Kelvin Chen

Contact Information

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College of Arts & Sciences
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Research Interests

Translational neuroscience, computational and experimental disease modeling, neuropathological and cerebrovascular mechanisms of nervous system disorders, omics-based clinical discovery

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Education

University of Virginia — Charlottesville, VA
B.A., Neuroscience & B.A., Chemistry; Minor, Bioethics — Aug 2022 – May 2026 (*Expected*)
- GPA: –

New Horizons Governor's School for Science & Technology — Hampton, VA
Dual Enrollment with VPCC, Biological Sciences & Mathematics — Sept 2020 – Jun 2022
- GPA: 5.00/5.00

Woodside High School — Newport News, VA
Advanced Studies Diploma — Sept 2018 – Jun 2022
- GPA: 4.61/4.00 (Weighted), Rank: 1/381

Research Experience

UVA School of Medicine, Center for Brain Immunology and Glia — Charlottesville, VA
Undergraduate Researcher, Department of Neurosurgery & Neuroscience — Jan 2024 – Present
Advisor: Petr Tvrdik, Ph.D.
- Mapped cortical myeloid cell dynamics in situ in focal cerebral ischemia models of stroke in Iba1-Dre and/or LysM-Cre transgenic mouse models with the intersectional *RC::RLTG* dual-recombinase reporter system.

Undergraduate Researcher, Department of Neuroscience — Aug 2023 – Jan 2024
Advisor: Lulu Jiang, M.D., Ph.D.
- Investigated the cellular mechanism underlying nuclear membrane disruption and nucleocytoplasmic translocation of RNA-binding proteins and transcripts triggered by tau pathology in Alzheimer's disease using mouse and iPSC-derived human organoid models.

Undergraduate Researcher, Department of Pharmacology — Sep 2022 – May 2023
Advisor: Julius Zhu, Ph.D.
- Optimized a genetically encoded sensor-based image visualization and analysis algorithm to probe neuromodulatory synaptic activities and characterize neurotransmitter properties at the nanoscopic scale.

Barrow Neurological Institute, Neuroimaging Innovation Center — Phoenix, AZ
Research Intern, Department of Translational Neuroscience — May 2024 – Aug 2024
Advisor: Richard Dortch, Ph.D.
- Performed numerical diffusion signal simulations in silico to optimize and validate peripheral nerve-specific computational models using the spherical mean technique and tested the impact of varying imaging parameters on the precision and accuracy of derived estimates (*tentative*).

Research Intern, Department of Translational Neuroscience — May 2023 – Aug 2023
Advisor: Richard Dortch, Ph.D.
- Modeled multi-compartmental diffusion MRI signals in pre-clinical rat models of peripheral nerve trauma based on segmented histological images to derive diffusion tensor imaging- and spherical mean technique-based metrics for monitoring axonal re/degeneration.

Hampton University Hampton, VA
Research Intern, Department of Chemistry & Biochemistry Sept 2021 – Mar 2022
Advisor: Peter Njoki, Ph.D.

- Probed the kinetic behavior of gold nanoparticles in COVID-19 diagnosis and its mediating effect with antiviral drugs in the targeting of the SARS-CoV-2 RdRp via biochemical and mathematical modeling.

Publications

Editorials

[E.6] **Chen, K.**, *A Neuroethical Discourse on the Application of Optogenetics for Memory Modification.* Grounds: The Virginia Journal of Bioethics, 2023 [URL]

[E.5] **Chen, K.**, *Therapeutic Nihilism in Disorders of Consciousness Care and the Right to Live.* Grounds: The Virginia Journal of Bioethics, 2023 [URL]

[E.4] **Chen, K.**, *On the Psychological Disembodiment of Autonomy and Agency in Patients with Brain-Computer Interface Implants.* Grounds: The Virginia Journal of Bioethics, 2023 [URL]

[E.3] **Chen, K.**, *Moral Status in Cerebral Organoids, Gastruloids, and Chimeras.* Grounds: The Virginia Journal of Bioethics, 2023 [URL]

[E.2] **Chen, K.**, *The Inadvertent Consequences of Scanning the Human Brain.* Grounds: The Virginia Journal of Bioethics, 2023 [URL]

[E.1] **Chen, K.**, *Towards a Brave New World: The Huxleyan Reality of Using Pharmacological Neuroenhancement.* Grounds: The Virginia Journal of Bioethics, 2023 [URL]

Presentations

Posters

[P.3] **Chen, K.**, Sharifi, K. A., Tvrdik, P. *Focal Cerebral Ischemia-Induced Phenotypic Plasticity in Recombinase-Mediated Myeloid Cell Subtypes* (*in preparation*).

