

Alex Tran

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832-466-1172

EDUCATION

Massachusetts Institute of Technology (MIT)

Cambridge, MA

Candidate for Master of Engineering in Electrical Engineering and Computer Science

February 2028

Candidate for Bachelor of Science in Electrical Engineering and Computer Science

May 2026

- **Relevant Coursework:** Computer Systems and Society; Computer Systems Engineering; Computation Structures; Advanced Computational Photography; Multivariable Calculus; Fundamentals of Programming; Intro to ML; Strobe Project Lab; Interactive Data Viz; Quantitative and Clinical Physiology; Differential Equations; Physics II: E&M; Tissue Engineering and Organ Regeneration; Design of Medical Devices and Implants; Fields, Forces, and Flows in Biological Systems;
- **Activities:** Phi Kappa Theta, Emergency Medical Technician, Photography, Graphic Design

EXPERIENCE

Massachusetts Institute of Technology (MIT)

Cambridge, MA

Teaching Assistant, Biological Circuit Engineering Laboratory

January 2026 – Present

- Supported lab instruction for genetic circuit engineering, assisting with preparation beforehand, and questions during sessions
- Taught computational modeling and simulation of genetic circuits using Gro, and data analysis of results using Cytotflow
- Held additional office hours and workshops on Gro modeling, Cytotflow analysis, figure design, and technical writing
- Graded technical reports, providing detailed feedback on experimental methods, Gro models, results, data analysis, and intros
- Mentored student teams on final projects, advising on circuit design, implementation strategies, and troubleshooting methods

Massachusetts Institute of Technology (MIT)

Cambridge, MA

Teaching Assistant, How to Grow (Almost) Anything

June 2025 – Present

- Led recitations and labs on synthetic biology, preparing slides, lab protocols, reagents, and debugging labs in advance
- Developed problem sets and lab exercises, and hosted office hours for help with homework and final projects
- Mentored student final projects, advising on design, implementation, troubleshooting, and sourcing materials
- Engineered bacteriophage lysis protein (L) variants via site-directed mutagenesis; developed quantitative lysis assays
- Designed and cloned beta-lactamase inhibitor constructs into pET28a/pUC backbones; validated efficacy using MIC assay
- Designed 70+ fluorescent protein variants through tuning expression and folding to modulate color and brightness

Massachusetts Institute of Technology (MIT)

Cambridge, MA

Research Assistant, (Weiss Lab, Laboratory for Soft Materials)

September 2025 – Present

- Designed and simulated a novel biological register for intracellular memory, reducing components relative to existing designs
- Designed and tested 20+ pegRNA variants for prime editing in mammalian cells to improve efficiency (up to 4x increase)
- Building a 1,000+ pegRNA library to map editing efficiencies for controlled intracellular neural network weight updates
- Assembled, cloned, and transfected pegRNA variants into HEK 293, using flow cytometry to quantify gene editing efficiency
- Formulated injectable hydrogels (gelatin/hyaluronic acid), performing rheological analysis to tune viscoelastic properties
- Investigated mechanical and biological constraints for hydrogel delivery in ocular environments for mitochondrial transplants
- Studying mitochondrial transplantation and Sherpa mitochondrial adaptations to hypoxia to improve post-ischemic function

Massachusetts Institute of Technology (MIT)

Cambridge, MA

Teaching Assistant, LEAH Knox Scholars Program

June 2025 – August 2025

- Instructed 15-25 high school scholars in core molecular biology techniques (PCR, cell culture, transformation, miniprep)
- Guided students through automated prep and expression of fluorescent E. coli using Opentrons OT-2 Python protocols/API

IQ Viet My

Houston, TX

Lead Tutor

August 2015 – August 2017; June 2020 – August 2021

- Taught K-12 students across STEM, literature, history, and standardized test prep (ACT/SAT), leading classes of up to 30 students, small-groups of up to 10, and private one-on-one tutoring both in-person and remotely
- Designed, implemented, and maintained a structured SAT/ACT curriculum, improving student performance by ~200/4 points
- Trained and mentored junior tutors on teaching strategies, curriculum, delivery methods, and student engagement strategies

MIT Spokes

Cambridge, MA

Logistics Coordinator

January 2018 – December 2018

- Led logistics for a 75-day, 3,500+ mile cross-country cycling expedition, coordinating route planning and lodging
- Designed and taught STEM workshops for up to 150 students across nine 6-hour learning festivals in rural communities
- Developed the MIT Spokes website to maintain relations with sponsors and expand partnerships, raising \$25,000+

SKILLS

Computational: Python (NumPy), C++, HTML/CSS/JavaScript (D3.js, P5.js), SQL, AWS, Adobe Photoshop/Lightroom/Illustrator

Laboratory: CRISPR, MoClo, Genetic Circuits, Cell-Free, FACS, DNA/Protein Design, Mass Spec, PCR, Gel Electrophoresis

Languages: English, Vietnamese, Turkish