

César D. M. Vargas
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EDUCATION

The Rockefeller University, New York, NY

The David Rockefeller Graduate Program, Ph.D.

Advisor: Dr. Erich Jarvis, Laboratory of Neurogenetics of Language

Entered Fall 2016

Vanderbilt University, Nashville, TN

B.A. in Neuroscience, Minor in History of Art

Departmental Honors in Neuroscience; Thesis under Dr. Vivien Casagrande

May 2016

University of St. Andrews, St. Andrews, Scotland, UK

Study Abroad

Fall 2014

FUNDING & GRANTS

HHMI Gilliam Fellowship for Advanced Study

Kavli Neural Systems Institute, Pilot Grant

–\$25,000 grant awarded to pursue “early-stage projects with high technical or intellectual novelty.”

Fall 2018-2020

2019-2021

HONORS & AWARDS

Departmental Honors in Neuroscience

College of Arts and Science Conference Travel Award

May 2016

October 2015

COURSES

Interacting with Neural Circuits, CAJAL Course, Champalimaud Institute for the Unknown, 2019

RESEARCH & EXPERIENCES

Laboratory of Neurogenetics of Language, The Rockefeller University, New York, NY

Graduate Fellow

August 2017-Present

- Researching the potential influence on control of cortex on mouse ultrasonic vocalizations used during courtship and other dyadic interactions, and the ability of mice to volitionally elicit or control their ultrasonic vocalizations. I am using various techniques, including *in vivo* free-behaving electrophysiology, electromyography, and operant conditioning paradigms.
- Mentored two undergraduate students by training them in basic histological and behavioral techniques used routinely in the lab in an effort to work towards an independent project. Further, training involved learning to read and analyze primary articles and developing written and oral presentations skills.

Department of Cell & Developmental Biology, Vanderbilt University, Nashville, TN

Undergraduate Researcher

January 2015-May 2016

- Investigated the changes in cortical connectivity and structure in sensory regions in autism spectrum disorders (ASDs) by using a mouse model with a known human mutation in the serotonin transporter.
- Used immunohistochemistry and image analysis to assess anatomical changes in primary visual areas and secondary visual areas with known multisensory/auditory input.

Department of Biological Science, Vanderbilt University, Nashville, TN

Undergraduate Research Assistant

September 2013–May 2014

- Investigated the asymmetric expression of the protein *her6* and its possible regulatory pathways in the habenula of zebrafish, as well as trying to understand *her6*'s role in promoting progenitor neurons to post-mitotic neurons.

Center of Excellence in Neurosciences, Texas Tech University Health Sciences Center, El Paso, TX

Research Volunteer

July–August 2014

ASPET Summer Research Program, Vanderbilt, Nashville, TN

Summer 2015

PUBLICATIONS

- Vasiliki Stoumpou, **César D. M. Vargas**, Peter F. Schade, Theodoros Giannakopoulos, Erich D. Jarvis. (2021). Analysis of Mouse Vocal Communication (Amvoc): A deep, unsupervised method for rapid detection, analysis, and classification of ultrasonic vocalizations. *bioRxiv*. Published online August 13, 2021:2021.08.13.456283.
- Mayu Frank, Nathalie E Blachere, Salina Parveen, Ezgi Hacısuleyman, John Fak, Joseph M Luna, Eleftherios Michailidis, Samara Wright, Pamela Stark, Ann H Campbell, Ashley Foo, Thomas P Sakmar, Virginia Huffman, Marissa Bergh, Audrey Goldfarb, Andrew Mansisidor, Agata L Patriotis, Karl H Palmquist, Nicolas Poulton, Rachel Leicher, **César D Vargas**, Irene Duba, Arlene Hurley, Joseph P Colagrecó, Nicole Pagane, Dana E Orange, Kevin Mora, Jennifer L Rakehan, Randal C Fowler, Helen Fernandes, Michelle F Lamendola-Essel, Nick Didkovsky, Leopolda Silvera, Joseph Masci, Mabelle Allen, Charles M Rice, Robert B Darnell. (2021). DRUL for school: Opening Pre-K with safe, simple, sensitive saliva testing for SARS-CoV-2. *PLOS ONE*. 2021;16(6):e0252949.
- Jose E. Marin, Andres H. Belmont, **César D. M. Vargas**, Jessica Salazar, Henderson Jones, Phillip Gibson, and Monica Delgado. (2013). Atoms, Elements, Molecules, and Ions. *General Chemistry by Exploration*: 46-48.

