# RAJVI AGRAVAT

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## Education

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

**New York Institute of Technology, NY** **May 2016 to 2020**
*Bachelor of Sciences (B.S.), Biological Sciences* (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)*

## 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.*
    - *Advances and Perspectives in Auditory Neuroscience (APAN), 2025. San Diego, CA.*
    - *Society for Neuroscience (SfN), 2025. San Diego, CA.*

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. **Travel Award, Advances and Perspectives in Auditory Neuroscience** *($1000)* — Fall 2024
4. **Travel Award, Society for Neuroscience** *($1500)* — Fall 2024
5. **INS Travel Award, Cold Spring Harbor Lab** — Summer 2024
   **Genetics and Neurobiology of Language** *($2900)*
6. **SLHS Travel Award, Cold Spring Harbor Lab** — Summer 2024

**Genetics and Neurobiology of Language** *($500)*

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

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

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

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

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

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

13. **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