Summer (Tiange) Lu

Houston, TX | tl215@rice.edu

EDUCATION

Rice University, TX Expected 2031
Ph.D. in Cognitive and Affective Neuroscience

University of California, Irvine, CA Sept 2020 – Jun 2024
B.S. in Neurobiology

PUBLICATIONS

Lu, T., Ji, Z., Tompary, A., Schechtman, E. No evidence for sleep-dependent memory generalization in a large online sample. Under review*, Learning and Memory.*

Narayan, G., Badineaux, G., Cho, M., Murugavel, S., **Lu, T.**, Lew, N., Aquino, S., Schechtman, E (2026). Odor-Cued Targeted Reactivation was unable to selectively benefit declarative memories during sleep. *Journal of Sleep Research: e70281.* https://doi.org/10.1111/jsr.70281

CONFERENCE PRESENTATION

Lu, T. (2024). *The effect of sleep on memory generalization.* Poster presented at the UROP Research Symposium, University of California, Irvine.

RESEARCH EXPERIENCES

CogNos Lab - ***University of California Irvine, Center for the Neurobiology of Learning & Memory***
Research Assistant, PI: Eitan Schechtman ***Mar 2023 – Mar 2026***
Research focus: sleep and memory consolidation, generalization, EEG analysis, behavioral task design.

- **Sleep and memory generalization (first-author project)**
  - Designed and implemented a large-scale human behavioral experiment (N=137, >43,000 trials) investigating how sleep influences category-based memory generalization.
  - Programmed experimental tasks, coordinated recruitment and data collection.
  - Performed statistical analyses in MATLAB, including data cleaning, mixed-effects modeling, correlation analyses, permutation tests; created visualization figures.
  - Drafted the manuscript and coordinated revisions across co-authors.
  - Preregistered the study and secured UROP Research funding. Mentored an undergraduate researcher in data collection and management.
  - Manuscript currently under review at *Learning and Memory*.
- **Odor-cued targeted memory reactivation during NREM sleep**
  - Contributed to experimental design and piloting; assisted with multi-channel EEG setup, recording, and data management.
  - Performed sleep scoring and EEG preprocessing in MATLAB, including ICA-based artifact detection, visualization, and removal.

- Contributing author to Manuscript published at *Journal of Sleep Research*.

McNaughton Lab - ***University of California Irvine, Center for the Neurobiology of Learning & Memory***
Research Assistant, PI: Bruce McNaughton ***Dec 2022 – June 2024***
Research focus: rodent spatial memory, retrosplenial cortex/hippocampal remapping, VR-based behavioral tasks, aging-related memory decline.

❖ **Pattern completion and rate remapping in virtual reality**
- Trained mice on virtual reality tasks with shifting environments to study spatial memory formation and remapping in the retrosplenial cortex and hippocampus.
- Assisted with VR system setup, hardware troubleshooting, and stimulus-control synchronization; standardized daily protocol to ensure consistency across trials.
- Shaped animal behavior through progressive training schedules; monitored task performance and maintained detailed behavioral logs.
- Trained more than 10 undergraduate research assistants on behavioral protocols, animal handling, and VR task procedures.
- Assisted in pre- and post-surgery procedures, including monitoring recovery, maintaining sterile workspaces, and updating animal care documentation.

❖ **Behavioral observation of healthy aging (Y-maze and object location memory)**
- Conducted Y-maze and object location memory experiments to assess the effect of aging on memory and exploration behavior in non-Alzheimer's mice.
- Performed data scoring and organization for downstream analysis.
- Managed animal handling and contributed to routine health checks.

AWARDS AND FUNDING

Undergraduate Research Opportunity Program (UROP) Research Grant Dec 2023
Dean's Honor List Multiple Quarters
UN LCOY Delegate and Contributor Nov 2023

TEACHING AND MENTORING

Learning Assistant, Organic Chemistry (Chem 51A) Sept 2022 – Dec 2022
UC Irvine, Prof. Griffin
- Facilitated active learning discussions, supported students in developing problem-solving skills.

Learning Assistant, Pre-Calculus (Math 1B) Sept 2023 – Dec 2023
UC Irvine, Prof. Lehman
- Guided students through core concepts and provided individualized support during class.

TECHNICAL SKILLS

Programming & Data Analysis
- MATLAB (advanced): data cleaning, mixed-effects models, permutation tests
- R, STATA (data analysis and statistical modeling)
- fMRI preprocessing (FSLeyes)

Human Neuroscience Methods
- Multi-channel EEG setup and recording
- EEG preprocessing: filtering, ICA-based artifact detection and removal

- Sleep scoring (NREM, stage classification)
- Human behavioral task programming and data management

Rodent Methods

- Rodent handling and behavioral shaping; pre- and post-surgery assistance
- VR behavioral setups; hardware troubleshooting
- Y-maze and object location memory scoring

Research Training

- RCR training (NIH-compliant); human subjects research and clinical data management