

TRIO

McNair Scholars Program
ST. OLAF COLLEGE

St. Olaf TRIO McNair Scholars' Summer Experiences 2018



wp.stolaf.edu/mcnair

Booklet Highlights

During the summer of 2018, six rising juniors and three rising seniors were each paired with a St. Olaf faculty mentor who guided their participation in an intensive summer research experience. Students produced research papers, posters, and presented at the St. Olaf Summer Research Symposium. This booklet highlights summer research experiences at St. Olaf, in addition to 16 other McNair students' participation in *off-campus* summer research and internship experiences.

Program Introduction

TRIO McNair is a graduate school preparatory program funded by the U.S. Department of Education and sponsored by St. Olaf College. It was founded in 1989 and initiated at St. Olaf College in 2007 to serve students at St. Olaf and Carleton. Nationally there are 158 McNair programs working with over 4,400 low-income, first-generation, and underrepresented undergraduate students. (The federal government defines "underrepresented" to include: Black; Hispanic; American Indian/Alaskan Native, Native Hawaiians and other Pacific Islanders.)

Program Goals

The goal of McNair is to increase the number of low-income, first-generation, and underrepresented students who participate in undergraduate research, graduate with a B.A., and immediately enter and complete graduate school, with a specific focus on obtaining a Ph.D. The program identifies students with high academic potential and provides opportunities for students to develop skills necessary to gain admission to and successfully complete graduate study. All McNair projects must meet federally approved program objectives each year.

Objective 1: 90% of participants will complete research or scholarly activities each year.

Objective 2: 40% of graduates will enroll in graduate school immediately following graduation.

Objective 3: 80% of first-year graduate students will continue to be enrolled in graduate school.

Objective 4: 10% of participants will attain a Ph.D. within 10 years.

Participants

Annually, 28 undergraduates participate in the St. Olaf TRIO McNair Scholars Program. Two-thirds of the participants meet federal income guidelines and are from a family in which neither parent graduated from a four-year postsecondary educational institution. One-third may be from groups that are traditionally underrepresented in graduate studies. Participants are from St. Olaf and Carleton Colleges and have a GPA of 2.75 or higher.

Services

McNair Scholars receive assistance with:

- On or off-campus internship/research experiences - summer of sophomore and junior year
- McNair research experience - summer of sophomore OR junior year. Participants paired with faculty mentors
- Research Writing Course (1 credit and WRI) - during summer on-campus research to learn how to write an effective proposal, conduct research, prepare a poster and present results
- Preparation for graduate school admissions tests
- Graduate school search and application assistance
- Financial aid, fellowship, and scholarship applications assistance

St. Olaf TRIO McNair Alumni Demographic Summary (2008-2018)

113 Students Served Since 2007 **Females:** 64% **Males:** 36%

Scholar Race/Ethnicity: 35% Asian American; 25% Black/African American; 13% White; 16% Latino; 6% Multiracial; 3% Native American; 2% Pacific Islander

Total Number of St. Olaf Faculty Mentors: 59

Mentored more than one student or have participated in more than one McNair summer: 17 faculty

Post-Graduation Status:

66% of McNair graduates are enrolled in or have completed graduate school (includes Class of 2018).

49% of students have completed or are enrolled in a Master's program.

18% of students have completed or are enrolled in a Ph.D. program.

22% of students completed or enrolled in graduate school in science, technology, engineering, or math.

Biography of Ronald E. McNair

"Before you can make a dream come true, you must first have one."

—Dr. Ronald E. McNair

In 1986, in memory of Ronald McNair, the U.S. Congress established the Ronald E. McNair Post-Baccalaureate Achievement Program, commonly known as McNair.

Dr. Ronald E. McNair's career as a scholar and astronaut stands as an inspiration to all McNair program participants. Ronald McNair, the second African American to fly in space, was born on October 21, 1950 in Lake City, South Carolina. In 1976 McNair earned a Ph.D. degree in Physics at the Massachusetts Institute of Technology and joined the Hughes Research Laboratories. Ronald McNair completed the training and evaluation course for shuttle mission specialists and began working at the Shuttle Avionics Integration Laboratory and later worked for NASA. Even though Dr. McNair's awards and special recognitions are numerous, he will be best remembered as being among those who died on January 28, 1986 when the Space Shuttle Challenger exploded after the launch. Dr. McNair was a mission specialist on that flight. His lifelong commitment to scholarship lives on in the McNair Scholars who are selected each year to participate in the many McNair programs across the United States.



