John J. Stout, Jr.

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EDUCATION

Neuroscience, Ph.D — *Summer 2019 – TBD*
Concentration in Behavioral Neuroscience
University of Delaware
Department of Psychological & Brain Sciences
Advisor: Amy L. Griffin, Ph.D

Neuroscience, M.S. — *Summer 2017 – Spring 2018*
University of Delaware
Department of Psychological & Brain Sciences

Advisor: Amy L. Griffin, Ph.D.

Neuroscience, *B.S.* — *Fall 2013 - Spring 2017*
University of Delaware; College of Arts & Sciences
Advisor: Amy L. Griffin, Ph.D.

Dean's List Honors (Fall 2013-17)

Associates Degree in the Arts, *Cum Laude Candidate* — *Spring 2014*
University of Delaware

Delaware Technical Community College — *Fall 2012 – Spring 2013*

RESEARCH EXPERIENCE

Neurobiology of Learning & Memory Laboratory — *Fall 2015 - current*
PI: Amy L. Griffin, Ph.D.
Department of Psychological & Brain Sciences, *University of Delaware*

Doctoral Student (*Summer 2019-current)*: Probing the causal nature of prefrontal-hippocampal theta coherence on memory

Doctoral Student (*Summer 2019-Fall 2021):* Investigating the contribution of the nucleus reuniens on deliberative decision-making

Doctoral Student (*Summer 2019-Spring 2020):* The role of prefrontal population coding during the encoding and retrieval of spatial memories

Masters Student (*Fall 2017-Spring 2018*): Examining prefrontal-thalamo-hippocampal correlates during spatial working memory

Undergraduate Research Assistant (*Fall 2015-2017*): Optogenetic silencing of prefrontal and hippocampal inputs to the nucleus reuniens

RESEARCH IN PROGRESS

Harnessing endogenous prefrontal-hippocampal theta synchrony to enhance memory (*manuscript in prep*)

Vicarious trial and errors during the encoding of spatial memories (*in prep as 2nd author*)

PUBLICATIONS

Stout, J. J., Hallock, H. L., George, A. E., Adiraju, S. S., & Griffin, A. L. (2022). The ventral midline thalamus coordinates prefrontal–hippocampal neural synchrony during vicarious trial and error. *Nature Scientific Reports* (Manuscript Link)

Stout, J. J., & Griffin, A. L. (2020). Representations of On-Going behavior and future actions during a spatial working memory task by a high Firing-Rate population of medial prefrontal cortex neurons. *Frontiers in Behavioral Neuroscience*, *14*. (Manuscript Link)

Stout, J. (2018). Prelimbic cortex integrates behavioral context with task-coding during spatial working memory maintenance. M.S. Thesis (Thesis)

Stout, J.J., Goerge A., Hallock H., Griffin, A. L. (*in prep for submission).* Harnessing endogenous neural synchrony to enhance memory

George A., **Stout J. J.,** & Griffin, A. L. (*in prep for submission*). Vicarious trial and error during the encoding of spatial memories.

CONFERENCE ABSTRACTS

Stout, J. J., George, A., & Griffin, A. L. (2022). Using endogenous neural synchrony to enhance decision making. Abstract, *Park City*. **Travel Award received to attend conference.**

Stout, J. **J.**, & Griffin, A. L. (2021). The ventral midline thalamus mediates successful deliberation by coordinating prefrontal and hippocampal neural activity. Abstract, *Park City Virtual*

Stout, J. **J.**, & Griffin, A. L. (2021). The ventral midline thalamus mediates successful deliberation by coordinating prefrontal and hippocampal neural activity. Talk, *SfN Delaware Chapter*

George, A., **Stout, J**. **J.**, & Griffin, A. L. (2021). Vicarious trial and error during the encoding of spatial memories. Abstract, *SfN Delaware Chapter*

George, A. E., **Stout, J. J.,** Griffin, A.L. (2021) Vicarious trial and error during encoding of a spatial working memory task facilitates accurate decision-making. Poster, *SfN Virtual*

Hoopman, J., Stout, J. J., **George A. E.**, Griffin, A. L. (2021) Using endogenous brain rhythms to impact decision-making on a spatial working memory task in rats. Poster, Delaware State University Summer Research Symposium

Stout, J. **J.**, & Griffin, A. L. (2020). The ventral midline thalamus mediates successful deliberation. Abstract, *SfN Virtual*

Stout, J. **J.**, & Griffin, A. L. (2019). Examining the mechanisms of spatial memory encoding and retrieval in the prefrontal-reuniens-hippocampal network. Abstract, *Society for Neuroscience Conference,* Chicago, IL.

