

Jenny Marie Michlich, BA/BS (She/They)

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Introduction: Jenny is an incoming Research Assistant in at the Evolutionary Neuroscience Laboratory (PI: Eri Hecht) at Harvard University in the Department of Human Evolutionary Biology where they are currently working on neuroanatomical projects related to domestication and evolution of neural structures in Carnivora. They are also a Research Technician II in the Department of Communication Science and Disorders at the University of Pittsburgh where they are working remotely on a project related to the cortical control of the muscles of voice and breathing. Jenny has a broad interest in ethology, neuroethology, and sensory systems in both extinct and extant species. Their main research focus has been auditory-vocal-motor systems in birds and primates situated within a behavioral, cognitive, and evolutionary context. Jenny is also interested in the role of hormones in vocal production and auditory perception in central and peripheral nervous systems in nonhuman animals as well as the effect of domestication on auditory and motor systems. Jenny has training in the history and philosophy of science where they have taken coursework in biological complexity, comparative animal cognition, and the history of Darwinism and evolutionary theory. They have additional training in behavioral endocrinology, animal linguistics, phonetics, and phonology, with an interest in developing skills in bioacoustics, quantitative phonology in animal communication, and natural language processing as applied to nonhuman animal gestures. When not working or studying, Jenny enjoys gardening, learning about medicinal herbs, translating 18th and 19th-century anatomical texts, mentoring, disability rights, crystal collecting, reading continental philosophy, and meditation.

Educational Background

- University of Florida, Graduate Certificate in Medical Anatomy and Physiology (Major GPA: 3.00), Concentrations: Gross anatomy, Anatomy of the peripheral nervous system, Series in advanced respiratory physiology, January 2022-August 2023
- University of Pittsburgh, Carnegie Mellon University, University of Nebraska, Postbaccalaureate and graduate coursework, Courses: Biological Complexity, Animal Cognition, Theories in Phonology, Acoustic Phonetics, General Linguistics, Behavioral Endocrinology, Allometry, Evolution, Introduction to Mathematical Language, Non-classical Logic, May 2021- August 2023
- University of Pittsburgh, Bachelor of Science in Neuroscience (Major GPA: 2.84); Bachelor of Arts in Anthropology (Major GPA: 3.80), Concentrations: Functional neuroanatomy, Comparative morphology, auditory-vocal-motor systems in mammals, January 2017- May 2021
- University of Colorado Colorado Springs, Undergraduate Certificate in Cognitive Archeology (Major GPA 3.21), Concentrations: Cognitive Evolution, Neurocognition of Art, Language Evolution and Typologies, Paleoneurology, September 2015 to December 2019
- Community College of Allegheny County, Associate of Science in General Studies (cGPA 3.15), Concentrations: Anatomy and Physiology, Biology, July 2015- December 2016

Teaching Experience

- University of Pittsburgh, Department of Neuroscience, January 2020-May 2020, Pittsburgh, PA, Undergraduate Teaching Assistant, Spring 2020: NROSCI 1011: Functional Neuroanatomy, Instructor: Professor Erika Faselow.
- University of Pittsburgh, Department of Neuroscience, August 2020-December 2021, Pittsburgh, PA Undergraduate Teaching Assistant, Fall 2020, Spring 2020, Fall 2021: NROSCI 0080, Brain and Behavior, Instructor: Professor Badr Albanna.
- University of Pittsburgh, Department of Communication Science & Disorders, January 2021-May 2021, Pittsburgh, PA, *Undergraduate Teaching Assistant*, Spring 2021: CSD 0439: Neuroscience of Communication, Instructor: Professor Leah B. Helou.
- University of Pittsburgh, Department of Biological Sciences, January 2022-May 2022, Pittsburgh, PA, *Undergraduate Teaching Assistant*, Spring 2022: BIO1130: Evolution, Instructor: Professor Abagael West