St. Olaf TRIO McNair Scholars Staff

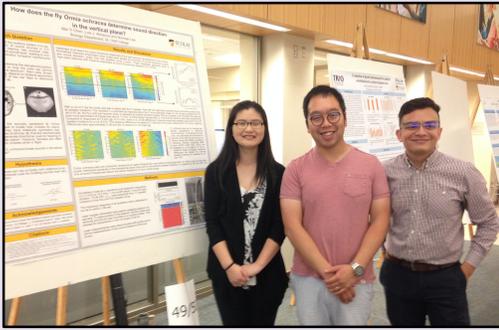
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Dr. Jean Porterfield, Faculty
McNair Research Writing Class

Dua Vang (*McNair Alum '18*)
McNair Summer Assistant

McNair Scholars Conducting St. Olaf Summer Research



Luis J. Almanza Jr., 2020

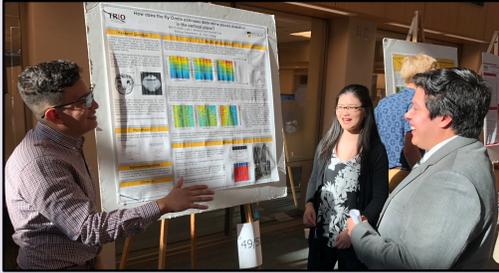
Major: Biology

“The highlight was working long nights together and powering through data that appeared to make no sense. The experience of working in a lab with Dr. Lee has awakened me to the promises of lab work. It can be mundane, frustrating, and yet so rewarding. My goal is to attend medical school and practice medicine.”

Mei Yi Chen, 2020

Majors: Biology & Chinese Studies

“The highlight was being able to work with various tools and ways of doing research. I learned that doing research relies on a lot of patience, persistence, and practice. My goal is to be a practicing medical professional. I want to attend graduate school because I want to spend my life conducting research to advance the scientific community and medical practice.”

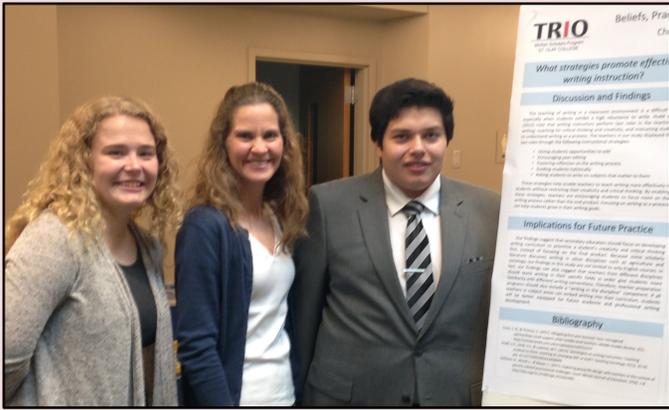


Faculty Mentor: Dr. Norman Lee

Dr. Norman Lee is a first-generation college graduate. His alma mater is the University of Toronto where he earned an honors BSC in Integrative Biology and Ph.D. in Cell and Systems Biology. He obtained a postdoc at the University of Minnesota in Evolution Ecology and Behavior. His primary research focuses on the understanding of the neurological basis of adaptive behavior as well as auditory perception in animals. In Dr. Lee's early career, he has already had numerous publications in top-tier journals that include PNAS, eLife, and Current Biology. His work has received popular coverage in Gizmodo, Popular Mechanics, and other news outlets. Dr. Lee currently has numerous ongoing projects with the goal of better understanding the auditory system of *O. ochracea* with prospects of future applications for humans. Currently, he is a teaching professor at St. Olaf nourishing young minds and flies. While not in the lab, Dr. Lee enjoys spending time with his family. In Dr. Lee's spare time he enjoys perfecting the art of smoking meat and playing badminton with his researchers in hopes of creating a Division 1 team.

