Elizabeth Voke

Education

University of California, Berkeley Fall 2020

- Graduate student in chemical engineering PhD program

University of Massachusetts, Amherst Fall 2019 – Spring 2020

- Chemical Engineering B.S., *summa cum laude*, GPA: 3.9
- Concentration in Biochemistry, Commonwealth Honors College

Research Experience

Sarah Perry Lab, University of Massachusetts, Amherst Winter 2017 – Spring 2020

Undergraduate researcher

I. Studied the effects of polymer sequence on the kinetics of complex coacervation

- Formulated samples manually and via an automated liquid-handling robot
- Used a plate reader, turbidimetry, optical microscope, and MATLAB for analysis
- Carried out experiments in an expedient and safe manner while monitoring other research in the lab

II. Studied the encapsulation of therapeutic proteins using novel polymers via complex coacervation for drug delivery applications

- Performed protein encapsulation experiments as a function of polymer properties and coacervate composition
- Compared the coacervation performance of novel polymers with well-characterized model systems
- Learned to fluorescently label proteins
- Wrote biweekly lab reports and read relevant papers to stay updated on current research

Jay Keasling Lab, UC Berkeley Summer 2019

Amgen Scholar

- Developed *Mycobacterium smegmatis* as a new host strain for polyketide synthase (PKS) production
- Engineered IPTG inducible T7 promoter expression system for protein purification
- Tested the strain's ability to express PKSs by introducing genes for two PKSs, DEBSI-TE and LipI-TE
- Preparing manuscript as co-author for publication

Stephanie Bryant Lab, University of Colorado, Boulder Summer 2018

Young Scholars Summer Research Program (YSSRP)

- Studied the effects of PGE2 on Bovine Chondrocytes cultured in PEG hydrogels for cartilage tissue engineering
- Utilized a photo-clickable thiol-norbornene system with an enzymatically degradable hydrogel to encapsulate cells
- Performed a Hoechst DNA assay and a DMMB assay to analyze collagen levels
- Sectioned and stained cells with Masson's Trichrome and Safranin staining techniques
- Worked with live cells in a sterile environment and learned cell counting techniques

Publications

McTigue, W. C. B.; **Voke, E**.; Chang, L.-W.; Perry, S. L. The Benefit of Poor Mixing: Kinetics of Coacervation. *Phys. Chem. Chem. Phys.* **2020**, *22* (36), 20643–20657.

Presentations and Posters

- **Elizabeth Voke**, Luis Valencia, Jay Keasling. (November, 2019). Development of *Mycobacterium smegmatis* as Host Strain for Polyketide Synthase Production. Poster presented at: AIChE National Conference, Orlando, FL.
- **Elizabeth Voke**, Luis Valencia, Jay Keasling. (August, 2019). Development of *Mycobacterium smegmatis* as Host Strain for Polyketide Synthase Production. Poster and talk presented at: Amgen Scholars Program Poster Session and Oral Presentations, Berkeley, CA.

- **Elizabeth Voke,** Whitney C. Blocher McTigue, and Sarah L. Perry. (April, 2019). The Effects of Ligand-Functionalized Substrates with Enhanced Binding Capacity on the Encapsulation of GFP via Complex Coacervation. Poster presented at: Massachusetts Statewide Undergraduate Research Conference, Amherst, MA.
- **Elizabeth Voke,** Whitney C. Blocher McTigue, and Sarah L. Perry. (April, 2019). The Effects of Charge Patterning on the Dynamics Complex Coacervation. Poster presented at: Chemical Engineering GradExpo, University of Michigan, Ann Arbor, MI.
- **Elizabeth Voke,** Whitney C. Blocher McTigue, and Sarah L. Perry. (October, 2018). The Effects of Charge Patterning on the Dynamics Complex Coacervation. Poster presented at: University of Massachusetts Polymer Day, Amherst, MA.
- **Elizabeth Voke,** Whitney C. Blocher McTigue, and Sarah L. Perry. (October, 2018). The Effects of Charge Patterning on the Dynamics Complex Coacervation. Poster presented at: AIChE National Conference, Pittsburgh, PA.
- **Elizabeth Voke,** Margaret Schneider, and Stephanie J. Bryant. (August, 2018). The Effects of PGE2 on Bovine Chondrocytes Cultured in PEG Hydrogels for Cartilage Tissue Engineering. Talk presented at: Youth Scholars Summer Research Program Symposium, Boulder, CO.

Undergraduate Fellowships and Grants

Honors Research Grant I: awarded to support the completion of a proposed honors thesis — Fall 2019
Honors Research Grant II: awarded to support the completion of a proposed honors thesis — Spring 2020
Honors Research Assistant Fellowship: awarded to select students for work as a research assistant — Fall 2018

Honors and Awards

Honorable Mention NSF Graduate Research Fellowship Program — Spring 2020
UMass Amherst Rising Researcher — Spring 2020
Biotech II Poster Competition 2nd Place, AIChE National Conference, Orlando, FL — Fall 2019

Teaching Experience

Teaching Assistant, Introduction to Chemical Engineering — Fall 2020
- Leads weekly discussions and helps develop course content

Teaching Assistant, Kinetics and Reactor Design — Fall 2019
- Taught students how to approach kinetic engineering problems and design reactors

Teaching Assistant, Thermodynamics I — Spring 2019
Teaching Assistant, Biomedical Engineering — Fall 2018
- Lead weekly lab sections and assisted students in developing problem solving skills and learning MATLAB

Outreach

Bay Area Scientists in Schools, UC Berkeley — Fall 2020
- Lead virtual density lessons for elementary students

Treasurer, AIChE — Summer 2019 – Spring 2020
- Organized funding for AIChE members to attend National AIChE conference

Academic chair, AIChE — Fall 2018 – Spring 2019
- Coordinated tutoring sessions for chemical engineering courses through discussions with faculty and students
- Provided relevant coursework material to tutors to facilitate teaching

Northeast Student Regional AIChE Organizer, AIChE — Spring 2019
- Recruited volunteers and managed events such as the Poster competition and ChE Car competition
- Developed workshops including a graduate student panel and contacted pharmaceutical industry speakers to create a drug development workshop

Skills:

Laboratory : UV-Vis Spectroscopy | Infrared Spectroscopy | Molecular Cloning | Bacterial Genome Editing | Cell Culture | Protein Purification | Tissue Staining | Confocal Microscopy
Software: MATLAB | PyMOL | ImageJ | ASPEN Plus | MS Office