RAJVI AGRAVAT

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Interdisciplinary Neuroscience Program
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Education

The University of Texas at Austin, TX **Expected 2027**
Ph.D. Neuroscience (GPA: 3.86)

New York Institute of Technology, NY **May 2016 to 2020**
B.S. Biology (GPA: 3.89)

Research Experience

1. **Hamilton Lab, UT Austin, TX** May 2023 – Present
   Graduate Research Assistant; Advisor: Dr. Liberty Hamilton
   Project 1: Investigating speech vs. music representation in higher order auditory cortex using sEEG during an implicit, pediatric, naturalistic attention task
   Project 2: Studying speech vs. music processing using sEEG during explicit pediatric naturalistic listening environments

2. **Developmental Cognitive Neuroscience Lab, UT Austin, TX** Jan – May 2023
   Rotation Student; Advisor: Dr. Jessica Church-Lang
   Project: Analyzing fMRI responses in children during academic and executive function tasks to inform classroom interventions

3. **Laboratory of Neurogenetics of Language, The Rockefeller University, NY** Aug 2020 – Jun 2022
   Research Assistant; Advisor: Dr. Erich Jarvis
   Project: Studying the functional representation of larynx in the mouse primary motor cortex (M1)

4. **Department of Psychiatry Irving Medical Center, Columbia University, NY** Nov 2019 – Feb 2020
   Research Intern; Advisor: Dr. Kristina Denisova
   Project: Investigating the impact of prenatal medication exposure on neurodevelopment and delving deep into the risk factors for autism spectrum disorder in high-risk infants

5. **Department of Molecular, Cellular, and Developmental Biology, Yale University, CT** Jul – Aug 2019
   Research Intern; Advisor: Dr. Haig Keshishian
   Project: Using microbeam laser ablation to study motoneurons and synapse formation in drosophila

6. **Department of Biological and Chemical Sciences, NYIT, NY** Oct – May 2020
   Senior Research Assistant; Advisor: Dr. Niharika Nath
   Project: Studying antibacterial efficacy of organosulfur compounds against Klebsiella pneumoniae, Escherichia coli, and Pseudomonas aeruginosa

7. **Kokilaben Dhirubhai Ambani Hospital, India** Jun – Jul 2019
   Observer; Advisor: Dr. Hrishikesh Sarkar, Dr. Yuvika Kamdar
   Discipline: Neurosurgery, Neuropsychology

8. **New York University, NY** Jan – Jul 2019
   Research Assistant; Advisor: Dr. Eleni Nikitopoulos
   Project: Researching the behavioral and genetic makeup of wild monkeys to reveal insights into their kinship and social structures

Manuscripts Under Preparation

Agravat, R. K., Desai, M, Field, A. M, Foox, G, Georges, S, Leisawitz, J, Asghar, S, Anderson, A. E, Clarke, D, Tyler-Kabara, E. C, Watrous, A. J, Weiner, H. L, Hamilton, L. S. Neural Prioritization of Speech Over Music in Pediatric Auditory Cortex Using Intracranial EEG *(in prep.)*

Vargas, C. D. M., **Agravat, R. K.**, Waidmann, E. N., Bochalis, C., Bermudez, H., Giannakopoulos, T., & Jarvis, E. D. (2024). A Functional and Non-Homuncular Representation of the Larynx in the Primary Motor Cortex of Mice, a Vocal Non-Learner. In bioRxiv (p. 2024.02.05.579004). https://doi.org/10.1101/2024.02.05.579004 *(pre-print)*

Additional Training

Analyzing, Presenting Data/Information. Edward Tufte. 2025

Genetics & Neurobiology of Language. Cold Spring Harbor Laboratories. 2024

Presentations

1. (Upcoming) **R. Agravat**, M. Desai, G. Foox, A. Field, A. Watrous, A. Anderson, D. Clarke, E. T. Kabara, H. Weiner, L. Hamilton. Direct Brain Recordings Showing Neural Prioritization of Speech Over Music in Children.
    - *Society for Neurobiology of Language (SNL), 2025. Washington, DC.*
    - *Berkeley Neuroscience Conference, 2025. Lake Tahoe, CA.*
    - *LLMs & the Brain, 2025. Houston, TX.*
    - *Advances and Perspectives in Auditory Neuroscience (APAN), 2025. San Diego, CA.*
    - *Society for Neuroscience (SfN), 2025. San Diego, CA.* [abstract selected for press conference, top 0.5%]

2. **R. Agravat**, M. Desai, G. Foox, A. Field, A. Anderson, D. Clarke, E. T. Kabara, H. Weiner, L. Hamilton. Neural Encoding of Acoustic Features Across Speech and Music in the Human Brain.
    - *The University of Texas System-wide Brain Research Summit, 2024. Austin, TX.*
    - *Advances and Perspectives in Auditory Neuroscience (APAN), 2024. Chicago, IL.*
    - *Society for Neuroscience (SfN), 2024. Chicago, IL.*

3. **R. Agravat**, M. Desai, G. Foox, A. Field, A. Anderson, D. Clarke, E. T. Kabara, H. Weiner, L. Hamilton. Comparing Speech and Music Encoding Models.
    - *UT Austin Cellular and Clinical Applied Rehabilitation Research and Engineering Research Day, 2024. Austin, TX.*

