Timothy Lantin
timothylantin@gmail.com

EDUCATION

Ph.D. Biomedical Engineering **Anticipated 2028**
Columbia University | New York, NY

M.Phil. Biomedical Engineering **May 2026**
Columbia University | New York, NY

M.S. Biomedical Engineering **May 2022**
Columbia University | New York, NY

B.A. Philosophy **Jun 2019**
University of Washington, Seattle | Seattle, WA

B.S. Biology (General) **Jun 2019**
University of Washington, Seattle | Seattle, WA

RESEARCH AND WORK EXPERIENCE

Ph.D. Candidate, Lead Teaching Fellow, Biomedical Engineering **Sept 2024 - Present**
Laboratory for Neural Engineering & Control | New York, NY
PI: Dr. Qi Wang

- Automated wet lab data collection, organization, processing, and analysis by setting up hardware rigs and deploying AI agents
- Designed and implemented wet lab experimental workflows spanning rodent colony management, neurosurgery, perfusion, tissue processing, behavioral analysis, and single-unit RNA sequencing
- Performed *in vivo* 2-photon imaging, Neuropixel 2.0 electrophysiology recording, neural stimulation, and functional circuit tracing experiments and data analysis
- Developed high-dimensional single-cell and single-nucleus sequencing (scRNA-seq/snRNA-seq) data analysis pipeline
- Mentored and managed three undergraduate researchers, provided training for wet lab techniques and engineering skills to drive independent subprojects

Research Associate **May 2022 – Jul 2024**
Envisagenics, Inc. | New York, NY
RNA Therapeutics Startup, Series B

- Generated and validated *in vitro* models for neurodegenerative disease via controlled cell differentiation from iPSC to mature motor neurons

- Created data processing pipelines to identify and assay 100+ candidate targets for development of RNA splice-modulating therapeutics in neurodegenerative disease
- Constructed RNA and cDNA libraries via extraction and purification from patient samples for target validation
- Assayed novel gene therapy interventions *in vitro* with hundreds of PCRs and qPCRs
- Managed all laboratory ordering, inventory, and chemical waste logistics
- Organized and moderated company journal club

Graduate Research Assistant **Aug 2021 – May 2022**

Laboratory for Neural Engineering & Control | New York, NY

PI: Dr. Qi Wang

- Investigated neural encoding of tactile sensation in somatosensory pathways of mouse brain via genetically-encoded neurotransmitter sensors and behavioral analysis
- Performed several solo mouse neurosurgeries for stereotaxic injection of adeno-associated virus (AAV) and brain-computer interface implant
- Coordinated experimental data collection with team of five members

Research Scientist 1 **Jul 2019 – Jul 2021**

University of Washington, Department of Pharmacology | Seattle, WA

PI: Dr. William Catterall

- Spearheaded investigation into pathogenic gating pore current in neuronal voltage-gated ion channels $K_V7.3$ and $Na_V1.2$ as a potential biophysical mechanism for autism spectrum disorder (ASD) and epilepsy
- Designed project roadmap, engineered mutations into DNA, and troubleshot molecular biology experiments to express 20+ unique mutant protein variants in insect and mammalian cell culture
- Recorded high quality voltage-clamp electrophysiology data and performed signal processing analysis under aggressive timelines, leading to first-author publication in PNAS

Undergraduate Research Assistant **Sept 2017 – Jun 2019**

University of Washington, Department of Pharmacology | Seattle, WA

PI: Dr. William Catterall

- Managed mouse colony for investigation into mutant voltage-gated sodium channel $Na_V1.1$ and Dravet syndrome
- Assembled electroencephalography (EEG) devices for implantation into mouse brains
- Processed hundreds of mouse brain tissue samples through cryosectioning and immunohistochemistry

Administrative Assistant, Organ Transplantation Services **Feb 2017 – Jun 2019**

University of Washington Medical Center | Seattle, WA

- Collaborated with doctors, nurses, and health care administration to optimize referral system for medical specialty clinics, cutting down processing time by 50%