Research Title: How Does the Fly *Ormia ochracea* Determine Sound Direction in the Vertical Plane?

Abstract: The acoustic parasitoid fly, *Ormia ochracea*, uses a pair of mechanically-coupled eardrums to locate singing crickets as host for their larvae. Previous studies have shown that *O. ochracea* can precisely localize sound sources in the horizontal plane. This is based on using bilaterally symmetric ears to measure time and intensity differences of sound arriving at each eardrum. For bilaterally symmetric ears, both cues are expected to vary as a function of sound location in the horizontal plane but should remain constant for sound to vary in elevation. Therefore, it is unknown as to how *O. ochracea* can determine the location of sound sources while in flight. In this study, we tested the hypothesis that flies rely on body rotations to exploit directional cues for sounds that vary in elevation. We used a speaker array to present sounds at different angles of elevation and measured the mechanical response of the eardrums while varying the body 'roll'. Results show that *O. ochracea* eardrums are broadly sensitive to sound frequencies that include cricket songs and body rotations, which may generate sufficient directional cues to locate sound sources while in flight.



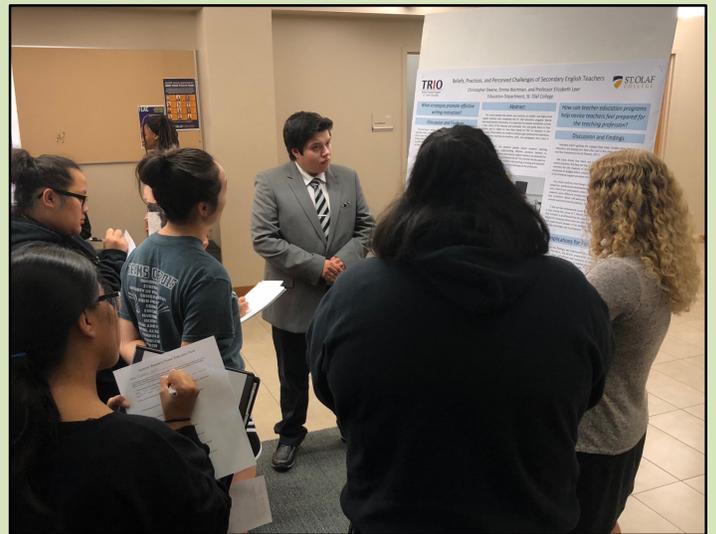
Faculty Mentor: Dr. Elizabeth Leer

Before teaching at St. Olaf in the Education Department, Dr. Elizabeth Leer was a middle and high school teacher where she taught English and German for about six years after earning her undergraduate degree from Concordia College in English and German Education. She later pursued her Master's in English Education from Northern Illinois University and finally her Doctorate in English Education from the University of Minnesota. Her doctoral thesis and later her research interest included how to infuse multicultural education effectively into largely homogeneous environments, which later became the basis for her book *Multicultural Literature in Monocultural Classrooms*. After that, Professor Leer taught in the Education department at the University of Minnesota, Duluth before moving with her family to Northfield, MN. In 2014, Professor Leer became the Department Chair of St. Olaf's Education department, an honor she finds "enriching" in her educational career.

Christopher Steene, 2020

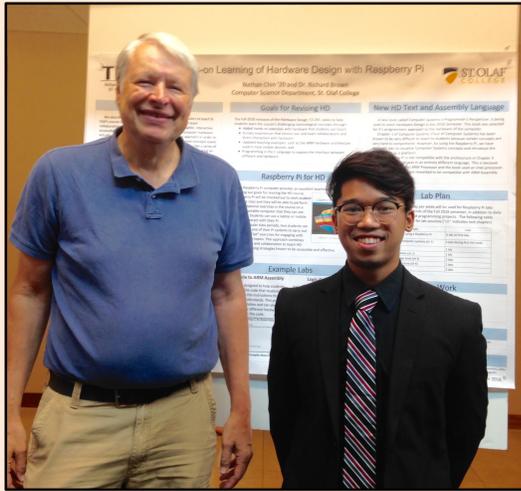
Majors: English, Women's and Gender Studies

"This summer I transcribed interviews and used qualitative software to code interviews, pre-teaching philosophy papers, and classroom observations. The highlight of my summer research was working with my faculty mentor and co-researcher on our project. It was great to have such an exciting team! Through this experience I learned how to compile data and synthesize it into a research paper. By participating in McNair, it provided me with a research experience that can further build my resume for future opportunities. My future goal is to go to graduate school to pursue a Ph.D. in Rhetoric and Composition. I believe that furthering my education will help me achieve my professional goals."



