

KELLY CHEN

National Institutes of Health, Bethesda, MD | Office: (301) 435-8728 | kelly.chen@nih.gov | Pronouns: they/them/theirs

EDUCATION

Massachusetts Institute of Technology (MIT)

B.S. Mathematics; B.S. Chemistry; Concentration in Science, Technology, and Society

Cambridge, MA

Graduated May 2022

- Cumulative GPA: 4.9/5.0
- 2022 MIT Department of Chemistry Alpha Chi Sigma Award recipient

WORK EXPERIENCE

National Institutes of Health (NIH), Clinical Center, Department of Bioethics

Postbaccalaureate Research Fellow (Advisors: Yukiko Asada, Holly Taylor)

Bethesda, MD

September 2023–Present

- Research interests: dual use issues in protein and small molecule drug design, ethics and regulation of biomedical and pharmaceutical research

Dark Monk

Prop Builder

Salem, MA

September 2022–May 2023

- Manufactured custom equipment for performers and hobbyists in fire-spinning, fire eating, and related arts

MIT, Department of Chemistry, Hong Lab

Undergraduate Researcher (PI: Mei Hong)

Cambridge, MA

January 2020–June 2022

- Ran protein-ligand docking simulations to identify potential binding sites and stabilizing interactions between polymorphic β -amyloid fibrils and imaging agent flutemetamol
- Ran numerical simulations to develop new ^{13}C - ^2H REDOR NMR technique for measuring site-specific conformational dynamics of proteins and other biomacromolecules

MIT, Program in Science, Technology, and Society

Undergraduate Researcher (Advisor: Robin Scheffler)

Cambridge, MA

February 2022–June 2022

- Cross-referenced oral history transcripts from individuals involved in the 1960s–1980s recombinant DNA controversy in Cambridge, MA to determine key factors in the resolution of the controversy

Brown University, Summer@ICERM Mathematics REU

Undergraduate Summer Researcher (Advisor: Jane Wang)

Providence, RI

June–August 2021

- Proved that every n -interval affine interval exchange transformation has at most n distinct periodic orbits.
- Conjectured based on computational evidence that almost every non-surjective affine interval exchange transformation has an attracting periodic orbit.

University of Minnesota, Mathematics REU

Undergraduate Summer Researcher (Advisor: Arnd Scheel)

Minneapolis, MN (Held Remotely)

June–July 2020

- Studied traveling-wave solutions to the two-dimensional phase-diffusion equation with nonlinear boundary condition using theoretical and numerical methods
- Determined the dependence of the rate of domain expansion on the solution wavenumbers in the limiting cases

Indiana University Bloomington, Mathematics REU

Undergraduate Summer Researcher (Advisor: Christopher Judge)

Bloomington, IN

June–August 2019

- Proved the existence of Dirichlet eigenfunctions of the Laplacian with critical points of Poincaré-Hopf index zero

MIT, Department of Chemistry, Van Voorhis Group

Undergraduate Researcher (PI: Troy Van Voorhis)

Cambridge, MA

June 2018–June 2019

- Proposed and tested potential new carbon-based catalysts for oxygen reduction reaction in fuel cells, using density functional theory and other quantum computational methods
- Identified predictive correlations between computed chemical properties and catalytic ability

MIT, Department of Brain and Cognitive Sciences, Bioelectronics Group

Undergraduate Researcher (PI: Polina Anikeeva)

Cambridge, MA

January–May 2018

- Cloned DNA, packaged viruses, cultured and transfected HEK and rat hippocampal cells to develop technique for remotely inhibiting neurons using magnetic nanoparticles and heat-sensitive ion channels

NIH, National Institute of Neurological Disorders and Stroke, Laboratory of Neurobiology

Summer Research Intern (PI: Thomas Reese)

Bethesda, MD

June–August 2016

- Created 3D reconstructions of mouse photoreceptor cells using EM tomography data
- Quantified effects of light exposure on protein dimensions and composition in cells

PEER-REVIEWED PUBLICATIONS

- N.D. Ricke, K.J. Chen, and T. Van Voorhis, *Exploring Scaling Relations and Active Site Specificity of Graphite-Conjugated Catalysts Using Density Functional Theory*, **J. Phys. Chem. C** 127, 13582–13592 (2023).
- K. Lodaya, N.D. Ricke, K.J. Chen, and T. Van Voorhis, *Machine Learning Identification of Active Sites in Graphite-Conjugated Catalysts*, **ACS Cent. Sci.** 127, 2303–2313 (2023).

- P. Duan, K.J. Chen, G. Wijegunawardena, A.J. Dregni, H.K. Wang, H. Wu, and M. Hong, *Binding Sites of a Positron Emission Tomography Imaging Agent in Alzheimer's β -Amyloid Fibrils Studied Using ^{18}F Solid-State NMR*, **J. Am. Chem. Soc.** 144, 1416–1430 (2022).
- K.J. Chen, Z. Deiman, R. Goh, S. Jankovic, and A. Scheel, *Strain and Defects in Oblique Stripe Growth*, **Multiscale Model. Simul.** 19, 1236–1260 (2021).
- M.D. Gelenter, K.J. Chen, and M. Hong, *Off-Resonance ^{13}C - ^2H REDOR NMR for Site-Resolved Studies of Molecular Motion*, **J. Biomol. NMR** 75, 335-345 (2021).