- Analyzed and flagged kidney, liver, heart, and lung transplant data for thousands of hospital patients
- Managed quality improvement projects including tracking of organ procurement expenses for $20M budget and updated United Network for Organ Sharing (UNOS) databases

Teaching Assistant **Sept 2017 – Dec 2017**

University of Washington | Seattle, WA

- Facilitated engaging classroom discussions and group activities for 25 students during academic quarter
- Produced original curriculum and provided individualized academic support to students, including personalized tutoring sessions and constructive feedback on assignments

Patient Care Intern **Feb 2016 – Aug 2017**

Swedish Medical Center, First Hill | Seattle, WA

- Rounded on patients on gynecological surgery, intermediate care, orthopedic, emergency, and pediatric units, totaling over 280 hours
- Obtained vital signs of patients, performed inventory of drugs and medical supplies

Photojournalist **Sept 2015 – Jun 2017**

The Daily of the University of Washington | Seattle, WA

- Documented university-centric stories through photographic media
- Collaborated with photo editors and writers to publicize in a prompt manner
- Contributed high-quality front-page photographs

PUBLICATIONS, POSTERS, CONFERENCES, AND PUBLISHED ESSAYS

PUBLICATIONS/POSTERS

**authors contributed equally*

Kim, S., Munot, S., …, **Lantin, T.**, Wang, Q., Konofagou, E. Ultrasound sonication and optogenetic stimulation of the retrosplenial cortex	**In preparation**
Wellman, S., …, **Lantin, T.**, Wang, Q., Myeku, N. Microglial functional failure in an immunoproteasome-deficient models of Alzheimer's disease. *In preparation.*	**In preparation**
Kelley, C., **Lantin, T.**, Slater, C., Sorrentino, M., Yu, K., Yuan, B., Kann, M., Liu, Y., Kim, J.S., Wang, Q. Behavioral state-dependent norepinephrine dynamics in the primary somatosensory and prefrontal cortices during tactile detection tasks. *bioRxiv.*	**Jan 2026**

Slater, C.*, **Lantin, T.***, Wellman, S., Jia, L., Gonzalez, G., McFaline-Figueroa, J. L., Wang, Q. Whole brain, cell type specific transcriptomic profiling of in vivo neurochemical perturbation. *bioRxiv.*	**May 2025**
Jurgielewicz, B. J., Da Silva, B., **Lantin, T.**, Luther, R., Fronk, A. D., Stanton, S., Anderson, K., Akerman, M., Arun, G. Artificial Intelligence Powered Approach to Enhance the Development of Splice Switching Oligonucleotides Targeting Novel Alternative Splicing Isoforms for the Treatment of Amyotrophic Lateral Sclerosis. *Poster Session, Society for Neuroscience 2024.*	**Oct 2024**
Gamal El-Din, T. M.*, **Lantin, T.***, Tschumi, C. W.*, Juarez, B., Quinlan, M., Hayano, J. H., Li, J., Zweifel, L. S., & Catterall, W. A. (2021). Autism-associated mutations in K_V7 channels induce gating pore current. *Proceedings of the National Academy of Sciences*, *118*(45).	**Nov 2021**

CONFERENCES

Center of Excellence Joint Workshop, Air Force Research Laboratory – Columbia (Dayton, OH)	**June 2025**
Neuroscience 2024 (Chicago, CA)	**Oct 2024**
The Financial Times US Pharma and Biotech Summit (New York, NY)	**May 2024**
Neurodegenerative Diseases: Biology & Therapeutics (Cold Spring Harbor, NY)	**Dec 2022**
Neuroscience 2022 (San Diego, CA)	**Nov 2022**
[VIRTUAL] Montreal AI and Neuroscience (Montreal, QC)	**Nov 2021**
Cleveland Neurodesign Entrepreneurs Workshop (Cleveland, OH)	**Sept 2021**

PUBLISHED ESSAYS

Lantin, T. Our Genetic Constitution. *Palladium Magazine.*	**May 2025**
Lantin, T. The Case for Human Hibernation. *Palladium Magazine.*	**Apr 2025**