Stout, J. **J.**, Garcia, A. C., & Griffin, A. L. (2018). Prelimbic cortex integrates behavioral context with task-coding during spatial working memory maintenance. Abstract, *Society for Neuroscience Conference,* San Diego CA.
- Poster will also presented at *SfN's DE Chapter Neuroscience Research Symposium,* Newark DE

Gemzik, Z., **Stout, J**., Looney, N., Gaylord, M., Maisson, D. J-N., & Griffin, A. L. (2017). Distinct Spatial Working Memory Correlates of Prefrontal and Hippocampal Projections to the Nucleus Reuniens. Poster, *Society for Neuroscience Conference,* Washington D.C.
- Poster also presented at *SfN's DE Chapter Neuroscience Research Symposium,* Newark DE

AWARDS & FUNDING

Graduate College Doctoral Fellowship Award (September 2022 – August 2023)

Graduate College Travel Award (January 2022)

Graduate College Travel Award (awarded June 2022 for November 2022)

Allen Brain Institute NeuroReHackathon Travel Award (awarded July 2022 for October 2022)

RESEARCH SKILLS & TECHNIQUES

Animal Behavior
- Behavioral shaping/training & testing (including optogenetic testing)

Electrophysiology
- *In vivo* electrophysiology in awake, freely-behaving rats
- Microdrive array and tetrode fabrication
- Stereotaxic surgery (multi-site microdrive implants, virus injections, fiber implants for optogenetics)

Optogenetics
- Optogenetics in awake, freely-behaving rats
- Stereotaxic surgery (multi-site microdrive implants, virus injections, fiber implants for optogenetics)

Post Processing

- Histology (transcardial perfusions, brain sectioning, Cresyl staining, Immunohistochemistry)
- Imaging (Confocal microscopy)
- Data reports & presentations (Microscoft Word & Powerpoint)

Data Analysis and Report
- Developed a 'MATLAB pipeline' for analysis (Github website)
- MATLAB analysis experience
    - Single cell firing correlates
    - Population analysis using correlation approaches and linear classification
    - Local field potential analyses
        - Power spectra
        - Coherence
        - Granger Prediction
        - Spike-Phase Entrainment
    - Behavioral quantification
        - Vicarious trial and error
        - Linearizing 2-dimensional position data
        - Kinematics: velocity, acceleration
    - Some code examples (Github website):
- Other programs:
    - Excel
    - PowerPoint
    - R
    - Some python
    - Adobe Illustrator

Closed-loop Neural Synchrony Development
- Developed a closed-loop neural synchrony detection method that interfaces with an automated T-maze (Video link; Code Link)
- Developed a method that detects real-time artifacts in local field potential data (Video link; Code link)
- Programmed an automated T-maze that interfaces with an arduino (Code link) and with capabilities for optogenetic silencing or stimulation (Code link)
- Created a MATLAB pipeline for experimental control (Code link)

Team Management
- Graduate student mentorship
    - Mentoring new graduate students in a variety of the labs techniques
- Managing a team of undergraduates
    - Orchestrating timely stereotaxic-optogenetic surgeries based on the animals behavior and undergraduate schedules (for optogenetic testing purposes)
    - Ensuring undergraduates have fair and reasonable lab-work schedules that fit their wants/needs

TEACHING & MENTORING

Graduate student and Lab Personel Mentor
- SuHyeong Kim *Summer 2019 – Current*
- Allison George *Summer 2020 – Summer 2022*
    - Now a doctoral student at Stony Brook University

Undergraduate Mentorship *Spring 2016 – Current*
- Senior thesis (Emily Walzl)
- Senior thesis (Jackson Mace)
- Senior thesis *in prep* (Austin Cestone)
- Summer Scholars Fellowship program (Carolyn Byrne)
- Co-organizer of a MATLAB crash-course for the lab
- Teaching lab-techniques and concepts to undergraduates

Teaching Assistant
- "Brain & Behavior" w/ Josh Neunuebel, PhD (UD) *Spring 2017, Spring 2020*
- "Integrative Neuroscience I" w/ Amy Griffin, PhD (UD) Fall, 2021
- "Introduction to Pschology" w/ Will Kenkel, PhD (UD) Spring, 2022

Substitute Teacher *Winter 2014*
- Lake Forest School District (K-8)

Guitar Instructor *Spring 2011 – Fall 2013*
- Lessons for individuals between the ages of 9 and 18

PUBLIC OUTREACH & SERVICES

S.T.E.M. Outreach *Fall 2017 – Current*
- for historically underrepresented youth in science ("Project Brain Light")

Psych/Brain Sci. Senator – Graduate Student Government *Fall 2017-Spring 2018*
- Committee member – Internal Affairs
  - Graduate Student Interdisciplinary Research Forum
  - Graduate Student Gala

Volunteer Concussion Clinic Technician *Spring 2016*
- Nemours Dupont Hospital for Children – *Wilmington, DE*

Volunteer Emergency Medical Technician *Fall 2013 – Spring 2014*
- Camden Wyoming Fire Department – *Camden, DE*

Increasing awareness for Krabbe disease *Spring 2010*
- Musical contribution: ***Emma's Gift*** – (YouTube link)

PROFESSIONAL ACTIVITIES & AFFILIATIONS

Student Member *Fall 2017 – current*
- Society for Neuroscience (SFN)

Peer Mentorship Program *Fall 2021 – Spring 2022*

Co-president: Project Brain Light S.T.E.M. Outreach *Summer 2019 – Spring 2020*

Member: Projection Brain Light S.T.E.M. Outreach *Spring 2018 – Current*

Senator: Graduate Student Government (UD) *Fall 2017 – Spring 2018*
- Psychological & Brain Sciences Department, Univ. of Delaware

Chairperson: Internal Affairs Committee *Fall 2017 – Spring 2018*
- Psychological & Brain Sciences Department, Univ. of Delaware

Supplemental

- Outside of the laboratory and studies, I spend my time with family/friends and stay active by participating in sports.