TALKS

Neuromatch conference 3.0, October, 2020

Keizen Lecture, Comparative Bioscience Center, The Rockefeller University, NY, April, 2019

POSTERS AND PRESENTATIONS

NIH High-Risk, High-Reward Research Symposium - Virtual

Vargas, C. D. M., Waidmann, E., Jarvis, E. D. (2020). Assessing the Functional Representation of Vocal Musculature in the Motor Cortex of Mice

Junior Scientist Workshop on Mechanistic Cognitive Neuroscience, HHMI,

Janelia Research Campus – Virtual

Vargas, C. D. M., Waidmann, E., Jarvis, E. D. (2020). Functional Representation of Vocal Musculature in the Motor Cortex of Mice

Annual Gilliam Fellows Meeting, HHMI - Virtual

Vargas, C. D. M., Waidmann, E., Jarvis, E. D. (2020). Influence of Specialized Forebrain Circuit in Mouse Vocal Communication

*Macauley Honors College Psychology Honors Conference, Hunter College,
New York, NY - Virtual*

Ahmed, J., **Vargas, C. D. M.**, Boyd, J.L., Jarvis, E. D. (2020). Volitional Control of Mouse Vocalizations

Annual Biomedical Research Conference for Minority Students (ABRCMS) - Virtual

Ahmed, J., **Vargas, C. D. M.**, Boyd, J.L., Jarvis, E. D. (2020). Volitional Control of Mouse Vocalizations

Annual Gilliam Fellows Meeting, HHMI, Chevy Chase, MD

Vargas, C. D. M., Ahmed, J., Jarvis, E. D. (2019). Influence of Specialized Forebrain Circuit in Mouse Vocal Communication

Annual Gilliam Fellows Meeting, HHMI Janelia Research Campus, Ashburn, VA

Vargas, C. D. M., Jarvis, E. D. (2018). Influence of Specialized Forebrain Circuit in Mouse Vocal Communication

Society for Neuroscience, San Diego, CA

Krueger Fister* +, J., **Vargas* +, C. D. M.**, Mavity-Hudson, J. A., Robson, M. J., Veenstra-Vanderweele, J., Wallace, M. T., Blakely, R. D., and Casagrande, V. A. (2016) Changes in thalamocortical projection patterns in a mouse model of autism. *Society for Neuroscienc*, Program No. 30.10/C8. *authors contributed equally

Society for Neuroscience, Chicago, IL

Vargas, C.D.M, Mavity-Hudson, J., Robosn, M., Veenstra-VanderWeele, J., Wallace, M., Blakely, R., Casagrande, V. (2015) Changes in Cortical Wiring in a Mouse Model of Autism. *Society for Neuroscience*, Program No.490.17/E18.

Vanderbilt Kennedy Center Science Day, Nashville, TN

Vargas, C.D.M, Mavity-Hudson, J., Robosn, M., Veenstra-VanderWeele, J., Wallace, M., Blakely, R., Casagrande, V. (2015) Changes in Cortical Wiring in a Mouse Model of Autism. *Society for Neuroscience*, Program No.490.17/E18.

TEACHING

Undergraduate Teaching Assistant

Summer 2013

Department of Physics and Astronomy, University of Texas at El Paso, El Paso, TX

- Led a section for the laboratory component of an introductory Physics (Mechanics) course.

Summer Neuroscience Program

Co-Director

August 2018-2021

Guest Lecturer and Mentor

August 2017, August 2018

- Co-director of a program aimed at students who have fewer scholastic resources in the sciences at their high schools. The program provides a platform engage them in neuroscience through a combination of lectures, journal clubs, and simple behavioral experiments.
- As co-director, I help select students and present multiple lectures during the two-week program.
- Previously guest lectured on neuroethology and animal behavior (2017) and sleep and dreaming (2018).

Rockefeller Summer Undergraduate Research Fellowship (SURF)

Journal Club Mentor

Summer 2017, 2018, 2019, 2020, 2021

- Invited by the Dean's Office to participate as a mentor for SURF. Provided mentorship/coaching to a group of five undergraduate students. Aided in selection of a paper to be presented to their SURF peers. The process involved learning how to critically read scientific literature and how to make presentations accessible to an audience with a diverse scientific background.

MENTORSHIP

Undergraduate Students:

Hira Choudhri – Fall 2017

Jannatul Ahemd – Fall 2018-Spring 2021

Research Assistants:

Rajvi A. Agravat

Rotation Students:

Elena N. Waidmann

PROFESSIONAL MEMBERSHIPS

Society for Neuroscience

Sigma Xi

CODING

Proficient in Python and MATLAB

Some experience with Java

LEADERSHIP & ACTIVITIES

Rockefeller Inclusive Science Initiative (RiSI)

Co-president

University Recruitment Co-Chair

December 2019-2020

December 2018-December 2019

- Helped found RiSI with other graduate students at Rockefeller. The goal of the group is to provide a community at Rockefeller for individuals who identify as underrepresented minorities (URMs), and to create a framework for mentorship and retention to increase diversity at the University.
- Collaborate with co-president to develop and lead the initiatives that are of interest to the RiSI and broader Rockefeller URM community. A particular focus is developing a speaker series and long-term mentorship initiatives between RiSI members and local undergraduate students.

Vanderbilt Undergraduate Review Journal

Peer Reviewer

January 2015-May 2015

- Was selected by the editorial team to collaborate with other journal members to review research articles submitted by undergraduate students from Vanderbilt University. My fields for review included Neuroscience and related fields, as well as Art History and History.