Kelvin Chen

Contact Information

University of Virginia
College of Arts & Sciences
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Research Interests

Translational neuroscience, mechanisms of neurovascular pathology, computational and experimental disease modeling, neurological surgery, marker discovery, integrative omics, quantitative imaging

Education

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

Virginia Peninsula Community College — Hampton, VA
Dual Enrollment, Biological Sciences & Mathematics — Sept 2020 – Jun 2022
- GPA: 4.00

Woodside High School — Newport News, VA
Advanced Studies Diploma — Sept 2018 – Jun 2022
- GPA: 4.61/3.98 (W/UW), 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.

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

- Analyzed the role of gold nanoparticles in the inhibition of SARS-CoV-2 via biochemical and mathematical modeling in a kinetic ODE system and their synergistic effect with antiviral drugs in the targeting of viral spike and nucleocapsid antigens.

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. *Spherical Mean Diffusion Weighted Magnetic Resonance Signals Reveal Axonal Integrity Following Traumatic Peripheral Neuropathy.* Barrow Neurological Institute Undergraduate Research Symposium, Phoenix, AZ, Aug 2024.

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

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

Honors & Awards

- **Echols Scholarship**, UVA — 2023
- **University Achievement Award Scholarship ($80,000)**, UVA — 2022
- **Distinguished Research Mentorship Award**, NHREC GSST — 2022

Technical Skills

- **Programming**: MATLAB, Python, R, Julia, C/C++, SQL, HTML/CSS, 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
Barrow Neurological Institute
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Ammasi Periasamy, Ph.D.
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Jason Chruma, Ph.D.
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