TRINH LAM

California Institute for Quantitative Biosciences (QB3)
University of California, Berkeley
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EDUCATION

University of Illinois at Chicago 2017-2022
Ph.D. Biomedical Engineering
GPA: 4.0

Texas Tech University (TTU) 2014-2017
B.S in Chemical Engineering
GPA: 3.5, Cum Laude

PROFESSIONAL EXPERIENCE

Postdoctoral Scholar, University of California, Berkeley 2022-Present
California Institute for Quantitative Biosciences (QB3-Berkeley)
Advisor: Amy Herr, Ph.D.

- **Research area**: microfluidics, single cell protein analysis, and ATAC sequencing.
- Developing a microfluidic system for on-chip single-cell ATAC-seq library preparation.

Graduate Research Assistant (PhD), University of Illinois, Chicago 2017-2022
Department of Biomedical Engineering
Advisor: David T. Eddington, Ph.D. (BME) and Donald A. Morrison, Ph.D. (BIOS)

- **Research area**: Droplet microfluidics, Streptococcus pneumoniae bacterial genetic transformation, Whole genome sequencing and mapping, Streptococcus pneumoniae Type IV competence pili.
- Developed and optimized a droplet microfluidic system to generate femtoliter droplets for encapsulation of Streptococcus pneumoniae (pneumococcus) for study of horizontal gene transfer of the species.
- Performed intensively different microbiological techniques such as PCR, colony isolation, blood agar plating, DNA extraction, and purification for whole genome sequencing.
- Applied bioinformatics (Linux/Ubuntu, R, IGV, Circos…) to map and analyze whole genome sequencing of pneumococcal recombinants with antibiotic resistance genes.
- Constructed a pneumococcus-specific procedure for labeling and analyzing pneumococcal competence pilus.
- Performed deconvolution microscopy imaging and image processing (ImageJ, MicrobeJ, MATLAB).

Undergraduate researcher, Texas Tech University 2015-2017
Department of Mechanical Engineering
Advisor: Jungkyu Kim, PhD

- **Research area**: Paper-based microfluidic device.
- Developed a paper-based microfluidic device for point of care diagnostics using a rapid, simple, and cost-effective fabrication technique.
- Developed a paper-based microfluidic network for blood components separation.

RESEARCH GRANTS

Contributions to Funded Research

1. **Macrorecombination in isolated cell pairs via natural genetic transformation** 2021-2026
   Principle Investigators: David T. Eddington and Donald A. Morrison
   University of Illinois at Chicago
   National Institute of Allergy and Infectious Diseases (NIAID)
   Grant R01: $2,713,336 (Role: Provided preliminary data)

2. **Confined Genetic Transformation and Exchange of Antibiotic Resistance Genetic in Femtoliter Microdroplets** 2017-2021
   Principle Investigator: David T. Eddington and Donald A. Morrison
   University of Illinois at Chicago
   National Institute of Allergy and Infectious Diseases (NIAID)
   Research Project (R21) $416,256 (Role: Provided preliminary data for grant renewal in 2018)

FELLOWSHIPS

The Dean's Scholar Fellowship of University of Illinois at Chicago 2021-2022
Role: Graduate Fellow
$53,000

HONORS & AWARDS

CHEMINAS Young Researcher/ Lab on A Chip Widmer/ Sensors (MDPI) Outstanding Sensors/ Microfluidic on Glass Awards (μTAS 2021) 2021
Award Nomination

UIC Dean's Scholar Fellowship 2021

UIC Department of Bioengineering Annual Research Symposium 2021
Third Place Oral Presentation

Center for Advanced Design and Manufacturing of Integrated Microfluidics Virtual Meeting 2020
First Place Presentation

UIC Provost's Graduate Research Award 2019

UIC Award for Graduate Research 2019

UIC Graduate College Student Presenter Awards 2019

UIC Graduate Student Council Travel Awards 2019

UIC Department of Bioengineering Annual Research Symposium 2019
First Place Oral Presentation

UIC Three Minute Thesis Competition (3MT) 2019
Third Place

TTU Undergraduate Research Conference (URC) 2016
Second Place Top Oral Presenter

TTU Center of Active Learning and Undergraduate Engagement 2016
Undergraduate Research Travel Funding Award

TTU Proven Achievers Scholarship 2014-2016

PUBLICATIONS

Published in peer-reviewed journals

1. **Lam T,** Ellison CK, Eddington DT, Brun YV, Dalia AB, Morrison DA**. "**Competence pili in Streptococcus pneumoniae are highly dynamic structures that retract to promote DNA uptake". Molecular Microbiology. 2021;116(2):381-96.