Research Title: Beliefs, Practices, and Perceived Challenges of Secondary English Teachers

Abstract: This study explores the beliefs and practices of middle- and high-school English teachers who completed the St. Olaf education program. Before becoming teachers themselves, it is important for teacher candidates to have a clear vision of the theories and principles that will guide them in their practice and to reflect on how they intend to "be" as teachers in the classroom. These beliefs are crucial as teachers gain professional experience and develop the teaching personalities, skills, and pedagogies they enact in the classroom. Teachers' beliefs and practices greatly impact students' learning experiences, therefore, understanding effective practices, barriers to implementing those practices, and ways to support teachers are essential for creating a healthy learning environment for all. This summer we focused our analysis specifically on beliefs related to the teaching of writing and teachers' perceptions of their preparedness for the challenges of the profession.



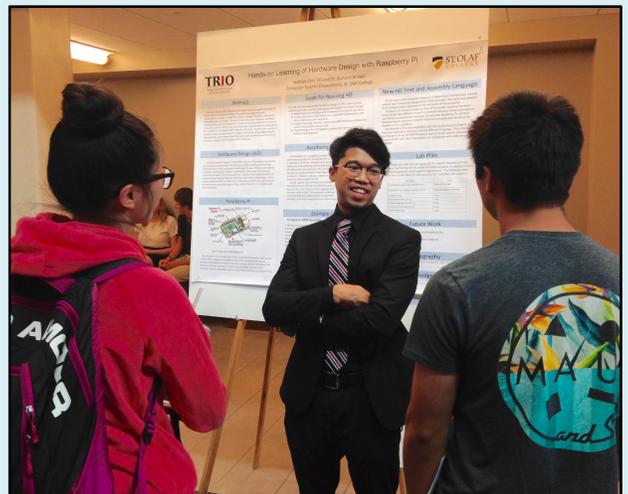
Faculty Mentor: Dr. Richard Brown

Dr. Richard Brown completed his undergraduate studies at Washington State University and earned a Ph.D. in Mathematics from the University of Illinois at Urbana-Champaign. His research interests include parallel and distributed computing education, interdisciplinary applications of CS, distributed and real-time systems and formal methods in computing. Dr. Brown directs the NSF-funded CSinParallel Project and the HiPerCic initiative. Throughout the years he has published many articles such as, *Virtual Clusters for Parallel and Distributed Education* in 2012 and *Teaching Parallel Computing Concepts with OpenMP* in 2017. He was also Director of Computer Science at St. Olaf College from 1991 to 2009, and designed St. Olaf's CS major. He has directed undergraduate research students in Computer Science each summer since 2003, and has introduced ten CS courses at St. Olaf College.

Nathan Chin, 2020

Majors: Computer Science and Japanese

"Participating in McNair summer research was an eye opening experience. I was given the opportunity to work with a widely known professor and have his experiences passed on to me. I've learned the skills to be able to conduct research and balance class at the same time. The highlight of the summer was interacting with the hardware and understanding how the research side of college is compared to being a student. This summer I learned how to conduct in-depth research. This experience increased my professionalism and knowledge of research as well as increased my motivation in my field of study. Pursuing graduate school is important to me because I want to become more knowledgeable in my field."



