Evan Keister

Boston, MA | (607) 426-7307 | keister.e@northeastern.edu | Personal Website: https://evankeister.com

EDUCATION

Northeastern University, Boston, MA — August 2021 – Present

- **Major in Behavioral Neuroscience**, **Minor in Computer Science**, GPA: 3.906, Senior, Expected Graduation May 2025
- **Behavioral Neuroscience Coursework**: Clinical Neuroanatomy, Psychopharmacology, Clinical Neuroscience, Neurobiology, Biological Psychology, Behavioral Endocrinology, Biochemistry, Physics I & II, Organic Chemistry I & II, Biology Project Lab, Genetics and Molecular Biology, General Chemistry, Foundations of Psychology, Inquires in Biological Sciences, Abnormal Psychology, Ethics and Professionalism in Science, Statistics in Psychological Research, History of Building and Cities
- **Computer Science Coursework:** Algorithms and Data, Object Oriented Design, Fundamentals of Computer Science I & II, Discrete Structures, Foundations of Data Science, Database Design, Advanced Writing in the Technical Professions, Macroeconomics
- **Certifications:** EMT-B (Emergency Medical Technician), Basic Life Support (BLS), CPR + AED
- **Technology Summary:** Programming in Java, Python, SQL, R, HTML, and CSS, Microsoft Office Suite
- **Clubs & Awards:** Dean's Scholarship, NU Rho Psi (Northeastern Honor Society for Neuroscience), NEURONS (Northeastern Researchers of Neuroscience), NUEMS (Northeastern University Emergency Medical Services), Intramural Basketball and Running

RESEARCH EXPERIENCE

Beth Israel Deaconess Medical Center and Harvard Medical School, Research Assistant, Boston, MA — December 2023 – Present

- Researching under Sydney Aten, PhD, in the lab of Clifford Saper, MD, PhD. Analyzing a proposed hypothalamic circuit that serves to control the circadian rhythm of sexual behavior in mice. Working on a project analyzing how sleep and body temperature affect fertility.
- Performing serial sectioning of mouse brains and immunohistochemistry staining to verify stereotaxic virus injection locations in the brain. Conducting body temperature probe implantation surgeries to track thermoregulation.
- Analyzing EEG and EMG data to classify sleep states (REM, NREM, awake) for sleep scoring. Utilizing Python to generate Raster Plots visualizing mouse behavior. Training undergraduate students in essential laboratory techniques and research methodologies.

Tufts Medical Center, Thoracic Surgery Research Assistant, Boston, MA — February 2025 - Present

- Studying thoracic anatomy and surgical techniques, including lobectomies and segmentectomies, to enhance understanding of minimally invasive surgery procedures. Creating annotated datasets of thoracic surgery procedures to support AI-driven advancements in surgical education and complication rate reduction.
- Contributing to the development of artificial intelligence models aimed at improving surgical training, intraoperative decision-making, and patient outcomes.

The Broad Institute of MIT and Harvard, Research Assistant Co-op, Cambridge, MA — July 2024 – December 2024

- Conducted research under Chen-Yu Wang, MD, PhD, in the Fishell Lab at the Stanley Center for Psychiatric Research. Utilized mouse genetics to ablate *Tcf4* in cortical interneurons and analyzed its developmental-stage and cell-type-specific regulation using single-cell RNA sequencing (scRNA-seq).
- Performed cardiac perfusions for brain fixation and extraction, serial sectioning of brain tissue, immunohistochemistry on brain sections, fluorescent microscopy, cell counting (using ImageJ), ATAC-seq, utilized R to create graphs, genotyping (PCR and Gel Electrophoresis), and cage maintenance.
- Attended biweekly lab meetings to learn about other lab members' projects. Performed literature reviews to better understand the background and best methods for experiments.

