

# César D. M. Vargas

Sober Lab, Department of Biology  
Emory University  
Atlanta, GA

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## EDUCATION & TRAINING

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<b>Emory University</b> Postdoctoral Fellow Advisor: Dr. Samuel Sober, Department of Biology	<b>May 2024-Present</b>
<b>The Rockefeller University</b> Postdoctoral Associate Advisor: Dr. Erich Jarvis, Laboratory of Neurogenetics of Language	<b>Sep. 2023-Apr. 2024</b>
<b>The Rockefeller University</b> The David Rockefeller Graduate Program, Ph.D. Advisor: Dr. Erich Jarvis, Laboratory of Neurogenetics of Language	<b>2016-2023</b>
<b>Vanderbilt University</b> B.A. in Neuroscience, Minor in History of Art Departmental Honors in Neuroscience; Honors Thesis under Dr. Vivien Casagrande	<b>2016</b>
<b>University of St. Andrews</b> Study Abroad	<b>Fall 2014</b>

## EXTERNAL COURSEWORK

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<i>Interacting with Neural Circuits</i> , CAJAL Course, Champalimaud Institute for the Unknown	<b>Summer 2019</b>
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## RESEARCH & EXPERIENCE

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<b>Laboratory of Neurogenetics of Language, The Rockefeller University, New York, NY</b> <i>Postdoctoral Associate</i> <i>Graduate Fellow</i>	<b>2023-2024</b> <b>2017-2023</b>
<b>Department of Cell &amp; Developmental Biology, Vanderbilt University, Nashville, TN</b> <i>Undergraduate Researcher</i>	<b>January 2015-May 2016</b>
<b>Department of Biological Science, Vanderbilt University, Nashville, TN</b> <i>Undergraduate Research Assistant</i>	<b>September 2013–May 2014</b>

## FUNDING & AWARDS

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GRC: Carl Storm Underrepresented Minority (CSURM) Fellowship	<b>August 2022</b>
Kavli Neural Systems Institute, Pilot Grant – \$25,000 grant awarded to pursue “early-stage projects with high technical or intellectual novelty.”	<b>2019-2021</b>
HMI Gilliam Fellowship for Advanced Study	<b>2018</b>
Departmental Honors in Neuroscience	<b>May 2016</b>
College of Arts and Science Conference Travel Award	<b>October 2015</b>

## TALKS

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Bridging Brains and Bioacoustics	Virtual, November 2023
Rockefeller Student Retreat	The Rockefeller University, September 2022
Rockefeller Postdoctoral Association Seminar Series	The Rockefeller University, August 2022
Neuromatch conference 3.0	Virtual, October 2020
Keizen Lecture	Comparative Bioscience Center, The Rockefeller University, April 2019

## PUBLICATIONS

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- A Functional and Non-Homuncular Representation of the Larynx in the Primary Motor Cortex of Mice, a Vocal Non-Learner.  
**César D. M. Vargas**, Rajvi K. Agravat\*, Elena N. Waidmann\*, Christodoulos Bochalos, Hector Bermudez, Theodoros Giannakopoulos, Erich D. Jarvis; \*Equal contribution; *BioRxiv* (2024); doi: <https://doi.org/10.1101/2024.02.05.579004>
- Unsupervised Temporal Analysis of Mouse Vocalizations.  
Christodoulos Bochalos, **Cesar Vargas**, Erich Jarvis, and Theodoros Giannakopoulos. *IEEE Conference on Computational Intelligence in Bioinformatics and Computational Biology* (2023). doi: [10.1109/CIBCB56990.2023.10264885](https://doi.org/10.1109/CIBCB56990.2023.10264885)
- Analysis of Mouse Vocal Communication (AMVOC): a deep, unsupervised method for rapid detection, analysis and classification of ultrasonic vocalisations.  
Vasiliki Stoumpou, **César DM Vargas**, Peter F. Schade, J. Lomax Boyd, Theodoros Giannakopoulos, and Erich D. Jarvis. *Bioacoustics* (2022): 1-31. <https://doi.org/10.1080/09524622.2022.2099973>
- DRUL for school: Opening Pre-K with safe, simple, sensitive saliva testing for SARS-CoV-2.  
Mayu Frank, Nathalie E Blachere, Salina Parveen, Ezgi Haciosuleyman, 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 Mansisor, Agata L Patriotis, Karl H Palmquist, Nicolas Poulton, Rachel Leicher, **César D Vargas**, Irene Duba, Arlene Hurley, Joseph P Colagreco, Nicole Pagane, Dana E Orange, Kevin Mora, Jennifer L Rakeman, Randal C Fowler, Helen Fernandes, Michelle F Lamendola-Essel, Nick Didkovsky, Leopolda Silvera, Joseph Masci, Mabelle Allen, Charles M Rice, Robert B Darnell. *PLOS ONE*. 2021;16(6):e0252949. <https://doi.org/10.1371/journal.pone.0252949>
- Atoms, Elements, Molecules, and Ions. *General Chemistry by Exploration: Resource Book For Peer-Led Team Learning First Semester*. **César D. M. Vargas** (2013). Jose E. Marin, Andres H. Belmont (eds.). LFAC. pp. 46-48.

