

Jenny Marie Michlich, BA/BS

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Jenny is a Research Technician in the Evolutionary Neuroscience Laboratory 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 were previously a Research Assistant in the Department of Communication Science and Disorders at the University of Pittsburgh where they worked on a project related to the cortical control of the muscles of voice and breathing in a primate model. Jenny also is leading the writing and development of a monograph on integrative methods in reversal learning and serial reversal learning under contract at Johns Hopkins University press with a team of postdoctoral and faculty coauthors. From these experiences, they have gained skills in grant proposal and progress report writing, protocol development and writing, development and writing of training materials, book proposal writing and expertise in neuroanatomical microscopy, tracing, surgical, and histological techniques. Jenny has a broad interest in comparative neuroanatomy, ethology, neuroethology, and sensory systems in both extinct and extant species. Their main research focus has been comparative autonomic-auditory-vocal-motor systems in birds and primates situated within a neuroanatomical, 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. They have also served as a teaching assistant in six courses and in this role developed test and quiz materials, held office hours, and additionally developed lecture materials for review sessions. Jenny has additional graduate training in the history and philosophy of science and biology where they have taken coursework in biological complexity, comparative animal cognition, the history of evolutionary theory, behavioral endocrinology, and allometry. They are currently enrolled in a masters program where they are learning techniques in data analysis for complex systems including methods in graph theory, dimensionality reduction, dynamical systems, and data visualization.

Applicable skills: Comparative Neuroanatomy, Immunohistochemistry, Microscopy, Grant Writing, Proposal Writing, Manuscript Writing, Protocol Development, Protocol Writing, Development of Training Materials, Neuroanatomical Atlas Development, Neuroanatomical Tracing, Surgical Techniques (Small Animals), Histology, Learning Management Systems, Test and Review Materials Development, Motor Systems Anatomy, Auditory Anatomy, Integrative Physiology, Behavioral Endocrinology, Allometry, Modeling, Data Visualization, Data Analysis, Lab Management

Educational Background

Arizona State University August 2022-Present	Master of Science In Complex Systems Science	Concentrations: Methods for modeling complex systems
University of Florida January 2022-Present	Graduate Certificate in Medical Anatomy and Physiology	Concentrations: Peripheral nerve anatomy, Series in quantitative respiratory physiology
University of Pittsburgh May 2021-August 2022	Postbaccalaureate coursework (History and Philosophy of Science, Biological Sciences, Linguistics)	Biological Complexity, Animal Cognition, Theories in Phonology, Acoustics Phonetics, Evolution
University of Pittsburgh January 2017-May 2021	Bachelor of Science in Neuroscience; Bachelor of Arts in Anthropology	Auditory-vocal-motor systems in mammals, functional morphology, linguistics, animal linguistics
University of Colorado Colorado Springs July 2015-December 2019	Undergraduate certificate in Cognitive Archaeology	Cognitive evolution, Cognitive Archaeology, Language Evolution
Community College of Allegheny County	Associate of Science in General Studies	Anatomy and Physiology, Biological Sciences

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

Data Entry and Data Management Experience

Adecco, LLC for ArgoAI, June 2019-October 2022, Pittsburgh, PA (Remote)

Data Entry Clerk, I worked across different engineering teams to migrate data from working documents to data management systems for review by stakeholders and senior management. My position largely interacted with technical writing and engineering staff to ensure that workflows are uninterrupted. Experience with Jama, Jira, Confluence and several document management software platforms.

Research Experience and Internships

Harvard University, Department of Evolutionary Biology, Evolutionary Neuroscience Laboratory PI: Erin Hecht, June 2022-Present, Boston, MA, Research Technician

- Work will consist of undergraduate mentoring, histological processing of fox brain tissue and great ape brain tissue, slide scanning, data analysis, density analysis, neuropil analysis, protocol development and writing, manuscript writing and preparation.

Radboud University Nijmegen, Donders Institute, PI: Wim Pouw/ Susanne Fuchs/ Lara Burchardt, February 2022- May 2022 Pittsburgh, PA (Remote), Post-graduate Research Internship

- Assisting with the project: "Cross-modal rhythms: A cross species investigation. I developed an open source database of locomotor data from accelerometer and actical equipment across 80 different species of mammals and birds for analysis by the senior members of the team.
- In addition to this, I collected acoustic data for each of the species if available and provided monthly updates to the team. Letter of completion is available upon request from the senior members of the team.