Research Experience and Internships

- **Harvard University, Department of Evolutionary Biology, Evolutionary Neuroscience Laboratory PI: Hecht, June 2022-Present, Boston, MA, Research Assistant** Work will consist of undergraduate mentoring, management of the wet lab, histological processing of fox brain tissue and great ape brain tissue, slide scanning, data analysis, density analysis, neuropil analysis and potentially full brain reconstructions.
- **University of Pittsburgh, Department of Communication Science and Disorders, Helou Laboratory, PI: Helou, September 2018 – Present, Pittsburgh, PA External Research Collaborator** 2D/3D Brain reconstructions, manuscript writing, and grant preparation, consulting for technical issues with Neurolucida and histological techniques. Additional creation of training documents as needed. **Research Technician II/Research Technician III** Training in histological techniques and tissue sectioning of primate cortical, subcortical, and spinal cord tissue, Training in histological techniques and tissue sectioning of rat cortical, subcortical, and spinal cord tissue, Developing proficiency in 3D brain reconstructions with Neurolucida, Developing proficiency in 2D reconstructions of cortical tissue in Recon Win, Mentoring and training undergraduate research assistants in the lab on neuroanatomy tasks, Managing purchasing orders and determining case cost for the grant budget, Shadowed surgical procedures and provided Postoperative care for nonhuman primates, Created a 3D visual (brain) meta-analysis of coordinate points from fMRI studies, Performed survival surgeries involving neuroanatomical tracers (rabies) in peripheral muscles in rats, Preparation and editing of manuscripts for publication and grant materials; presentations at international conferences, **Undergraduate Research Assistant** Mapping of subcortical regions related to respiration and vocalization in nonhuman primates, Training in histological techniques and tissue sectioning of the brainstem and spinal cord in nonhuman primates, Literature searches, SOP creation, and summary of literature for protocols, Participated in lab groups for both paper presentations and weekly updates to projects
- **Harvard University, Department of Evolutionary Biology, Evolutionary Neuroscience Laboratory PI: Hecht, August 2019- August 2022, Remote/Boston, MA External Research Collaborator** Compiled carnivore neuroanatomy database for a review manuscript, Data annotation for fox brain atlas and qualitative review of labeling from immunohistochemistry, Identifying neuroanatomical features across comparative anatomy texts for example cat, primate, Participated in the publication of an atlas utilizing both histological sections and DTI imaging in the fox.
- **University of Pittsburgh, Department of Otolaryngology, Williamson Laboratory. PI: Williamson July 2019-August 2020 Pittsburgh, PA Research Technician II** Research focus: Auditory Cortex: corticofugal projections and auditory guided behavior, Receiving training to perform small animal surgeries and cortical injections, Utilized both anterograde and retrograde viruses that were CRE dependent, as well as monosynaptic rabies and retro beads.
- **Royal Society London Proceedings B, Publishing Department, August 2021-Present, Pittsburgh, PA (remote) Preprint solicitation team (Neuroscience)**
- **Microsoft, Speech and Language Labs, July 2021-September 2021, Pittsburgh, PA (Remote) Computational Linguistics Internship**, Deduplication of text data sets
- **Radboud University Nijmegen, PI: Pouw/Fuchs/Burchardt, February 2022-Present, Pittsburgh, PA (Remote) Post-graduate Research Internship**, Assisting with the project: “Cross-modal rhythms: A cross species investigation.”

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Publications

Michlich, JM, Pinillos, A, West, A, Gold, E, Allen, C. (In preparation) An Integrative approach to “learning sets”: A look into the role that reversal learning and serial reversal learning can contribute to studies of nonhuman animal cognition and behavior through the lens of nonhuman animal vocal-acoustic communication grounded within a historical and philosophical context. Book proposal under review at Johns Hopkins University Press.

Michlich, JM. (2022). Intratelecephalic variability in connectivity across cortices in Rodentia: A consideration of ethological roles and domestication syndrome. *Biology Letters*. (Invited abstract.)

Michlich, J. (2020) Audition and Communication in Hominins: Evidence from the Fossil Record. *The University of Michigan Undergraduate Journal of Anthropology*.

Michlich, J. (2018). An analysis of semiotic and mimetic processes in *Australopithecus afarensis*. *The Public Journal of Semiotics*.

Posters

Michlich, JM. (2022). Explorations of the Gombe Chimpanzee Archives: Phonetic and Phonological features of Chimpanzee (Pan Troglodytes) vocal communication over the course of development. IWOLP2022, Pittsburgh, PA. (Abstract accepted). Helou, LB, Michlich, JM, Bostan, AC. Cerebral cortical control of the posterior cricoarytenoid muscle in nonhuman primates. (11 November 2021). *Society for Neuroscience Conference 2021*. (Abstract accepted; Virtual poster presentation).

*Michlich JM, *Fisher J, Helou LB . Brainstem-level variation in the descending motor pathway to the diaphragm. (25 March 2020). *University of Pittsburgh Spring Undergraduate Research Fair*, Pittsburgh, PA (Abstract accepted, cancelled due to COVID-19).

Presentations

Michlich, J. (April, 2020). *The role of epigenetic inheritance in innate behaviors*. This presentation was a part of journal club in the Evolutionary Neuroscience Laboratory at Harvard University.

Michlich, J. (September, 2020). *Vocal tract length and manipulation with helium in a crocodilian species*. This presentation was a part of a journal club for the Helou Laboratory for Vocal Systems Anatomy and Physiology Research at the University of Pittsburgh.

Michlich, J. (October, 2020). *Vocal tract morphology in canid species*. This presentation was part of a journal club for the Evolutionary Neuroscience Laboratory at Harvard University.

Michlich, J. (December, 2020) *A cross-species comparison of connectivity in the auditory cortex across domesticated and undomesticated species*. This presentation was part of an invited talk to the journal club of the Area 41 Lab at the University of Pittsburgh.

Michlich, J. (July, 2021) *A cross-species comparison of connectivity in the auditory cortex across domesticated and undomesticated species*. This presentation was part of an invited talk to the journal club of the Evolutionary Neuroscience Laboratory at Harvard University.

Programs

NeuroLucida, ImageJ, Adobe Illustrator, ReconWin, 3D Slicer, Microsoft Office, Stereoinvestigator

Professional Memberships

International Association for Cognitive Semiotics; Society for the Neurobiology of Language; International Society for Neuroethology, Society for the Study of Evolution, American Association for Anatomists, Acoustical Society of America, Society for Neuroscience

Funding

Fulbright US Student Program: Country of Research, Argentina (PI: Professor Gabriel Mindlin) September 2020 “Big Data in Conservation: The Case of the Yellow Cardinal” *Not funded*.

National Science Foundation: Graduate Research Fellowship Program (NSFGRFP) September 2020 “Descriptive analysis of the syringeal form and function of suboscine songbirds: A model for computational methods in phonation” *Not funded*.

Workshops

Simon W. Townsend (2021) “Workshop 4: Language Evolution and Animal Communication.” Leipzig Lectures on Language: Combinatorics 2021, End of year Symposium. Virtual. (Attended Workshop).