

Myles Allred

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EDUCATION

Aug 2022 – Expected May 2026	University of Illinois - Chicago BS, Neuroscience; BS, Mathematical Computer Science Cumulative GPA: 4.0 Dean's list all semesters
June 2022	Eureka Highschool, Missouri

RESEARCH

Feb 2024 – Present

University of Illinois Chicago - Center for Alcohol Research in Epigenetics

With Dr. Katherine McMurray:

Investigating neurobiology underlying comorbid psychiatric disorders at behavioral, molecular, and circuit level.

Characterized a novel rodent model of comorbid alcohol using disorder/panic disorder using homeostatic-stressor CO₂-inhalation as panicogenic challenge, finding that withdrawal from chronic ethanol increased sensitivity to CO₂-inhalation in C57Bl/6J but not DBA/2J. Examined functional activity changes underlying behavioral differences. Developed custom FIJI script enabling user-friendly, Ilastik powered quantification of custom regions of interest for cFos positive cells in images (see Github). Manuscript in preparation.

Posters: UIC Dept. Of Psychiatry, SfN 2024, RSA 2025.

Investigating role of microglial acid sensor TDAG8 in regulating AUD-associated outcomes and drinking behaviors. Studied behavior and physiology including voluntary consumption in DID model, EtOH metabolism, ataxia, locomotor stimulation, and respiratory changes. Quantified neural-inflammatory markers. Studied effect of TDAG8 inhibitor, finding it decreased EtOH consumption, and decreased microglial activation
Poster: UIC Undergraduate Research Forum.

Currently investigating brain-wide functional network disruptions in model of comorbid AUD/PD, using tissue-clearing techniques to quantify cFos expression. Developing network analysis to understand functional changes underlying differential sensitivity to CO₂ and identify hub regions modulating these changes. My honors thesis is on this project; will result in another publication.

University of Illinois Chicago - Dept. of Math, Stats, Comp. Sci.

May 2025 – Aug 2025

With Jennifer Vaccaro (reading project):

Statistical mechanics and neural systems: Ising models, message passing, Metropolis Monte Carlo simulations, replica method, replica symmetry breaking, dimensionality reduction. Developed toolkit in python (see GitHub), enabling simulation and analysis of Ising systems.

Talk: *From Monte Carlo Simulations to Analytic Solutions of Ising Models*

Jan 2025 – May 2025

University of Illinois Chicago - Dept. of Math, Stats, Comp. Sci.

With Jennifer Vaccaro (reading project):

Graph representation learning; graph convolutional networks and their relation to image convolution and spectral theory; graph theoretic measures relevant to neural networks.
Talk: *Graph Convolutional Networks (as an extension of convolution over grids)*

AWARDS

May 2025

UIC Honor College – Conference Travel Grant

May 2025

Research Society on Alcohol – Student Merit and Junior Investigator Meeting Grant

April 2025

UIC Laboratory of Integrative Neuroscience – Featherstone Scholarship

April 2025

UIC Laboratory of Integrative Neuroscience – Founders Award in Systems & Behavioral Neuroscience

April 2024

UIC French Dept. – Student Showcase Award

MEMBERSHIP

April 2025 - Present

Nu Rho Psi – University of Illinois Chicago Chapter

April 2025 - Present

Phi Beta Kappa – University of Illinois Chicago Chapter

2025 - Present

Research Society on Alcohol

2024 - Present

Society for Neuroscience

2024 - Present

UIC Quantum Information Science Society (club officer June 2025-present)

Oct 2022 – May 2023

UIC Engineers for a Sustainable World

OTHER

EXPERIENCE

June 2025 – Aug 2025

UIC Math, Stats, Comp. Sci. Dept. – Young Scholars Program

Coordinated by Dr. Brooke Shipley, Dr. Vishesh Jain, Nick Christo, Lexie Wheeler.
Undergraduate teaching instructor at math program for Chicago high school students.
Worked with graduate students to introduce wide range of topics in college math.
Helped with lectures and mentored students in small groups.

Jan 2024 – May 2024

UIC Biological Sciences Department – BIOS 102

Peer mentor/teaching assistant for incoming biology students.

May 2023 – Aug 2023

Civil Design Inc. – Land Survey Intern

Conducted land, construction, and legal surveys. Created, analyzed, and presented on datasets to increase team efficiency in survey and engineering projects.

SKILLS

Programming:

Python (Numpy, Pandas, PyTorch, Matplotlib), SageMath, Java

Animal husbandry (mice):

IP Injections, fear conditioning, plethysmography, CO₂ exposure model, colony management, blood draws, transcardial perfusion

Wet lab:

Immunohistochemistry, brightfield and fluorescent imaging, qPCR, iDISCO

Languages:

English (native), French (B1)

PRESENTATIONS

November 2025

[UIC College of Medicine Research Forum – poster](#): "A Novel Mouse Model Relevant to AUD-Panic Disorder Comorbidity: Strain Differences in Sensitivity to CO₂ Inhalation During Withdrawal from Chronic Ethanol"

October 2025

[UIC Dept. of Psychiatry 16th Annual Research Forum – poster](#): "A Novel Mouse Model Relevant to AUD-Panic Disorder Comorbidity: Strain Differences in Sensitivity to CO₂ Inhalation During Withdrawal from Chronic Ethanol"

August 2025

[UIC Directed Reading Program – talk](#): "From Monte Carlo Simulations to Analytic Solutions of Ising Models"

June 2025

[Research Society on Alcohol meeting – poster](#): "A Novel Mouse Model Relevant to AUD-Panic Disorder Comorbidity: Strain Differences in Sensitivity to CO₂ Inhalation During Withdrawal from Chronic Ethanol"

May 2025

[UIC Directed Reading Program – talk](#): "Graph Convolutional Networks (as an extension of convolution on grids)"

November 2024

[UIC Honor College Undergraduate Research Symposium – poster](#): "Microglial acid sensing regulates AUD associated outcomes and drinking behavior"

October 2024

[Society for Neuroscience meeting – poster](#): "Withdrawal from chronic alcohol increases CO₂ inhalation sensitivity in mice and rats: a novel model relevant to panic and PTSD comorbidity following AUD"

September 2024

[UIC Dept. of Psychiatry 15th Annual Research Forum – poster](#): "Developing a novel model relevant to AUD-panic disorder comorbidity: Strain differences in sensitivity to CO₂ inhalation during withdrawal from chronic alcohol"