### In submission

- A humanized NOVA1 splicing factor alters mouse vocal communications.  
Yoko Tajima, **César Vargas**, Ji-Dung Luo, Wei Wang, Erich D. Jarvis, Robert B. Darnell

## POSTERS AND PRESENTATIONS

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*Society for Neuroscience*, San Diego, CA

**Vargas, C. D. M.**, Agravat., R. K., Waidmann, E., Jarvis, E. D. (2022). Mouse Motor Cortex Can Influence Vocal Musculature

*Gordon Research Conference: Neural Mechanisms of Acoustic Communication*, Mount Holyoke College

**Vargas, C. D. M.**, Agravat., R. K., Waidmann, E., Jarvis, E. D. (2022). Control of Vocal Musculature by Primary Motor Cortex in Mice

*Society for Neuroscience – Virtual*

**Vargas, C. D. M.**, Waidmann, E., Jarvis, E. D. (2021). Stimulation of Mouse Primary Motor Cortex Activates Intrinsic and Extrinsic Vocal Muscles

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

**Vargas, C. D. M.**, Waidmann, E., Jarvis, E. D. (2021). 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  
Attend as Gilliam Fellow

**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

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

**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\*<sup>+</sup>, J., **Vargas\*<sup>+</sup>**, **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. <sup>+</sup>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

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### Summer Neuroscience Program

Co-Director

Guest Lecturer and Journal Club Mentor

**August 2018-2021**  
**August 2017, 2018, 2022**

### Rockefeller Summer Undergraduate Research Fellowship (SURF)

Journal Club Mentor

**Summer 2017, 2018, 2019, 2020, 2021**

### Undergraduate Teaching Assistant

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

**Summer 2013**

## MENTORSHIP

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Mia Haraguchi

Rotation Student

Fall 2022

Elena N. Waidmann

Rotation Student

Summer 2020

Hector Bermudez

Research Assistant

Fall 2022–Present

Rajvi A. Agravat

Research Assistant

Fall 2020–Spring 2022

Jannatul Ahemd

Undergraduate Student

Fall 2018–Spring 2021

Hira Choudhri

Undergraduate Student

Fall 2017

## OUTREACH

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Kavli Science & Society Webinar: Building a Community: Mobilizing your Peers and Leveraging your Resources, Virtual (2021)

-Panelist, responded to questions about organizing peer networks to be involved in mentorship activities

Foro Estudiantil de BioBus - Virtual, Spanish language (2020)

- Panelist for a Q&A where kids (target age 5-15) asked questions about the brain and animal behavior.

BioAccess – Virtual (2020)

- Moderated session for student lectures. Program designed as a professional development workshop for undergraduates and recent Bachelor's graduates to increase graduate school preparation and application success. Science Saturday (2017-2019)

-Developed scientific demos with the Jarvis lab to teach and engage students on neuroscience, vocal learning, and evolution. Outreach program aimed at K-8, several hundred students participate during the all-day event.

## **MEDIA**

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STARTS: Demystifying the Boundary Between STEM and the Arts (2023)

– Podcast guest, Episode 19. Discussed path to research, link between arts and science, and diversity in science.

“Why the F\*\*\* Should We Care?” (2020)

– Podcast guest, Episode 9. Discussed my research and mouse vocal behavior.

The Art of Doing Science (2019)

– Blog post hosted by RockEdu on the similarities between the practice of science and the arts.

## **OTHER LEADERSHIP ACTIVITIES**

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**Rockefeller Inclusive Science Initiative (RiSI)**

*Co-president*  
*University Recruitment Co-Chair*

**December 2019-2020**  
**December 2018-December 2019**