2. **Lam T**, Maienschein-Cline M, Eddington DT, Morrison DA. "Multiplex gene transfer by genetic transformation between isolated S. pneumoniae cells confined in microfluidic droplets". Integrative Biology. 2019;11(12):415-24. **(Issue Cover Feature)**

3. **Lam T**, Brennan MD, Morrison DA, Eddington DT. "Femtoliter droplet confinement of Streptococcus pneumoniae: bacterial genetic transformation by cell–cell interaction in droplets". Lab on a Chip. 2019;19(4):682-92.

4. Marston JO, Moradiafrapoli M, Li C, **Lam T**, Razu ME, Kim J. "Footprint of droplets after impact onto paper surfaces with a hydrophobic barrier". Chemical Engineering Research and Design. 2018;133:103-10.

5. **Lam T**, Devadhasan JP, Howse R, Kim J. "A Chemically Patterned Microfluidic Paper-based Analytical Device (C-µPAD) for Point-of-Care Diagnostics". Scientific Reports. 2017;7(1):1188. (**Top 100 in Chemistry 2017**)

TEACHING EXPERIENCES

Graduate Teaching Assistant, University of Illinois at Chicago Fall 2018
Course: BIOE 421 Biomedical Imaging (Graduate + Undergraduate)
Responsibilities: Develop assignments and exam questions. Graded assignments and exam questions.

Graduate Teaching Assistant, University of Illinois at Chicago Spring 2020
Course: BIOE 460 Biomaterials (Graduate + Undergraduate)
Responsibilities: Graded assignments and exam questions.

Graduate Teaching Assistant, University of Illinois at Chicago Fall 2020
Course: BIOE 421 Biomedical Imaging (Graduate + Undergraduate)
Responsibilities: Develop assignments and final project. Graded assignments and final project.

MENTORING EXPERIENCE

Mentor for Catarina Bromatti, undergraduate student at UIC **Fall 2019**
Mentor for Giulia Venturini, graduate (MS) student at UIC **Spring 2021**
Mentor for Anna Borowska, graduate (PhD) student at UIC **Fall 2021**
Mentor for Agatha Miodowski, undergraduate student at UIC **Fall 2021**

PRESENTATIONS

Oral Presentations

1. **Trinh Lam**, David T. Eddington, and Donald A Morrison, "Microfluidics for Studies of Bacterial Genetic Transformation in Steptococcus pneumoniae*"* UIC Positive Thinking Seminar 2022, Virtual
2. **Trinh Lam**, David T. Eddington, and Donald A. Morrison, "Pneumococcus as a Gene Fisherman" *Griffith's* Legacy Redux 2021, Virtual
3. **Trinh Lam**, Courtney K. Ellison, David T. Eddington, Yves V. Brun, Ankur B. Dalia, and Donald A. Morrison, "Competence pili in Streptococcus pneumoniae are highly dynamic structures that retract to promote DNA uptake" Wind River Conference on Prokaryotic Biology 2021, Virtual
4. **Trinh Lam,** David T. Eddington, and Donald A. Morrison, "Streptococcus pneumoniae: A microscopic fisherman?" RESISPART (http://bit.ly/RESISPART) 2021, Virtual
5. **Trinh Lam**, Courtney K. Ellison, David T. Eddington, Yves V. Brun, Ankur B. Dalia, and Donald A. Morrison, "Competence pili in Streptococcus pneumoniae are highly dynamic structures that retract to promote DNA uptake" UIC Department of Bioengineering Annual Symposium 2021, Virtual
6. **Trinh Lam**, David T. Eddington, and Donald A Morrison, "Retractable Type IV Competence pili In Streptococcus pneumoniae" UIC Department of Biological Sciences Student Seminar 2021, Virtual
7. **Trinh Lam**, David T. Eddington, and Donald A Morrison, "ComG, a Gram-positive grapnel or kedging anchor?*"* UIC Positive Thinking Seminar 2021, Virtual
8. **Trinh Lam**, Mark Maienschein-Cline, David T. Eddington, and Donald A. Morrison. "Droplet Microfluidics for Studies of Bacterial Genetic Transformation in Streptococcus pneumoniae" *Zoom on Griffith's Legacy* 2020, Virtual
9. **Trinh Lam**, David T. Eddington, and Donald A. Morrison, "Droplet Confinement of Streptococcus pneumoniae for Studies of Bacterial Genetic Transformation" RESISPART- Brazil (http://bit.ly/RESISPART) 2019, Brazil
10. **Trinh Lam**, Martin D. Brennan, Donald A. Morrison, and David T. Eddington, "Bacterial Genetic Transformation of Streptococcus pneumoniae in Droplets" UIC Department of Bioengineering Annual Symposium 2019, IL, USA
11. **Trinh Lam,** Martin D. Brennan, Donald A. Morrison, and David T. Eddington, "Femtoliter Confinement of Pneumococcus Pairs for Single Event Transformation Assay" Wind River Conference on Prokaryotic Biology 2018, CO, USA
12. **Trinh Lam** and Jungkyu Kim, "A Chemically Patterned Paper-based Microfluidic Device (cPMD) for Bioassay" Texas Tech Undergraduate Research Conference 2016, TX, USA