POSITIONS, AWARDS, AND HONORS

1st Place, ClawHack NY (Hackathon) **Mar 2026**
Built Labster Claw, a multi-agent platform for automating administrative tasks in the laboratory setting.
https://www.youtube.com/watch?v=VKbPohsU78s
$2500 + Mac Mini + ClawCon demo

Graduate Student Reviewer, Grey Matters CU **Sept 2025 - Present**
Reviewer for undergraduate neuroscience journal of Columbia University

eCLOSE Volunteer, Pelham Bay High School **Apr 2025**
Taught basic laboratory skills to high-achieving, underprivileged high school students

Envisagenics, Inc. Journal Club Coordinator & Moderator **July 2023 – Dec 2023**

Institute of Electrical and Electronics Engineers: Engineering in Medicine and Biology (IEEE EMBS), Columbia University Chapter **Sept 2021 - May 2022**
Member ('21-'22)

Arts and Sciences Advisory Council for Students (ASACS) **Sept 2018 – Jun 2019**
Council Member ('18-'19). One of ten students selected to represent 18,000+ undergraduate students in regular meetings with the Dean of the College of Arts and Sciences at the University of Washington.

University of Washington Mobile Health Coalition **Sept 2018 – Jun 2019**
Co-Founder. Created a mobile health clinic to benefit underserved populations in greater Seattle community.
https://www.washington.edu/news/2021/04/30/uws-new-mobile-health-outreach-van-will-serve-community-and-student-experience/

University of Washington Leaders **Feb 2016 – Jun 2018**
Mentor ('17-'18), Participant ('16)

Delta Epsilon Mu, Inc. Co-Ed Pre-Health Professional Fraternity **Feb 2016 – Jun 2019**
Co-Founder, Vice President ('16-'17, '17-'18)

Purple and Gold Scholarship **Sept 2015**
University of Washington Undergraduate Admissions

1st Place, Photography **Aug 2015**
Laguna Beach Arts Festival
https://www.latimes.com/socal/daily-pilot/news/tn-dpt-me-0821-junior-artist-20150820-story.html

Eagle Scout **Nov 2014**
Boy Scouts of America

SKILLS

Laboratory 1

- Mouse neurosurgery
- Mouse behavior analysis
- Single-cell RNA sequencing (scRNA-seq)
- Single-nucleus RNA sequencing (snRNA-seq)
- Patch-clamp electrophysiology
- Mammalian and insect cell culture
- Lentivirus production
- Polymerase Chain Reaction (PCR)
- Genetic engineering
- Cloning
- Western blotting
- Confocal Microscopy
- Mouse colony management
- Fear conditioning
- Transformation
- Transfection
- Fluorescence-activated cell sorting (FACS) / flow cytometry
- High-throughput slide scanning

Laboratory 2

- Laboratory automation
- Cryosectioning
- Transcardiac perfusion
- cDNA synthesis and library construction via reverse transcriptase (RT-PCR)
- Bradford assay / protein quantification
- Quantitative PCR (qPCR)/Real-time PCR
- Stem cell / iPSC culturing / differentiation /cell fate control
- *In vitro* model generation and validation
- DNA/RNA extraction
- RNA-seq sample preparation
- BSL-2+
- Immunohistochemistry
- Primer Design
- 2-photon/multi-photon microscopy

Software

- Deploying AI agents
- OpenClaw
- Multi-agent platforms
- Python
- MATLAB
- R
- ImageJ
- Igor Pro (Electrophysiology)
- SnapGene
- EPIC (Medical Records)
- StepOne Plus (qPCR)
- Cloud integration
- HIPAA-compliance

Hardware

- Laser cutting
- 3-D printing
- Centrifugation
- Welding
- Basic autoclave repair
- Basic circuitry
- Oscilloscope
- Equipment setup

Other

- Literature review
- Project management
- Budgeting
- Graphic design
- Technical communication
- Teaching & mentoring
- Grant proposal writing
- Philosophical essay writing