4. C.D.M. Vargas, **R. Agravat**, E. Jarvis. Mouse Motor Cortex Can Influence Vocal Musculature.
    - *Society for Neuroscience (SfN), 2022. San Diego, CA.*

5. **R. Agravat**, C.D.M. Vargas, E. Jarvis. Connectivity and Neuroanatomy of the Orofacial Motor Cortex and Laryngeal Motor Cortex for Vocal Modulation in Mice.
    - *Society for Neuroscience (SfN), 2021. Chicago, IL.*

6. **R. Agravat**, N. Nath. Antibacterial effects of organosulfur compounds against gram-negative bacteria.
    - *Sigma XI Virtual Science Scholars' Symposium 2020. New York City, NY.*

7. **R. Agravat**, A. Petrovic. Chiral Sensing of Natural Products via Chiroptical Spectroscopy.
    - *Symposium of University Research and Creative Expression (SOURCE) 2019. New York City, NY.*

Honors, Awards, and Scholarships

1. **Graduate Student Professional Development Award, UT Austin** *($412)* Fall 2024

2. **Reimagining Professional Development Award, UT Austin** *($800)* Fall 2024

3. **INS & SLHS Travel Award, Cold Spring Harbor Lab** Summer 2024
   Genetics and Neurobiology of Language *($3400)*

4. **Texas SLH Foundation (TSHA) Elizabeth Wiig Research Award** *($1000)* 2024

5. **Reimagining Professional Development Award, UT Austin** *($400)* Fall 2023

6. **UT INS Graduate Fellowship** *($40,000 per year)* 2022-2027

7. **Dr. Barbu Kestanband Annual Scholarship** *($5000)* 2018

8. **The NYIT Scholarship** *($16,000 per year)* Sep 2016 – May 2020

9. **NYIT Dean's List** Spring: 2017, 2018, 2019, 2020

10. **NYIT Presidential Honor's List** Fall 2019

Leadership and Activities

1. **UT Cellular to Clinical Applied Rehabilitation Research and Engineering (CARE) UT Austin, TX** Nov 2023 – Present
   Advisory Board Member

2. **Institute for Neuroscience, UT Austin, TX** Jan 2022
   Student Buddy

3. **Biology Academic Conference for Emerging Scholars (BioAcCES)** Oct 2021
   Reviewer

4. **Graphic Design and Printing Shop, NYIT, NY** Sep 2017 – May 2020
   Student Manager

5. **Telangana Jagruthi International Youth Leadership Conference, India** Jan 18-21, 2019
   International Delegate Organizer

Teaching

6. **Department of Speech, Language, & Hearing Sciences, UT Austin, TX** Spring 2025
   Graduate Teaching Assistant, SLH350: Language & the Brain

7. **Department of Biological Sciences, NYIT, NY** Fall 2019
   Undergraduate Teaching Assistant, Bioethics

Mentoring

8. **SAGES Women in STEM + STEM Muse Mentorship Program, UT Austin, TX** Feb – Jul 2023
   Mentor (Undergraduate Mentee: Melis Demiralp)

9. **Neuroscience Undergraduate Reading Program (NURP), UT Austin, TX** Jan – Apr 2023
   Graduate Student Mentor (Undergraduate Mentee: Ai-Vy Le)

10. **Letters to a Pre-scientist** Aug 2022 – Jun 2023
    STEM Pen Pal

Skills

Programming & Data Analysis

Languages: Python, MNE-Python, R

Signal Processing: Time-frequency analysis, spectral analysis, filtering, artifact removal, independent-component analysis (ICA), principal-component analysis (PCA), power analysis

Computational Modeling: Encoding and decoding models, linear/multivariate regression, Multi-temporal (MTRF) & Spatio-temporal (STRF) receptive field modeling, L2 regularization, model evaluation and validation
Statistical Analysis: Hypothesis testing, Linear Mixed-Effects Regression (LMER)

Neuroscience Techniques
EEG: Intracranial EEG (stereo-EEG), scalp EEG (event-related potentials/ERPs, time-frequency decomposition)

Software & Tools
EEG/MRI Tools: MNE-Python, FreeSurfer
Stimulus Design: Adobe Audition, Audacity, Praat (acoustic analysis)
Audio Processing DNN Tools: Moises, MVSEP, AudioShake, GAUDIO studio, NeuralMixPro (for source separation)
Markup: LaTeX (for academic writing), HTML
Writing/Presentation: Microsoft Word, PowerPoint, Excel
Visualization: Adobe Illustrator, Python (Matplotlib, seaborn)
Data Collection: Qualtrics (for surveys/experiments)

Operating Systems
Experienced user of macOS, Windows

Fluent in Spoken Languages
English, Hindi, and Gujarati

Community Service

Volunteer at **Austin Animal Shelter**, Austin, USA

Rotaract Club, Mumbai, India
Causes: Protecting the environment and supporting education

Interact Club, Mumbai, India
Causes: Cleanliness, fighting disease, and education

Children's Movement for Civic Awareness, Mysore, India
Causes: Children's education, civic awareness