

# ETHAN CHANG

Student ~ URochester

✉ etchang949@gmail    🌐 ethan-chang-nmc.github.io  
☎ 949 735 6077    📄 /ethan-chang-nmc  
📍 Irvine, USA    🌐 /in/ethan-chang-nmc

## SUMMARY

Inquisitive. Dedicated. Passionate. My goal is to pursue opportunities that can realize the potential between neuroscience and mathematics. Research interests: astrocytes, modeling of integrative neurocircuits, AI/ML/DL generalizing neural networks.

## SKILLS

**Languages** Python, MATLAB, Java, C, SQL, HTML, CSS, JavaScript.  
**Other** PyTorch, LaTeX, Excel, Powerpoint, Git.

## EDUCATION

8/2021 - 5/2025 **Bachelor of Science in Applied Mathematics (Dual Degree)** **University of Rochester**  
**Bachelor of Science in Neuroscience**  
• Minor in Psychology. Cluster in Philosophy: Ethics and Values

8/2021 - 5/2025 **Biotechnology Certificate** **University of Rochester**

12/2024 **Computer Science for Artificial Intelligence Professional Certificate (In Progress)** **Harvard X**  
• Also completed: IBM Artificial Intelligence Fundamentals, IBM Generative AI for Business Leaders

## AWARDS/GRANTS

2021 - 2025 **Undergraduate** **University of Rochester**  
• Schwartz Discover Grant, 2024  
• Dean's List  
• BankCard Services Scholarship Award, 2021

## RESEARCH

10/2021 - Present **Researcher in Center for Translational Neuromedicine** **University of Rochester**  
• 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  
• Currently studying clearance differences between aquaporin-4 knock-out and wild-type mice. Collaborated with lab members to plan and execute experiments, adapted to unexpected data, and organized lab time with coursework. Contributed to data collection and analysis techniques for other projects investigating the glymphatic system.  
MATLAB / Excel

8/2023 - 12/2023 **Microbiology Course Research** **University of Rochester**  
• Under Dr. Richard K. Barth, Ph.D.  
• Investigated the isolation and characterization of hydrogen-sulfide-producing bacteria from the environment. Identify and resolve issues in isolating samples.

## PUBLICATIONS

Published **Peer Reviewed Journals**  
• 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

In Preparation **Manuscripts**  
• **Chang E**, Giannetto M, Gahn-Martinez D, Nedergaard M. Effect of Aquaporin-4 Expression on Glymphatic Clearance Routes and Function.  
• Gahn-Martinez D, Giannetto M, **Chang E**, Beam N, Pla V, Nedergaard M. Chronic Intracerebroventricular Cannulation as A Viable Delivery Method To Cerebrospinal Fluid.

## PRESENTATIONS

2021-2025 **Posters** **University of Rochester**  
• **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

2023 – 2024	<b>Mentoring</b> <ul style="list-style-type: none"><li>Audrey Jung, University of Rochester Undergraduate, C.O. 2027. Neuroscience Undergraduate Council.</li><li>Isha Agarwald, University of Rochester Undergraduate C.O. 2026. Center for Translational Neuromedicine.</li><li>Nick Ventokl, University of Rochester Undergraduate C.O 2026. Center for Translational Neuromedicine.</li></ul>	University of Rochester
2024	<b>Teacher for UR SPLASH</b> <ul style="list-style-type: none"><li>Co-taught a free class with Audrey Jung to High School students, introducing basic neuroscience concepts behind mental and degenerative disorders and getting involved in research.</li></ul>	University of Rochester
8/2023 – 12/2023	<b>Teaching Assistant for Dr. Renee Miller, Ph.D.</b> <ul style="list-style-type: none"><li>Course: NSCI 201P, Basic Neurobiology Lab</li></ul>	University of Rochester
2022 – 2023	<b>Biology and Chemistry Tutor</b> <ul style="list-style-type: none"><li>Provided one-on-one tutoring assistance to students for high school biology and chemistry.</li></ul>	Irvine, CA

## SERVICE AND LEADERSHIP

2023 – 2024	<b>Deputy Chair for Academic Affairs Committee, Student's Association</b> <ul style="list-style-type: none"><li>Assist in leading a team of <b>9 people</b> on <b>15+ initiatives</b> to improve student's academic experience on campus. Spearheaded projects to increase research opportunities for students. Responsibilities include organizing meetings and minutes, coordinating between departments, and collaborating/delegating tasks.</li></ul>	University of Rochester
2021 – 2022	<b>Archery Club Executive Board</b> <ul style="list-style-type: none"><li>Ran practices with <b>25+ people</b>. Increased range time by <b>50%</b> and assisted in managing equipment, club logistics, conflict resolution, and funding/budgeting.</li></ul>	University of Rochester
11/2021 – 1/2022	<b>ED Clinical Support</b> <ul style="list-style-type: none"><li>Hired to assist <b>clinical needs during COVID-19</b> omicron winter peak. Main responsibilities include vital acquisition, EKG, and phlebotomy. Helped nurses and doctors as needed.</li></ul>	Strong Memorial Hospital
2021-2025	<b>Service</b> <ul style="list-style-type: none"><li>Student Research Ambassador for the Office of Undergraduate Research at the University of Rochester. Acted as a point of contact to answer questions about research involvement for <b>6000+</b> undergraduate students and served on the student research panels at admission events.</li><li><b>Emergency Medical Technician</b> for RC-MERT, providing free and confidential service to students. Also served on the Selections Committee, where we assessed <b>80-100</b> applications and facilitated interviews.</li><li>Hospital volunteering through Friends of Strong, assisting multiple departments in logistics</li><li>College coach volunteer through AmeriCorps/Hoekelman Center at SMH. Assisted and encouraged underserved students at RCSD to attend college, where graduation rates rose to <b>71%</b></li></ul>	

## RELEVANT COURSES

• Real Analysis	• Machine Learning	• Computational Neuroscience	• Organic Chemistry	• Social Psychology
• Complex Analysis	• Data Structures and Algorithms	• Sensory and Motor Neuroscience	• Biochemistry	• Social Political Philosophy
• Numerical Analysis	• Linear Algebra	• Biology of Mental Disorders	• Genetics	• Clinical Psychology
• Differential Equations	• Probability and Statistics	• Multidimensional Calculus	• Microbiology	• Ethics

## LANGUAGES

**English** - native, **Mandarin Chinese** - intermediate