Brigham and Women's Hospital & Harvard Medical School, Medicinal Chemistry Co-op, Cambridge, MA — July 2023 – December 2023

- Conducted drug discovery research at the Laboratory for Drug Discovery in Neuroscience (LDDN) under Kevin Hodgetts, PhD, focusing on novel CNS therapeutics for Alzheimer's disease, migraine, and essential tremor.
- Designed and executed complex organic synthesis reactions, including halogen-metal exchange with butyl lithium, palladium-catalyzed couplings, BOC protection, and methyl chloroformate addition. Analyzed pharmacokinetic data to evaluate synthesized compounds' drug efficacy and potential therapeutic applications.
- Utilized liquid chromatography-mass spectrometry (LC-MS), high-performance liquid chromatography (HPLC), nuclear magnetic resonance (NMR), rotary evaporation, and recrystallization techniques to purify, characterize, and confirm compound structures.

POSTERS AND PUBLICATIONS

Poster - 20th Annual Broad Institute of MIT and Harvard Research Retreat, Boston, MA — December 16, 2024

- Title: Investigating the Role of TCF4 in Interneuron Development
- Associated with my work in the Fishell Lab, conducted under mentor Chen-Yu Wang, MD, PhD.

Review Article Publication *2025*

- Aten, Sydney, et al. "A Time for Sex: Circadian Regulation of Mammalian Sexual and Reproductive Function." *Frontiers in Neuroscience*, vol. 18, Jan. 2025, p. 1516767. *DOI.org (Crossref)*, https://doi.org/10.3389/fnins.2024.1516767.
- Co-author for a review paper that provides an overview of circadian timing, regulation of male and female reproductive hormones by the circadian system, and proposes neuronal circuits that serve to control physiology. The motivation behind this work lies in the potential to improve fertility outcomes through a deeper understanding of circadian regulation, paving the way for future therapeutic interventions.

Poster - 1st Annual Beth Israel Deaconess Medical Center Neurology Research Retreat, Boston, MA April 24, 2024

- Title: Circadian Rhythms in Mouse Sexual Behavior and Potential Hypothalamic Circuits Modulating Such Behaviors
- Associated with my work in Saper Lab, conducted under mentor Sydney Aten, PhD.

CLINICAL EXPERIENCE

Northeastern University Emergency Medical Services, Emergency Medical Technician, Boston, MA January 2025 – Present

- Providing pre-hospital emergency medical care at Northeastern University sporting events, ensuring timely assessment and treatment of injuries. Administering first aid care, and coordinating with fellow EMTs to maintain a safe environment for attendees.
- Serving as a teaching assistant for America Heart Association (AHA) CPR certification classes, assisting in hands-on instruction and skill development.

Boston Children's Hospital, Emergency Department Volunteer, Boston, MA May 2023 – January 2025

- Assisted Child Life Specialists in engaging pediatric patients facing psychiatric challenges and extended wait times by providing therapeutic activities, including board games and toys, to enhance comfort and reduce anxiety.
- Maintained a sanitary and organized environment by cleaning and restocking essential supplies, ensuring a safe space for patients and staff. Acted as a liaison between patient and medical staff, promptly communicating urgent medical needs to nurses to support efficient and effective patient care.

Guthrie Corning Hospital, Hospital Volunteer, Corning, NY July 2019 – November 2019

- Greeted patients, families, and visitors, ensuring a positive hospital experience. Provided clear directions to hospital departments and helped with wayfinding and logistics. Escorted patients to appointments. Coordinated with hospital staff to improve patient navigation.

OTHER WORK AND VOLUNTEER EXPERIENCE

Boston Cares, General Volunteer, Roxbury*,* MA March 2022 - Present

- Instructed students as part of the High School Equivalency Math Tutoring program at X-Cel Education, helping them develop the skills necessary to earn their GED. Provided personalized tutoring and support, addressing individual learning needs and reinforcing key concepts such as algebra, geometry, and data analysis.
- Assisted in facilitating Lego Robotics lessons for STEAM (Science, Technology, Engineering, Arts, and Math) Saturdays at Prospect Hill Academy, guiding students in building and programming robots to enhance their understanding of engineering and technology. Fostered an engaging environment to encourage students' interest in STEM.

