in a mouse model of jet lag". Society for Neuroscience, San Diego, CA

Invited Talks

Dec 2020	American Epilepsy Society Annual Meeting, Virtual Conference *Sleep and circadian rhythm disturbances in a pre-clinical model of Dravet syndrome*
April 2019	University of Washington Graduate Program in Neuroscience Student Symposium *Sleep regulation in a mouse model of epilepsy*
January 2019	University of Washington Neural Computation and Engineering Connection, Seattle, Washington *Long-term continuous recording of sleep in a mouse model of epilepsy*
May 2018	Society for Research on Biological Rhythms Meeting, Amelia Island, Florida *Circadian Regulation of Sleep in a Mouse Model of Dravet Syndrome*
January 2018	University of Washington Neural Computation and Engineering Connection, Seattle, Washington *A Novel System for Closed-Loop Manipulations of Sleep Stages and Seizures in a Mouse Model of Epilepsy*
September 2017	University of Washington Graduate Program in Neuroscience Annual Retreat, Seattle, Washington *Sleep and Circadian Rhythm Disturbances in a Mouse Model of Dravet Syndrome*

Teaching and Outreach

Spring 2020	University of Washington Neurobiology, Teaching Assistant NBIO 402: Diseases of the Nervous System
2018-Present	Member and Contributing Science Writer, *We are Scientists* series (students.washington.edu/sarje/blog), Scientists Advocating for Representation, Justice & Equity (SARJE) The University of Washington
2018-Present	Contributing Science Writer Massive Science Consortium (massivesci.com)
2017	Society for Neuroscience 2017, Washington D.C. Official Annual Meeting Blogger

2017-Present	Pacific Science Center, Portal to the Public Paul G. Allen Family Foundation Science Communication Fellow • Volunteer at Meet a Scientist events • Assist other Fellows with Activity development and feedback
Spring 2017	University of Washington Department of Biology, Teaching Assistant BIOL 418: Biological Clocks and Rhythms
Winter 2017	University of Washington Neurobiology, Teaching Assistant NBIO 301: Molecular & Cellular Neurobiology
2015-Present	Neuroscience Community Outreach Group, Member The University of Washington • Visiting scientist at Phantom Lake Elementary School, Bellevue, WA. Coordinate Neuroscience Activity Days and Hour of Code • Visiting scientist at Lowell Elementary School, Seattle, WA • Organizer and Volunteer, UW Brain Awareness Week Open House, 2016-Present
2015-Present	Editor and Reviewer, Grey Matters Undergraduate Neuroscience Magazine The University of Washington • Edited and reviewed over two dozen neuroscience articles written by undergraduates for popular consumption

Mentorship

Spring 2019 – Present	Asad Beck, PhD Candidate, Graduate Program in Neuroscience, University of Washington
Spring 2019 – Present	Daniella Marinelli, Undergraduate Research Assistant, UW Molecular Cellular & Developmental Biology Major
Winter 2017-Fall 2018	Tenley Weil, Undergraduate Research Assistant, UW Neurobiology Major Current Position: Post-baccalaureate Research Fellow, National Institutes of Mental Health, Bethesda, MD

Professional Service

August 2019-June 2020	Bioscience Careers Seminar Committee, Website Manager University of Washington School of Medicine
2018-2019	Admissions Committee, Chair of Student Representatives Graduate Program in Neuroscience, The University of Washington
2015-2019	Admissions Committee Student Representative Graduate Program in Neuroscience, The University of Washington
2015-2018	Seminar Committee Student Representative Graduate Program in Neuroscience, The University of Washington
Oct. 2016	Student Representative to SACNAS Graduate Program in Neuroscience, The University of Washington SACNAS Conference in Long Beach, CA, Oct. 2016

Honors & Awards

2020	Society for Research on Biological Rhythms 2020 Trainee and Young Faculty Diversity Enhancement Fellowship
2019	XV Latin American Symposium in Chronobiology 2019 Sleep Science Prize
2018	Society for Research on Biological Rhythms 2018 SRBR Merit Award
2018	Society for Research on Biological Rhythms 2018 Trainee and Young Faculty Diversity Enhancement Fellowship
2017-2019	Washington Research Foundation Innovation Graduate Fellow in Neuroengineering University of Washington Institute for Neuroengineering
2017–2019	Paul G. Allen Family Foundation Neuroscience Communication Scholar Pacific Science Center Portal to the Public, Seattle, WA
2016-2018	Neuroscience Scholars Program Associate Society for Neuroscience, professional and travel award
2014-2015	NASA Space Grant Intern University of Arizona and the National Aeronautics & Space Administration
2014	Galileo Circle Scholar University of Arizona, College of Science
2011-2015	National Hispanic Merit Scholar National Merit Scholarship Program and the University of Arizona

Professional Appointments

2014-2015	Science Writer and Press Release Officer UANews, The University of Arizona, Tucson, AZ