# Kelvin Chen


**Contact Information**

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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: 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

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

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## 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]

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## 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.* Barrow Neurological Institute 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.* Barrow Neurological Institute Undergraduate Research Symposium, Phoenix, AZ, Aug 11, 2023 [PDF]

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## 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

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## 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

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## Additional Activities

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

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## Honors & Awards

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

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## 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

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## 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.**
Professor
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University of Virginia
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**Jason Chruma, Ph.D.**
Assistant Professor
Department of Chemistry
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