13. **Trinh Lam** and Jungkyu Kim, "A Chemically Patterned Paper-based Microfluidic Device (cPMD) for Bioassay" NanoEngineering for Medicine and Biology Conference (NEMB) 2016, TX, USA

Poster Presentations

1. **Trinh Lam**, Donald A. Morrison, and David Eddington. "Droplet Microfluidics for Studies of Bacterial Genetic Transformation in Streptococcus pneumoniae" Miniaturized Systems for Chemistry and Life Sciences (μTAS) 2021, CA, USA
2. **Trinh Lam**, Mark Maienschein-Cline, David T. Eddington, and Donald A. Morrison. "Droplet Microfluidics for Studies of Bacterial Genetic Transformation in Streptococcus pneumoniae" Miniaturized Systems for Chemistry and Life Sciences (μTAS) 2020, Virtual
3. **Trinh Lam**, Mark Maienschein-Cline, David T. Eddington, and Donald A. Morrison. "Droplet Microfluidics for Studies of Bacterial Genetic Transformation in Streptococcus pneumoniae" Center for Advanced Design and Manufacturing of Integrated Microfluidics Virtual Meeting (http://bit.ly/CADMIM) 2020, Virtual
4. **Trinh Lam**, Martin D. Brennan, Donald A. Morrison, and David T. Eddington. "Droplet Confinement of Streptococcus pneumoniae for Studies of Bacterial Genetic Transformation" Biomedical Engineering Society (BMES) Annual Meeting 2019, PA, USA
5. **Trinh Lam**, Mark Maienschein-Cline, David T. Eddington, and Donald A. Morrison. "Multiplex gene transfer by genetic transformation between isolated S. pneumoniae cells confined in microfluidic droplets" Center for Advanced Design and Manufacturing of Integrated Microfluidics Meeting (http://bit.ly/CADMIM) 2019, IL, USA
6. **Trinh Lam**, Martin D. Brennan, Donald A. Morrison, and David T. Eddington. "Femtoliter Droplet Confinement of Streptococcus pneumoniae: Bacterial Genetic Transformation by Cell-cell Interaction in Droplets" American Society of Microbiology (ASM) Microbe 2019, CA, USA
7. **Trinh Lam,** Martin D. Brennan, Donald A. Morrison, and David T. Eddington, "Femtoliter Droplet Confinement of Pneumococcus: Improvement in Genetic Transformation Efficiency of Pneumococcus in Droplets" Miniaturized Systems for Chemistry and Life Sciences (μTAS) 2018, Taiwan.
8. **Trinh Lam,** Martin D. Brennan, Donald A. Morrison, and David T. Eddington, "Femtoliter Droplet Confinement of Pneumococcus: Improvement in Genetic Transformation Efficiency of Pneumococcus in Droplets" Center for Advanced Design and Manufacturing of Integrated Microfluidics Meeting (http://bit.ly/CADMIM) 2018, IL, USA
9. **Trinh Lam**, Jasmine Pramila Devadhasan, and Jungkyu Kim, "A Chemically Patterned Microfluidic Paper-based Analytical Device (C-μPAD) for Point-of-Care Diagnostics" Texas Tech University ACS and AIChE Poster Symposium 2016, TX, USA

REFERENCES

- David T. Eddington, Ph.D
  Professor, Department of Biomedical Engineering, University of Illinois at Chicago, USA.
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  dte@uic.edu

- Donald A. Morrison, Ph.D
  Professor, Department of Biological Sciences, University of Illinois at Chicago, USA.
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- Richard Magin, Ph.D
  Distinguished Professor, Department of Biomedical Engineering, University of Illinois at Chicago, USA.
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