Quoc Tran

www.quoctran.com – Seattle, WA

EDUCATION

University of Washington, Seattle, WA **Sep. 2021 – Present**

- Ph.D. in Molecular Engineering in progress (3.7/4.0 GPA)
- M.S. in Molecular Engineering awarded *en route*
- Advised by Georg Seelig, Department of Electrical and Computer Engineering

University of California, San Diego, La Jolla, CA **Sep. 2016 – Jun. 2021**

- B.S. in Biochemistry and Cell Biology (3.4/4.0 GPA) (June 2019)
- M.S. in Biology (June 2021), advised by Jeff Hasty, Division of Biology and Bioengineering
- Thesis: *Optimization of the Tet-On system in* Saccharomyces cerevisiae

RESEARCH EXPERIENCE

Graduate Student - Seelig Lab, University of Washington, Seattle, WA **Jun. 2021 – Present**

Engineered CRISPR/Cas9-based synthetic gene circuits in mammalian cells

- Designed a CRISPR-based gene circuits for novel modes of computation in living cells
- Mathematically modeled and computationally simulated synthetic gene circuits

Developed scRNA-seq methods to preform high-throughput screens in *E. coli*

- Optimized methods to increase transcript capture
- Developed experimental and bioinformatic workflows for analyzing data

Graduate Student - Hasty Lab, UC San Diego, La Jolla, CA **Sep. 2019 – Jun. 2021**

Cloned and tested inducible promoers and other synthetic biology tools for *S. cerevisiae*

- Published a MoClo-compatible toolkit of a variety of yeast-optimized small molecule-inducible promoter systems, including doxycycline, abscisic acid, danoprevir, and 1-naphthaleneacetic acid
- Adapted and implemented different cloning protocols for budding yeast in the lab

Undergraduate Researcher - Hasty Lab, UC San Diego, La Jolla, CA **Apr. 2018 – Jun. 2019**

Worked alongside Dr. Philip Bittihn to design *E. coli* heavy metal biosensors

PUBLICATIONS

- O'Laughlin, R.*, **Tran, Q.*,** Lezia, A.*, Ngamkanjanarat, W., Emmanuele, P., Hao, N. & Hasty, J. A Standardized Set of MoClo-Compatible Inducible Promoter Systems for Tunable Gene Expression in Yeast. *ACS Synth. Biol.* **13,** 85–102 (2024).

* Equal Contribution

TEACHING EXPERIENCE

Teaching Assistant - University of Washington, Seattle, WA **Mar. 2022 – Present**

- BIOL 467: Comparative Vertebrate Physiology (Spring 2023, Spring 2024)
- ECE 523: Introduction to Synthetic Biology (Fall 2024)

Teaching Assistant - Division of Biology, UC San Diego, La Jolla, CA **Sep. 2019 – Jun. 2021**

- BILD 4: Introductory Biology Lab (Fall 2019 – Spring 2021)
  - Led two sections of lab a week, in person and online, covering topics including biology lab techniques, basic molecular biology, data analysis, and scientific literature
  - Adapted the lab course to an online format for the Spring 2020 quarter and prepared a manuscript with Dr. Stanley Lo about community-building tools in online teaching.
- BIMM 100: Molecular Biology (Summer 2020)

Relevant Coursework

Introduction to College Teaching (UC San Diego - Winter 2021)

- Developed evidence-based effective teaching practices to support student learning
- Drafted a teaching philosophy and a lesson plan for a hypothetical college-level course

Anti-Racist Pedagogy Learning Community (UC San Diego - Fall 2020)

- Explored racial inequities in college educational outcomes and practices to create more welcoming and inclusive classrooms

SELECTED PROJECTS

Wiki Wall Street (www.wiki-wall-street.com)

- The stock market game lets players simulate buying and selling stocks using fake money; it is often used as an educational tool in economics classes. I have recreated this game using Wikipedia articles using pageviews as a proxy for value.
- Developed and deployed a Python Flask app with a MongoDB to pull from the Wikipedia API, alongside a full JavaScript front-end

Quoc Thoughts (www.quocthoughts.com)

- Quoc Thoughts is my blog where I explore thought-provoking but, ultimately, meaningless ideas
- In *Why is the left faucet handle always for hot water? (Part 1)*, I delve into the labyrinth of plumbing codes, current and past, to understand why our sink faucets are the way they are.
- In *In which I get really into cereal for a short while but now I'm over it, I think.,* I interview Thomas Hicks, a self-proclaimed cereal influencer, about cereal news and cereal community.

EasyGeneDB.Net (www.easygenedb.net)

- Most gene databases are bloated with features and too complex to easily navigate. EasyGeneDB offers an easy-to-use and simplified UI for investigating genes from annotated databases.
- Developed and deployed a full-stack web app on a self-managed instance to pull and process information from NCBI's databases and efficiently serve large amounts of data to clients.

More projects at www.quoctran.com and www.github.com/quoctran98

TECHNICAL SKILLS

Biology and Chemistry Laboratory Skills

- General biology and chemistry lab techniques and safety
- Well-versed in molecular biology techniques: molecular cloning, flow cytometry, scRNA-seq and next-generation sequencing workflows, and mammalian cell culture
- Use of custom PDMS microfluidic chips for single-cell and population microscopy
- Molecular cloning methods in *E. coli* and *S. cerevisiae*

Mathematical, Computational, and Programming Skills

- Python (PyTorch), R, and MATLAB for data analysis, visualization, machine learning, and mathematical modeling of biological systems
- CLI and cloud computing tools and Python (Scanpy, etc.) for single-cell RNAseq data processing
- Python (Flask), JavaScript, MongoDB, Docker, and Digital Ocean for full-stack web development
- C++, Rust, Fusion 360, and KiCAD for PCB design and microcontroller programming for prototyping hardware projects