

ETHAN CHANG

Ph.D. Student | WashU in St. Louis

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SUMMARY

Passionate researcher interested in NeuroAI - building bio-realistic brain models to optimize artificial neural networks. Key interests include generalizing neural networks, computational neuroscience, mathematical modeling, AI/ML/DL, and astrocytes.

SKILLS

Languages Python, Java, C++, MATLAB, R, HTML, CSS, JavaScript.
Other Sage, LaTeX, Excel, Powerpoint.

EDUCATION

- 2025 – Present **Ph.D. in Neuroscience** Washington University in St. Louis
School of Medicine, Division of Biology & Biological Sciences (DBBS)
• Dissertation: In Progress
• Thesis Advisor: TBD
- 2025 – Present **Master of Science in Applied and Computational Mathematics** Johns Hopkins University
Whiting School of Engineering
• Focus: Machine/Deep learning, Probability and Statistics
- 2021 – 2025 **Bachelor of Arts in Mathematics and Bachelor of Science in Neuroscience with High Distinction** University of Rochester
School of Arts and Sciences
• Certificate in Biotechnology, Minor in Psychology. Cluster in Philosophy: Ethics and Values.

AWARDS/GRANTS

- 2025 – Present **Doctoral** Washington University in St. Louis
• NIH T32 Predoctoral Trainee, Neuroscience Training Program (T32NS121881)
- 2021 – 2025 **Undergraduate** University of Rochester
• Schwartz Discover Grant, 2024
• Dean's List
• BankCard Services Scholarship Award, 2021

RESEARCH

- 2025 – Present **Doctoral Researcher: Rotating in Brain Dynamics and Control Group** Washington University in St. Louis
Department of Electrical and Systems Engineering, McKelvey School of Engineering
• Laboratory of Dr. ShiNung Ching, Ph.D.
• Research Focus: Modeling astrocytes to optimize neural network performance.
- 2021 – 2025 **Researcher in Center for Translational Neuromedicine** University of Rochester
Department of Neurology, University of Rochester Medical Center
• Laboratory of Dr. Maiken Nedergaard, M.D., D.M.Sc.
• Official positions: School of Medicine and Dentistry Intern, Glymphatic System Technical Associate I, Schwartz Discover Scholar
• Research Focus: The contribution of aquaporin-4 (located on astrocytic endfeet) to glymphatic function.

PUBLICATIONS

- Gahn-Martinez D, Giannetto M, **Chang E**, Beam N, Pla V, Nedergaard M. Chronic Intraventricular Cannulation for the Study of Glymphatic Transport. *eNeuro*. doi: 10.1523/ENEURO.0537-24.2025
- Giannetto M, Gomolka R, Gahn-Martinez D, Newbold E, Bork P, **Chang E**, Gresser M, Thompson T, Mori Y, Nedergaard M. Glymphatic fluid transport is suppressed by the AQP4 inhibitor AER-271. *Glia*. doi: 10.1002/glia.24515

PRESENTATIONS

- Chang E (presenter)**, Giannetto M, Agarwald I, Nick Vento, Gahn-Martinez D, Nedergaard M. Aquaporin-4 Expression on Glymphatic Clearance Routes and Function. Schwartz Discover Scholar Showcase. 2024
- Chang E (presenter)**, Giannetto M, Gahn-Martinez D, Nedergaard M. Aquaporin-4 Expression and Size-Dependent Solute Movement in the Brain. University of Rochester Undergraduate Research Exposition. 2024.
- Chang E (presenter)**, Barth RK. Isolation of Hydrogen Sulfide Producing Bacteria from the environment. Department of Microbiology and Immunology Poster Session. 2023.
- Giannetto M, Gomolka R, Gahn-Martinez D, Newbold E, Bork P, **Chang E (presenter)**, Gresser M, Thompson T, Mori Y, Nedergaard M. Glymphatic fluid transport is suppressed by the AQP4 inhibitor AER-271. University of Rochester Undergraduate Program in Biology and Medicine Poster Symposium. 2023.

TEACHING

2022 – Present

Teaching

- **Teacher for UR SPLASH**
Co-taught a free class with Audrey Jung to RCSD High School students, introducing basic neuroscience concepts behind mental and degenerative disorders and how to get involved in research. 2024.
- **Teaching Assistant: NSCI 201P**
Basic Neurobiology Lab at the University of Rochester, Department of Brain and Cognitive Sciences with Dr. Renee Miller, Ph.D. 2023.
- **Biology and Chemistry Tutor**
Provided one-on-one tutoring assistance to high school biology and chemistry students. 2022-2023.

2023 – Present

Mentoring

- Audrey Jung, University of Rochester Undergraduate, C.O. 2027. Neuroscience Undergraduate Council.
- Isha Agarwald, University of Rochester Undergraduate C.O. 2026. Center for Translational Neuromedicine.
- Nick Ventokl, University of Rochester Undergraduate C.O. 2026. Center for Translational Neuromedicine.

SERVICE AND LEADERSHIP

2025 – Present

Doctoral

Washington University in St. Louis

- **Finance Committee Member**
WashU DBBS Student Advisory Committee, where I helped oversee and manage the financial budget of DBBS SAC and student events.
- **Graduate Student Advisory Board Representative**
WashU Center for Career Engagement, where I gave insights and pushed for optimizing resources for graduate students interested in pursuing industry as a career path.
- **St. Louis Neuroscience Outreach Volunteer**
Hosted an interactive table at the Amazing Brain Carnival for the St. Louis Science Center's SciFest to foster excitement and understanding of STEM.

2021 – 2025

Undergraduate

University of Rochester

- **Deputy Chair for Academic Affairs Committee**
Student's Association, where I played a key role in leading a team of nine on 15+ initiatives to enhance the student academic experience. Spearheaded projects expanding research opportunities and fostering inter- and intradepartmental collaboration.
- **Emergency Department Clinical Support**
Strong Memorial Hospital. Supported clinical operations during the COVID-19 Omicron peak. Main responsibilities include vital acquisition, EKG, and phlebotomy. Helped nurses and doctors as needed.
- **Student Research Ambassador**
Office of Undergraduate Research. Acted as a contact to answer questions about research involvement from the 6,000+ undergraduate student body and served on the student panels at admission events.
- **Emergency Medical Technician**
RC-MERT, providing free and confidential service to students. Also served on the Selections Committee, where we assessed 80-100 applications and facilitated interviews.
- **Archery Club Executive Board**
I helped run practices with 25+ people. Increased range time by 50% and assisted in managing equipment, club logistics, conflict resolution, and funding/budgeting.
- **Hospital volunteering**
Friends of Strong, assisting multiple departments in logistics
- **College coach volunteer**
AmeriCorps/Hoekelman Center at SMH. Assisted and encouraged underserved students at RCSD to attend college, where graduation rates rose to 71%

RELEVANT COURSES

• Cellular Neurobiology	• Deep Neural Networks*	• Measure Theoretic Probability*	• Real Analysis*	• Organic Chemistry I and II
• Neural Systems*	• Machine Learning Theory*	• Bayesian Statistics*	• Point-set Topology	• Genetics, Biochemistry
• Computational Neuroscience	• Optimization*	• Stochastic Processes	• Numerical Analysis	• Microbiology
• Matrix Theory, Linear Algebra	• Data Structures and Algorithms	• Probability, Mathematical Statistics	• Multidimensional Calculus	• Differential Equations
				*to take

LANGUAGES

English - native, Mandarin Chinese - intermediate