[P.2] **Chen, K.**, Ketsiri, T., Dortch, R. D. *Microstructural Analysis of Nervous Tissues by Imaging to Simulate Diffusion MRI Signals Following Peripheral Nerve Trauma.* BNI Undergraduate Research Symposium, Phoenix, AZ, Aug 9, 2024 (*in preparation*).

[P.1] **Chen, K.**, Sadrabadi, M. S., Dortch, R. D. *Geometry-Informed Multi-Compartmental Diffusion MRI Modeling of Injured Peripheral Nerves.* BNI Undergraduate Research Symposium, Phoenix, AZ, Aug 11, 2023 [PDF]

Honors & Awards

Echols Scholarship, UVA Aug 2023
Awarded to 5% of undergraduates in the College of Arts & Sciences for academic excellence and intellectual leadership

Distinguished Research Mentorship Award, NHGSST Jun 2022
Awarded to three seniors for excellence in research based on their research project

University Achievement Award Scholarship, UVA Mar 2022
Awarded to 50 in-state students from disadvantaged backgrounds on the basis of academic merit, leadership, public service, citizenship, diversity, and character; covers full-tuition for four years

Teaching Experience

UVA Department of Chemistry — Charlottesville, VA

Undergraduate Teaching Assistant

- CHEM 2311 Organic Chemistry Laboratory I (for Non-Chemistry Majors) — FA 2024
- CHEM 1810 Principles of Chemical Structure (Accelerated) — FA 2024
- CHEM 2321 Organic Chemistry Laboratory II (for Non-Chemistry Majors) — SP 2024
- CHEM 2311 Organic Chemistry Laboratory I (for Non-Chemistry Majors) — FA 2023
- CHEM 1811 Principles of Chemical Structure Laboratory (Accelerated) — FA 2023

UVA Department of Psychology — Charlottesville, VA

Undergraduate Teaching Assistant

- PSYC 3210 Research Methods: Psychobiology Laboratory — SP 2024

Professional Services

UVA Office of Citizen Scholar Development — Charlottesville, VA

Symposium Volunteer — Apr 2023 – Present

- Undergraduate Research Symposium

Editorial Board Staff — Sept 2022 – Present

- The Oculus: The Virginia Journal of Undergraduate Research

W. M. Keck Center for Cellular Imaging — Charlottesville, VA

Microscopy Workshop Volunteer — Mar 2024

- 21st Annual FRET, FLIM, & FLIRR Microscopy Workshop

Additional Activities

- **Editor**, Grounds: The Virginia Journal of Bioethics — Jun 2023 – Present
- **Senior Mandarin Translator**, The Cavalier Daily — Feb 2023 – Present
- **Investigator**, University Judiciary Committee — Sept 2022 – Present
- **Senior Associate**, The Blosson Together Association — Sept 2022 – Present
- **Surgical Supply Volunteer**, UVA Health University Hospital — Sept 2022 – May 2023

Technical Skills

- **Programming**: MATLAB, Python, R, Julia, C/C++, SQL, HTML, JavaScript
- **Softwares**: LaTeX, Microsoft Offices, ImageJ, ZEN, GraphPad Prism
- **Operating Systems**: Windows, Linux, MacOS

Affiliations

- **American Neurological Association**, Member — Jun 2024 – Present

References

Petr Tvrdik, Ph.D.
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Richard Dortch, Ph.D.
Associate Professor
Department of Translational Neuroscience
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Jason Chruma, Ph.D.
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