NHI "SANDY" DOAN

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EDUCATION

BA, Connecticut College – New London, CT
GPA: 3.94/4.0
Major: Neuroscience (Honors, Distinction in the Major)
Minors: Philosophy, Statistics and Data Science

AWARDS

Rena Rimsky Wing Fellowship 2023
Prize for two students in Neuroscience/ Psychology department for dedication and excellence in collaborative student-faculty research

Psychology Department Prize 2023
Prize offered to two students honored service and dedication to the department

Connecticut College Arboretum Photo Contest 2022

Connecticut College Career Center Professional Development Fund 2022

Undergraduate Library Research Award 2021
Annual prize offered to one undergraduate student to recognize excellence in research projects that incorporate the use of library collections and literacy skills

Connecticut College Research Program Award 2021, 2022

Presidential Scholar 2019-2020

Dean's High Honors 2019-2023

PUBLICATIONS AND MANUSCRIPTS

Doan, N., Kohli, P., Grahn, R. (2023). Cognitive and neural development in rodent model of PTSD from maternal maltreatment. Behavioral Neuroscience Honors Papers. 14.

Doan, N. (2021). Evaluation of Animal Models and Previous Studies on PTSD. Library Research Prize. 10.

RESEARCH EXPERIENCE

Harvard University - Cambridge, MA June 2024 – Present
Learning and memory in unicellular organisms
Advisor: Samuel Gershman

- Goal: Explore what types of information are encoded during learning and where this information is stored. We study simple forms of learning, such as habituation and conditioning, in single-celled organisms to investigate these questions.
- Help design and build custom apparatus and automated research pipelines. Develop and optimize protocols for culturing *Stentor coeruleus* and *Chlamydomonas.* Implement mixed models in Julia to analyze parameter effects at single-cell and population levels

Baylor College of Medicine - Houston, TX August 2023 – April 2024
Neural mechanisms of epilepsy and microcephaly in CASK-knockout mouse models

Advisor: Mingshan Xue

- Investigated molecular mechanisms and phenotypes of CASK mutations in neurodevelopmental disorders through analysis of clinical data (117 CASK mutation cases) and mouse models (CASK-knockout mouse models using Atoh1-Cre system). Optimized EEG signal detection scripts for automated analysis of epilepsy patterns

Connecticut College – New London, CT Spring 2020 – Fall 2024

Motor responses as a window to attentional states

Advisor: Jeff Moher

- Goal: Understand the relationship between motor and attention systems
- Used Gaussian kernel analysis methods to identify periods of focus and distraction. Led research team in data collection and analysis. Trained students in eye-tracking and reach-tracking methods, and managed IRB. Implemented a comprehensive data analysis in R for data cleaning, visualization, and analysis. Acquired technical skills in multiple neuroimaging and behavioral methods, including fMRI data collection and analysis protocols (with collaborator Joo-Hyun Song at Brown University)

Connecticut College – New London, CT Fall 2020 – Spring 2023

Cognitive and neural circuits in anxiety-related disorder

Advisor: Ruth Grahn

- Goal: Investigate how early life stress influences vulnerability to trauma and anxiety, especially on learning and memory impairments through behavioral and neural analyses in rodent models at different stages of life
- Conducted literature reviews on the use of animal models for anxiety-related disorders; investigated early-life housing instability, trauma, and sex differences on behavioral and neural activation on rodent models. Performed immunohistochemistry, cryosectioning, transcardial perfusions, crystal violet staining, and brain extractions; collected behavioral data on cognitive tasks. Analyzed immunohistochemistry and behavioral data using R & SPSS. Prepared and submitted application for Animal Care and Use Project (ACUP).

Connecticut College – New London, CT Spring 2020

Effect of different mutations on brightness intensity of Aequorea victoria

Advisor: Marc Zimmer

- Studied structure-function relationships in *Aequorea victoria* fluorescent proteins. Analyzed how specific mutation points affect protein stability, fluorescence intensity, and its interactions with other proteins

SELECT PRESENTATIONS

"Cognitive and neural development in rodent model of PTSD from maternal maltreatment", **Doan, N.,** Grahn, R. NEURON Conference, Quinnipiac University, April 23, 2023 (talk)

"Increasing Biomechanical Costs Improve Sustained Attention"*,* **Doan, N.,** Duval, M., Mateo, A., Steinharter, H., Moher, J., Object Perception, Attention, and Memory, Boston, MA, November 17th, 2022 (poster presentation)

"Impacts of early life stress on adult PTSD-like behaviors" **Doan, N.,** M., Veilleux, G., LaMacchia, A., O'Connell, Myhayer, R., Niyonkuru, K., Grahn, R., Annual Psychology Department Conference,

Connecticut College, April 29, 2022 (oral presentation)

"Lapses in sustained attention predicted by changes in visually guided movements," Moher, J., Haber, C., Aaron, C., Schwab, E., **Doan, N.**, Vision Science Society Annual Meeting, virtual, June 3, 2021 (poster presentation)

SELECT PROJECTS

Phylogenetic Footprinting Spring 2022

Implemented Blanchette's motif-finding algorithm (2002) in Python to identify regulatory DNA sequences across genomes

TEACHING AND MENTORSHIP

St. Paul's School, *Intern,* Concord, NH Summer 2023

Connecticut College, *Teaching Assistant,* New London, CT Fall 2022

PassionNet, *Club director,* virtual, based in NJ Spring - Summer 2021

VELA Academy, *Teaching assistant,* Ho Chi Minh City, Vietnam Fall 2019 - Fall 2021

South-East Asian Leadership Network, *Curriculum Developer & Mentor,* Brunei Summer 2019

LEADERSHIP AND CO-CURRICULAR EXPERIENCE

Institutional Animal Use and Care Committee, *Student Prep.,* Connecticut College 2021-2023

Office of the Dean of College, *International Student Lead*, Connecticut College 2020-2023

Office of Advancement, *Student Manager,* Connecticut College 2021-2022

Platt Psychiatric Associates, *Intern,* Cedar Grove, NJ Summer 2020

SKILLS

Laboratory

Animal husbandry • Brain extraction • Cell culture • Crystal violet staining • Cryosectioning • Genotyping • Image analysis (ImageJ) • Imaging (wide field, confocal) • Immunohistochemistry • Microinjection • Pipette pulling • Rodent behavioral assays (NOR, EPM, tail flick) • Transcardial perfusions

Programming

R • Python • MATLab • C • SQL • Julia • HTTP • CSS • Javascript

Hardware

Custom apparatus design • Laser cutting • Raspberry Pi

Data collection

Participant recruitment • Eye-tracking administration (Eyelink) • Reach tracking • MRI administration (Level 1 Certified, Brown MRI Research Facility)

Data analysis

Data manipulation & visualization • Statistical analyses • EEG signal processing

Language

Bilingual (Vietnamese and English), German (beginner)