

David Tran, PhD

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I am a PhD scientist and builder with over a decade of experience bridging the gap between mammalian cell culture and automation engineering. I specialize in identifying manual bottlenecks in the lab and re-engineering them into high-speed, reliable data pipelines. From designing custom hardware to building automated data architectures, I have a proven track record of increasing experimental throughput and leading processes from the bench to GMP scale. My work combines hands-on wet lab expertise with technical proficiency in computational tools to solve complex scaling challenges. I am motivated by mission-driven technology that has a tangible impact on human health and the future of bioengineering.

EDUCATION

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- Ph.D.** Chemical and Biochemical Engineering UC Irvine 2015
Functional Characterization of in vitro Models of Stem Cell-derived Cardiomyocytes
- B.S.** Chemical and Biomolecular Engineering UCLA 2009

PROFESSIONAL EXPERIENCE

Web Developer

Pirate Labs

January 2026 - Present

- ◆ Currently expanding my technical repertoire through full-stack web development, working with PHP on both the front end and back end, and contributing to database updates and maintenance

Senior Manager - Process Development

Upside Foods, Berkeley, CA

September 2023- March 2025 (1.6 years)

- ◆ Led scientific experimental design for process development and optimization (increase yield, reduce costs and improve product quality) of animal cell suspension culture for cultivated meat
 - ◆ 3x increase in volumetric productivity (PCV/day) over fed-batch process
 - ◆ 30% reduction in cost of goods sold (COGS) by spent media analysis and lean media optimization
 - ◆ 4x improvement in product quality necessary for positive mouthfeel
- ◆ Directed tech transfer to and operated successful pilot scale bioreactors (250L SUB and 2000L SS) at GMP manufacturing facility, leveraging bench-scale experiments for process ranging, risk mitigation and material validation
 - ◆ Wrote batch records and SOPs and trained operators and manufacturing teams on new workflows for tech transfer
 - ◆ Provided technical leadership by effectively collaborating with key stakeholders in manufacturing to plan operations
- ◆ Established bench scale perfusion bioreactor platform and increased experimental throughput by 6x through continuous platform improvement (e.g. mitigation of shear-induced cell death), RCA, and operational excellence
- ◆ Managed up to 6 FTEs providing career guidance, scientific coaching and constructive feedback
- ◆ Built productive cross-functional relationships between teams (Process Development, Process Engineering, Manufacturing, MSAT, Supply Chain, FSQA, Data and Food Research & Development) for strategy and prioritization of limited resources

Senior Process Development Engineer

Upside Foods, Berkeley, CA

March 2022 - September 2023 (1.6 years)

- ◆ Increased productivity up to 16x via clone selection, media optimization and process development
- ◆ Established next-gen bench-scale adherent bioreactor start-to-finish with continuous troubleshooting and improvement
- ◆ Bioreactor operations on Applikons, DASboxes, DASGIPs, and AES controller systems
- ◆ Conducted successful root cause analysis (RCA) in troubleshooting initial failures of tech transfer from bench to pilot scale
- ◆ Reduced team spending by \$500k/year by creating a custom bioreactor metadata system including an ELN, LabKey data input module, data lake and automated Tableau/JMP graphing for rapid data monitoring
- ◆ Improved sensory attributes and raw material characteristics of our biomass for improved cultivated meat product quality

Process Development Engineer 2

Upside Foods, Berkeley, CA

November 2020 - March 2022 (1.4 years)

- ◆ Increased product yields by 10x through process and media development
- ◆ Directed development of new scale-down adherent bioreactor, from concept, deliverables, commissioning of new bioreactor controllers and timeline management
- ◆ Re-established scale-down bioreactor by raising throughput (10x) and reducing variability

Biomedical Engineer

Novoheart Limited, Irvine, CA

January 2017 - November 2020 (3.9 years)

- ◆ Designed and validated custom bioreactors and imaging systems, integrating hardware control (LabVIEW), sensors, cameras, and automated data pipelines.

Postdoctoral Researcher

University of Hong Kong, Hong Kong

September 2015 - January 2017 (1.4 years)

- ◆ CAD designed and fabricated multi-camera bioreactor for long term imaging of cardiac organoid pump function
- ◆ Coded image processing tools in MATLAB & LabVIEW to streamline drug screening, reduced time by 75%
- ◆ Extensive experience culturing stem-cell-derived human cells, including directed-differentiated iPSC-derived cardiomyocytes and engineered tissues.

PATENTS & PUBLICATIONS

Patents

- ◆ E Roberts, E Lee, D Tran, SY Mak, B Fermini, A Wong. "Support and system for engineered tissue". EP4179065A4, published Sept 11, 2024.
- ◆ Y Kurokawa, E Lee, D Tran, KD Costra, RA L. "A multi-sample system for engineered tissue strip assays". WO2022015869A9, issued Jan 20, 2022.
- ◆ D Tran, KD Costa, RA Li "Bioreactor platform for monitoring multi-organoid function and modelling human systems biology". US20200369996A1, issued Nov. 26, 2020.
- ◆ M. Khine, E Lee, RA Li, D Tran, "Methods and apparatuses for prediction of mechanism of activity of compounds". US20180372724A1, issued Dec 27, 2018.

Publications

- ◆ E Roberts, SY Mak, A Want, D Tran, E Lee, Y Kurokawa, K Jennbacken, QD Wang, D Lieu, R Hajjar, KD Costa, RA Li. Ultra-Compliant Indwelling Elastomer Balloons Improve Stability and Performance of Bioengineered Human Mini-Hearts. *Advanced Engineering Materials*, 2022.
- ◆ E Lee, D Tran, W Keung, P Chan, G Wong, CW Chan, KD Costa, RA Li, M Khine. Machine learning of human pluripotent stem cell-derived engineered cardiac tissue contractility for automated drug classification. *Stem Cell Reports*, 2017.
- ◆ D Tran, Moya, M, and S.C. George. An integrated in vitro model of perfused tumor and cardiac tissue. *Stem Cell Research & Therapy*, 2013.
- ◆ C Robertson, D Tran, SC George. Concise Review: Maturation Phases of Human Pluripotent Stem Cell-Derived Cardiomyocytes. *Stem Cells*, 2013.

SKILLS

- ◆ **Digital & Data Systems:** ELN (Benchling, LabKey), LIMS/SDMS integration, automated pipelines, cloud storage, FAIR data principles
- ◆ **Data Analytics & Visualization:** Python, SQL, Tableau, JMP, VBA, automated dashboards, machine learning (scikit-learn), GraphPad Prism (ANOVA, multi-factor statistical tests, publication-quality figures)
- ◆ **Workflow Design & Automation:** Metadata strategy, instrument-to-cloud data transfer, workflow mapping (Visio, Lucidchart)
- ◆ **CMC Expertise:** Cell culture (suspension, perfusion), bioreactor development, process optimization, scale-up, GMP tech transfer
- ◆ **Leadership & Collaboration:** Cross-functional stakeholder engagement, project management (Jira, Smartsheet), team mentorship