Royal Society London Proceedings B, Publishing Department (Neuroscience Team), August 2021-Present, Pittsburgh, PA (remote), Preprint solicitation team

- I was assigned articles monthly to suggest for journal solicitation in Neuroscience. I would make recommendations based on structure of the writing of the article, article length, and based on how novel the finding was as described within the body of the paper.

University of Pittsburgh, Department of Communication Science and Disorders, Helou Laboratory, PI: Leah Helou, September 2018 – September 2022, Pittsburgh, PA, Research Technician II, Undergraduate Research Assistant

- 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.
- 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, grant materials, and grant progress reports
- Presentations at international conferences,
- Mapping of subcortical regions related to respiration and vocalization 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: Erin 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: Ross Williamson July 2019- August 2020 Pittsburgh, PA, Research Technician II

- Research focus: Auditory Cortex: corticofugal projections and auditory guided behavior
- Received training to perform small animal surgeries and cortical injections as well as performed craniotomies and cranial window surgeries
- Utilized both anterograde and retrograde viruses that were CRE dependent, as well as monosynaptic rabies and retro beads.

Magee Womens Research Institute, Vivarium, July 2018- July 2019, Pittsburgh, PA Lab Animal Research Assistant

- Performed husbandry for both large and small animals including mice, rats, macaques, sheeps, pigs, and rabbits. Sanitized husbandry areas.
- Administered medications as needed both oral and injectable.
- Trained in necropsy dissection techniques.

Carnegie Mellon University, Mellon College of Science, Vivarium, December 2017-February 2018, Pittsburgh, PA Laboratory Technician

- Performed husbandry for both rats and mice, Sanitization and maintenance of equipment in the vivarium.

University of Pittsburgh, Department of Epidemiology, Heinz Laboratory, March 2017-June 2018 Pittsburgh, PA Undergraduate Laboratory Assistant

- Made weekly solutions and reagents for a clinical biochemistry laboratory, received and shipped biological samples, notified Lab

Manager as stock became low for ordering, performed routine analysis on an Olympus, trained on radio immunological assays, pipetting skill development, maintaining clean glassware, removal of biological waste, maintained data entry for longitudinal statistical record for quality control.

Monograph Publications

Allen, C, Gold, E, Michlich, J, Pinillos, A, and West, A. (Forthcoming January 2024) **An Integrative approach to learning sets**. Monograph under contract at Johns Hopkins University Press.

Article Publications

Michlich, JM and Welch, B. (Forthcoming) **Explorations of the Gombe Chimpanzee Archives: Phonetic and Phonological features of Chimpanzee (*Pan Troglodytes*) vocal communication over the course of development**. *MDPI: Applied Sciences, Special Issue on Animal Acoustics*.

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

Helou, LB and Michlich, JM. **Cerebral cortical control of the posterior cricoarytenoid muscle in nonhuman primates**. (October 2022) *Fall Voice Conference*. (Abstract accepted).

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, canceled due to COVID-19).

Presentations

Michlich, J. (August, 2022). **How to write a successful book proposal**. This presentation was a part of a journal club in the Evolutionary Neuroscience Laboratory at Harvard University.

Michlich, J. (April, 2020). **The role of epigenetic inheritance in innate behaviors**. This presentation was a part of a 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.

Miscellaneous

Programs

Neurolucida, Neurolucida Explorer, Stereoinvestigator, ImageJ, Adobe Illustrator, Adobe Photoshop, ReconWin, 3D Slicer, Microsoft Office, JAMA, Jira

Professional Memberships

International Society for Neuroethology, Acoustical Society of America, Society for Neuroscience

Workshops and Conferences

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

Gordon Research Conference, **Neural Mechanisms of Acoustic Communication**, Mount Holyoke, MA, July 31, 2022 (Accepted to conference).

Equipe de Neuro-Ethologie Sensorielle (ENES) **Bioacoustics Winter School**, Etienne, FR, January 3-17, 2023 (Accepted to workshop).

Gordon Research Conference, **Neuroethology: Behavior, Evolution and Neurobiology**, Mount Snow in West Dover, Vermont, August 6, 2023 (Accepted to conference)

Reviewer

Mentorship program in peer review, Society for Neuroscience
Mentorship program in peer review, Proceedings of the National Academy of Sciences.