HAILEY LOEHDE-WOOLARD

Hailey.Loehde-woolard@colorado.edu

We, as humans, have an inherent responsibility to preserve the living environment.
The welfare of humankind, biodiversity, and the earth is something I strive to improve through engineering.

EDUCATION

University of Colorado Boulder, Boulder, CO. USA. *August 2019- Present*

- Expected Master of Science in Chemical Engineering
- Expected Doctor of Philosophy in Chemical Engineering
    - Advisor: Alan W. Weimer

Georgia Institute of Technology, Atlanta, GA. USA. *August 2015- May 2019*

- Bachelor of Science in Chemical and Biomolecular Engineering, *summa cum laude* (GPA 3.92)

RESEARCH EXPERIENCE

Analyzing Algal Volatile Organic Compounds to Detect and Prevent Algal Pond Crashes *May 2019-August 2019, Livermore, CA.*

Dr. Todd Lane, Dr. Carolyn Fisher, Sandia National Laboratories. **Intern**.

- Performed temperature shock experiments on *M. gaditana* and *N. oceanica*, used SPME fibers to collect volatile compounds associated with algal stress and death.
- Analyzed GCMS results to identify compounds of interest for directed analysis of grazer experiments.

Identifying Bacteria that Protect Microalgae from Predation – Academic Alliance *August 2018 – May 2019, Atlanta, GA.*

Dr. Julia Kubanek, Marisa Cepeda, Georgia Institute of Technology. **Undergraduate Research.**

- Performed metabolomic analysis of protective and non-protective consortia to determine the chemical basis for improved predation resistance

Identifying Bacteria that Protect Microalgae from Predation *May 2018- August 2018, Livermore, CA.*

Dr. Todd Lane, Dr. Carolyn Fisher, Sandia National Laboratories. **Intern.**

- Screened bacterial consortia to determine the ability of marine bacteria to protect *N. salina* from rotifer predation
- Performed metagenomic analysis on protective and non-protective consortia

Bugs Without Borders: Essential Medicine Production in Cyanobacteria *June 2017 – Oct. 2017, Santa Cruz, CA.*

Dr. David Bernick, University of California, Santa Cruz. **2017 iGEM Team.**

- Researched vitamin B_{12} production pathways and determined the two gene inserts needed to produce human-usable B_{12}
- Performed toxicity tests to determine the lethal concentration of acetaminophen for this strain of cyanobacteria
- Monitored cell culture growth and developed an inexpensive media

Building a Better Sweetener through Almond Waste Valorization *June 2016- Oct. 2016, Santa Cruz, CA.*

Dr. David Bernick, University of California, Santa Cruz**. 2016 iGEM Team.**

- Developed an inexpensive and effective method to remove bacteria and separate erythritol from other components in solution
- Created a HPLC standard for erythritol

PRESENTATIONS

- **What is Dead May Never Die: Analyzing Algal Volatile Organic Compounds to Detect and Prevent Algal Pond Crashes.** Hailey C. Loehde-Woolard, Dr. Carolyn L Fisher, Kristen L. Reese, Dr. Todd W. Lane. Poster presented at Sandia Posters on the Patio, July 2019.
- **The Good, The Bad, and The Algae: Identifying Bacteria that Protect Microalgae from Predators.** Hailey C. Loehde-Woolard, Dr. Carolyn L. Fisher, Pamela D. Lane, Dr. Todd W. Lane. Poster presented at Sandia Posters on the Patio, July 2018.
- **Bugs Without Borders: Essential Medicine Production in Cyanobacteria.** McKenna Hicks, Pratibha Jagannatha, Hailey Loehde-Woolard, Mark Lund, Jethro Marasigan, Casidee McDonough, Sara Medor, Tyler Meyers, Alexander Pearce, Evan Pepper, Daniel Schmelter, Tom Sousa, Marissa Taub, Khanh Tran, Brittney Wick, Logan Mulroney, Dr. David Bernick. Poster presented at 2017 iGEM Gamboree, October 2017.
- **Building a Sweeter Future Through Almond Waste Valorization** Jon Aguinaga, Chase Armer*, Andrew Blair, Lon Blauvelt*, Sarah Cligher*, Jasmine Dioguardi, Miles Hobby, Colin Hortman, Pavle Jeremic*, Giordan Kitts*, Hailey Loehde-Woolard*, Misa Macliesh, Riley Mahn, Hannah Meyers*, Austin York*, Logan Mulroney, Dr. David Bernick. (*)Presentation at 2016 iGEM Gamboree, October 2016. Poster presented at 2016 iGEM Gamboree, October 2017.

OUTREACH EXPERIENCE

K-12 InVenture Prize at Georgia Tech *August 2017 – May 2019, Atlanta, GA.*

Center for Education Integrating Science, Mathematics, and Computing, Student Assistant.

- Outreach document preparation for teachers, students, and sponsors
- Website maintenance and restructuring

K-12 Chemistry Outreach *January 2017 – May 2019, Atlanta, GA.*

Alpha Chi Sigma Science Outreach Activities, Facilitator and Organizer.

- Performed interactive, age-appropriate chemistry demonstrations to K-12 students (<4 events per semester)

LEADERSHIP

Alpha Chi Sigma – *Science Outreach Officer* *Dec. 2017 – Dec. 2018, Atlanta, GA.*

- Organized and coordinated chemistry demonstrations and hands-on activities for K-12 students
- Hosted two Chemistry Merit Badge Clinics to help Boy Scouts from the surrounding Atlanta area earn their chemistry badge

iGEM 2016 Research Team – *Team Lead (Purification Team)* *June 2016 – Oct. 2016, Santa Cruz, CA.*

- Used Scrum framework to delegate tasks, monitor timeline, and complete project
- Presented research and results at iGEM to an audience of more than 100 members

Honors Leadership Council – *Director of Admissions* *Oct. 2016 – Sep. 2018, Atlanta, GA.*

- Read and reviewed applications for the Honors Program
- Presented at Connect with Tech and Preview Tech on behalf of the Honors Program

Georgia Tech Dance Association – *Treasurer* *May 2016 – May 2018, Atlanta, GA.*

- Oversaw financial responsibilities of the club and assisted in coordinating large monthly swing dances

ORGANIZATIONS

- Member of the Georgia Tech Honors Program
- Member and previous Officer of Alpha Chi Sigma, Alpha Omega (collegiate branch of professional chemistry fraternity)

HONORS AND AWARDS

- **Alpha Chi Sigma Scholar Award –** Certificate of Commendation Award
- **iGEM 2016 –** Silver Medal
- **iGEM 2017 –** Bronze Medal

SKILLS AND TRAININGS

COMPUTER – MATLAB (proficient), LaTeX, ChemDraw, PowerPoint, ASPEN Plus (basic)
LABORATORY – trained in Pressure and Cryogen safety, NMR and Mass Spectroscopy
(Biology) – Cell Culture Growth, Mini-Prep, PCR, Culturing
INSTRUMENTS – GCMS, Autoclave, Spectrophotometer, Centrifuge