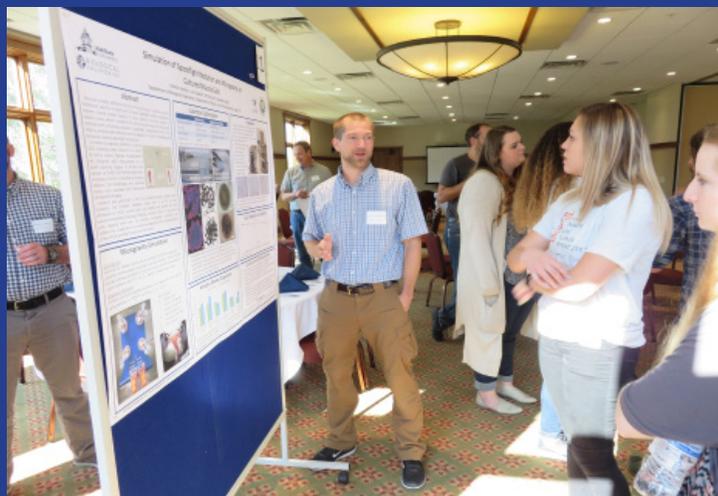


# Chemistry & Biochemistry Undergraduate Internships 2019

LEARN FROM RENOWNED FACULTY IN THE  
DEPARTMENT OF CHEMISTRY & BIOCHEMISTRY  
AT UTAH STATE UNIVERSITY.



## 10 WEEK SUMMER 2019 INTERNSHIP AT UTAH STATE UNIVERSITY

- \$4,000 Stipend
- Housing provided
- Reimbursement for travel, up to \$500
- Application Deadline February 16, 2019
- Internship dates are somewhat flexible with a preferred time-line of May 20 - July 29

### RESEARCH:

Our faculty have a wide range of research interests and receive funding from public and private sources such as NIH, NSF, DOE, NASA, the American Heart Association, USDA and the Frasch Foundation.

Their work is regularly published in prominent research journals, including Science, Nature, PNAS, EMBO, JACS, Biochemistry, JBC, and Inorganic Chemistry.

Learn about each of the participating research labs on the back page of this flyer.

### APPLICANT QUALIFICATIONS:

- Currently working toward an undergraduate degree
- Interest in pursuing a graduate degree in chemistry or biochemistry
- Successful completion of both general chemistry and organic chemistry courses

### APPLICATION:

To apply, please email the following documents to Cindy Weatbrook at [chemgrad@usu.edu](mailto:chemgrad@usu.edu) and include "UG internship" in the subject line.

- Transcript (unofficial is OK)
- One letter of recommendation from a science faculty member (emailed directly from faculty)
- Top three choices for research labs to work in and why specifically you chose these three.
- A one page, single-spaced letter of interest addressing the following:
  - Current undergraduate major
  - Whether an internship is required to complete your undergraduate degree
  - Expected graduation date
  - Prior science-related coursework and research activities
  - Long-term career goals

Questions regarding the application process can be addressed to Cindy Weatbrook at [chemgrad@usu.edu](mailto:chemgrad@usu.edu).

# Research Labs

Below are descriptions of the research being conducted within the Department of Chemistry & Biochemistry at Utah State University.



## ALVAN HENGGE

My lab uses physical and organic chemistry and biochemistry to study the mechanisms of phosphatases, including the role of protein motions in catalysis. We also are examining the ability of these enzymes to catalyze the hydrolysis of compounds other than their native substrates, a property called catalytic promiscuity.



## SEAN JOHNSON

My lab uses x-ray crystallography techniques in combination with biochemical analysis to understand the structure and mechanism of proteins and macromolecular assemblies, with an emphasis on RNA processing and quality control pathways.



## TOM CHANG

My lab is interested in using chemical synthesis to develop molecules with antibacterial, antifungal, antiviral, or anticancer activities. In addition to basic research, we also pursue practical applications for the results generated from various projects.



## NICHOLAS DICKENSON

My lab is using techniques from many disciplines including molecular biology, microbiology, physics, analytical chemistry and biochemistry to address challenging health related problems. Our current focus is characterizing the initial interactions between *Shigella flexneri* and host cells during infection with goals of developing anti-infective agents.



## KIMBERLY HAGEMAN

My lab uses gas chromatography with mass spectrometry to measure the concentrations of organic contaminants, such as pesticides and flame retardants, in the environment. We also develop and use models to predict their environmental fate.



## YI RAO

My lab is using interdisciplinary approaches including ultrafast interface-specific nonlinear optical spectroscopies, time-resolved fluorescence spectroscopy, and electrochemistry to elucidate molecule-level understandings of charge transfer and charge transport for solar energy conversion, catalysis, and the environment.



## LANCE SEEFELDT

My lab is using multi-disciplinary approaches including molecular biology, biochemistry and biophysics to elucidate a molecular understanding of the metalloenzyme nitrogenase. A second research program is focused on exploring the use of yeast and phototrophic microbes to produce bioproducts and biofuels.



## JOANIE HEVEL

My lab is using molecular biology, biochemistry and biophysics to elucidate a molecular understanding of enzymes which participate in cellular signaling and synthesize bioactive natural products.



## LISA BERREAU

My lab is interested in synthesizing and evaluating the reactivity of novel bio-inspired compounds. A current project focuses on organic and inorganic compounds that release CO upon exposure to visible light and have potential uses in medicine. A second area of investigation involves mechanistic studies of novel oxidative C-C bond cleavage reactions of relevance to metalloenzyme function and catalysis.



## RYAN JACKSON

My lab uses biophysical methods and in vivo assays to investigate the structure and function of molecular machines that act on nucleic acid. We use microbiological, biochemical, and structural techniques to determine the biological function and mechanisms of action of Type IV CRISPR systems.



## TIANBIAO LIU

My lab focuses on rechargeable batteries, electrocatalysis and homogenous catalysis employing earth abundant element based catalysts and materials. Our research is highly multidisciplinary embracing inorganic chemistry, organic chemistry, material science, and electrochemical engineering. We strive to achieve sustainable, economical and environment-benign energy and chemical transformations and to address global energy and environment challenges simultaneously.