Blake Downing

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PROFILE

An enthusiastic undergraduate looking for research, teaching, and leadership opportunities in biology and microbiology that will utilize written and oral communication skills, organizational skills, and laboratory techniques developed as a student researcher in the Gralnick Lab at the University of Minnesota.

WORK EXPERIENCE

Summer Student Researcher, Hazen Lab; Knoxville, TN — May, 2018 - Present

As an summer student researcher part of an REU program, I work under the mentorship of a graduate student and developed my own project to investigate over the course of 10 weeks. Upon the completion of the project, a poster detailing the project will be designed and presented.

Student Technician, UMN Soil Testing and Analytical Research Lab; St. Paul, MN — October, 2016 - Present

As a student technician, I assist with day to day laboratory procedures such as washing glassware, cataloging, grinding, and weighing samples, preparing acid digests, replacing combustion tube materials for elemental analyzers, and packing up remaining samples for completed orders.

Sophomore Guild Leader, UMN College of Biological Sciences Biology Teaching and Learning Department; Minneapolis, MN — September 2016 - May 2017

As a sophomore guild leader, I functioned as a teaching assistant for a required introductory class for freshmen in the College of Biological Sciences at the University of Minnesota. I oversaw a group of 10 students while they worked on a semester long project, graded weekly reflections, and conducted a one-to-one meeting with each student during the academic year to prepare them for a successful college career.

Undergraduate Researcher, Gralnick Lab; St. Paul, MN — December, 2015 - Present

As an undergraduate researcher, I work under the direct supervision of a post-doctoral researcher focusing on a project attempting to isolate a novel iron-reducing microorganism using enrichments with selective carbon and nitrogen sources.

VOLUNTEER EXPERIENCE

Volunteer Major Mentor, UMN Center for Academic Planning and Exploration; Minneapolis, MN — September, 2017 - Present

As an major mentor, I am paired with first or second year students who express interest in majoring in microbiology. I am given the name and email of a mentee and then I answer their questions electronically about the major, research in microbiology, and future career

paths. I am also able to invite them to sit in one or several of my upper division classes with me.

Honors Mentor, UMN Honors Program; Minneapolis, MN — September, 2017 – January, 2018

As an honors mentor, I was paired with a first semester freshman student who expressed interest in majoring in the biological sciences. I worked to be advise my mentee about any questions they had regarding the honors program, about majoring in CBS, and about life to help them adjust to and prosper in the college environment.

EDUCATION

University of Minnesota; Minneapolis, MN — BS Microbiology with Honors, in progress. Cumulative GPA: 3.435. Expected graduation date: May 2019.

NSF REU; UTK – Microbial Community Interactions and Functions. Summer 2018.

Awarded College of Biological Sciences Dean's List; Fall 2017 - Spring 2018.

Awarded National Merit University of Minnesota Scholarship; Fall 2015 - Present

Awarded Cyrus Northrup Scholarship; Fall 2015 - Present

RELEVANT COURSEWORK

Microbial Ecology and Applied Microbiology — Spring 2018

This course was an overview of the evolution and structure of microbial communities. Topics covered related to microbial ecology included population interaction within ecosystems, quantitative and habitat ecology, biogeochemical cycling, molecular microbial ecology, gene transfer in the environment, and molecular phylogeny of microorganisms. Topics covered related to applied microbiology included application of microbes in agriculture, the production of commodity chemicals, drugs, and other high-value products, and bioremediation.

Geomicrobiology — Spring 2018

This course was an introduction to geosphere/biosphere interactions over temporal/spatial scales. Topics covered included global biogeochemical cycling, microbe-metal interactions, microbial paleobiology, environmental geomicrobiology, life detection, and the habitability of planets.

Biotechnology and Bioengineering for Biochemists — Spring 2018

This class provided a comprehensive introduction to major topics in biotechnology research and development. Topics discussed ranged from isolation, recombinant production and engineering of biotechnological relevant proteins to small molecule biotechnology. Other topics included the production of important primary and secondary metabolites, as well as strategies of metabolic pathway engineering and diversification in the "Omics" area to achieve increased production levels and for drug discovery purposes. Several guest lecturers from local biotechnology/biomedical companies linked class contents to practical applications and provided insights into actual industrial research and development.

Microbial Physiology and Diversity — Fall 2017
A course covering the structural and functional organization of bacteria/archaea. Other topics included energy metabolism utilizing light, inorganic/organic chemicals, cell morphologies, roles and assembly of surface structures, and growth and survival mechanisms in various extreme environments. Adaptation to changing conditions by development of specialized cells structures, and alteration metabolic patterns were discussed.

Advanced Laboratory: Microbial Physiology and Diversity — Fall 2017
A laboratory course consisting of the isolation, cultivation and study of a wide variety of prokaryotes from environmental sources. Experiments to examine certain aspects of bacterial physiology were performed on selected isolates. Other isolates were identified by 16S rDNA sequencing analysis. Independence, analytical thinking and written communication skills were emphasized, as was technical proficiency in microbiology and general laboratory methods.

Communicating in the Biological Sciences — Fall 2017
This course is a seminar designed for juniors in the Honors Program. Discussions covered the characteristics of effective oral and visual presentations, each student gave a 15-minute, video-taped talk on an aspect of biology and engaged in the scientific process of peer review and response to review.

Soil and Environmental Biology — Fall 2017
This course was writing intensive, and a literature review was written over a topic covered in or related to the course material. Properties of microorganisms that impact soil fertility, structure, and quality, nutrient requirements of microbes and plants and mineral transformations in biogeochemical cycling, symbiotic plant/microbe associations and their role in sustainable agricultural production, and biodegradation of pollutants and bioremediation approaches were all covered.

Biology of Microorganisms — Spring 2017
A general overview of taxonomy, anatomy, physiology, biochemistry, pathogenesis, immunology, ecology of microbes, molecular structure in relation to bacterial function/disease. Included lab course covering basic microbiological laboratory skills such as sterile technique and biochemical tests used for characterization of microbes.

SKILLS
Competency with Microsoft Office programs and corresponding OSX programs.

Excellent written and verbal communication skills.

Familiar with statistical analysis using R.

Detail-oriented, patient, creative, and adaptable.