Northeastern University, Teaching Assistant*,* Boston, MA September 2022 – December 2023

- Led weekly office hours and review sessions to aid students in Discrete Structures, Organic Chemistry II, and Fundamentals of Computer Science I, providing individualized support. Graded assignments and exams with a strong focus on accuracy and fairness, collaborating with professors to proofread and refine coursework for clarity and effectiveness.
- Assisted in instructing the in-person lab component of Fundamentals of Computer Science I, helping students develop hands-on programming skills.

Greater Southern Tier Boces, Mathematics Teaching Assistant, Elmira*, NY* July 2022 – August 2022

- Collaborated with teachers to support 7th-grade summer school students in mastering foundational math concepts, including fractions, decimals, percentages, linear functions, geometry, and basic statistics. Delivered one-on-one tutoring, ensuring personalized support for students with varying levels of understanding. Developed and implemented practice exercises and interactive lessons to reinforce key math skills, preparing students for a final exam essential to advancing to 8th grade. Fostered a positive and encouraging classroom environment.

COMPUTER SCIENCE PROJECTS | GitHub: https://github.com/evankeister

Health Hero *Fall 2023*

- A functional relational database model that allows for users of three different personas: patient, doctor, and pharmacist. Full-stack application created using SQL, Python, and AppSmith.
- Allows for functionalities such as diagnosing medical conditions, prescribing medications, and retrieving information about future appointments. Realistic data supplied to the database was created using Mockaroo.

Basketball Data Science Analysis *Fall 23*

- Used Python libraries (Scikit-learn, Pandas, Plotly, NumPy) to algorithmically analyze statistics of NBA and International players. Analyzed how statistics varied between international and domestic players.
- Predicted which international players would be successful in the NBA using KNN (k-nearest neighbors) and Random Forest classifiers.

Maze Solver Website *Summer 2022*

- Transformed a project made in Java, from the class Fundamentals of Computer Science II, into a website using HTML, CSS, JS, and VS Code. The project allowed for visualizations of Depth First Search and Breadth First Search algorithms on minimum-spanning trees (MST).

Image Processor *Summer 2022*

- Created a GUI application using an MVC architecture that is capable of loading and saving images of different file types, and applying different visual manipulations to images (rotations, greyscales, blurring, sharpening, and dimension downscaling).

Personal Website *Summer 2022*

- Developed using HTML, CSS, JS, and VS Code. Showcases my project portfolio, experiences, and some personal interests. The contact page was made using the Formspree API. The site was made to be fully resizable across devices of varying dimensions.

MEDICAL SHADOWING EXPERIENCE

Brigham and Women's Hospital, Boston, MA

- Neurosurgery (Dr. Mooney): observed a variety of complex neurosurgical procedures in the operating room including craniotomies for the removal of parasagittal meningiomas and laminectomies to relieve spinal cord compression.
- Endocrinology (Dr. Alexander): attended an educational lecture on acute kidney injury (AKI) with 3rd-year Harvard Medical School students on their clinical rotations. Deepened my understanding of clinical management in endocrinology.

Guthrie Corning Hospital, Corning, NY

- Gastroenterology (Dr. Hathwar): observed a range of diagnostic procedures, including colonoscopies and endoscopies, gaining firsthand insight into the evaluation of gastrointestinal conditions. Learned about various GI disorders, including ulcerative colitis, irritable bowel syndrome, and gastroesophageal reflux disease.
- Diagnostic and Interventional Radiology (Dr. Bifano, Dr. Sobieraj, Dr. Masi): observed the interpretation of CT scans, MRIs, and X-rays across multiple specialties, including orthopedics, OBGYN, and neurology. Observed lung and heart biopsy procedures, learning about the techniques and patient management involved in interventional radiology.

Arnot Hospital, Elmira, NY

- Orthopedic Surgery (Dr. Jarvis): observed procedures including knee and hip arthroplasties, gaining insight into surgical techniques and patient care during joint replacement surgeries. Attended clinic visits with patients, learning about pre-operative assessments, post-operative care, and the management of musculoskeletal conditions.
- Anesthesiology (Dr. Deluca, Dr. Kellner): observed the responsibilities involved in preparing patients for surgery and managing their care through the perioperative period. Gained knowledge of drugs used to induce, maintain, and reverse anesthesia.