Research Title: Hands-on Learning of Hardware Design with Raspberry Pi

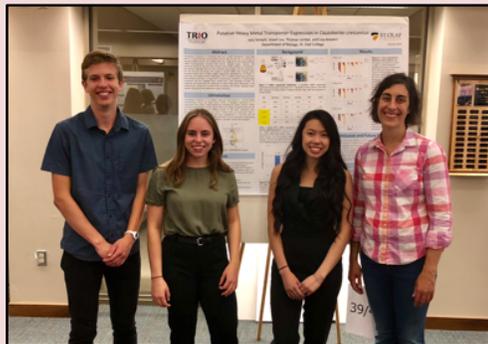
Abstract: We describe the use of Raspberry Pi single-board computers to teach St. Olaf's course in Hardware Design using active learning and team collaboration, in order to make the course's concepts tangible, interactive, accessible, and up to date. This course describes how computer hardware actually works. We designed this hands-on learning approach in order to make the course's abstract and technologically sophisticated concepts easier for students of all backgrounds to absorb and retain. We describe a series of weekly in-class lab experiences to support student learning, elaborating on two examples, and indicate how these labs relate to revised course content based on a popular text by Bryant and O'Hallaron.



Nathan poses with Jesus Caballero Jr., Ole alum who conducted research with Dr. Brown in 2017.

Faculty Mentor: Dr. Lisa Bowers

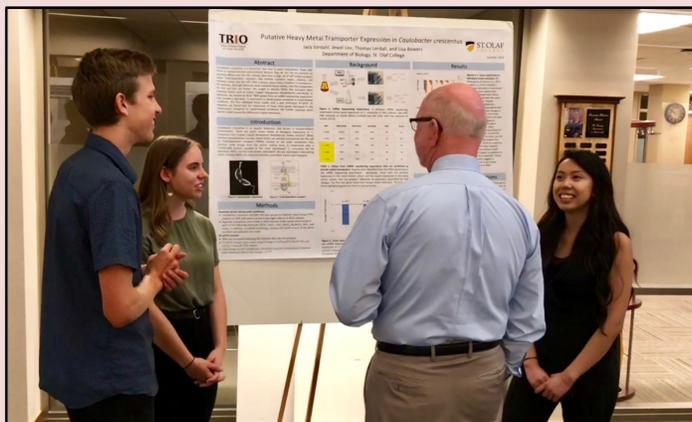
Dr. Lisa Bowers received her Ph.D. in Microbiology from the University of Wisconsin-Madison. Her areas of expertise and interests include bacterial genetics, quantification of gene expression, molecular cloning, and anything that involves *Caulobacter*! Some of her published articles are *Who's in Charge Here? Regulating Cell Cycle Regulators*, *Cooperative Binding Mode of the Inhibitors of R6K Replication*, and *Bacterial Expression System with Tightly Regulated Gene Expression and Plasmid Copy Number*. She is also preparing to submit more articles during the summer of 2018. She received the National Institutes of Health Predoctoral Fellowship and the National Institutes of Health Postdoctoral Fellowship that allowed her to pursue her education, training, and some of her research with expenses paid. Dr. Bowers has greatly contributed to the science community, but she has also contributed to the wider community. For instance, she has developed and implemented a Microscopy lab for science day and a unit for science class called "Microbial Germ Hunting" at Greenvale Park Elementary school. Although still early in her career, she already has numerous achievements and will continue to do more research involving *Caulobacter*.



Jewel Lee, 2019
Major: Biology

"I conducted research with Dr. Lisa Bowers on TonB-dependent receptors involved in metal transportation in

Caulobacter crescentus. The highlight of this experience was developing professional relationships with my mentor Dr. Bowers, my research team, Dr. Jean Porterfield, McNair staff, and the TRIO McNair Scholars. This experience was a time of tremendous growth and learning. This research experience taught me how to think critically and develop solutions to problems. I also improved on how to clearly communicate scientific information, both in writing and verbally, to audiences with different academic backgrounds. This experience provided me many opportunities to improve my lab techniques, networking skills, and professionalism. These skills will better prepare me in achieving my graduate school and career goals. I want to attend optometry school to become an optometrist. Optometry school will teach me the skills I need for this occupation, and will give me hands-on experience in patient care."



Research Title: Putative Heavy Metal Transporter Expression in *Caulobacter crescentus*

Abstract: *Caulobacter crescentus* is a bacterium that lives in water everywhere. These cells thrive in nutrient-limited environments because they have a large set of cell surface proteins called TonB dependent receptors that actively transport sugars, vitamins, and essential metals into the cell. Little is known about these receptors in *Caulobacter*. We sought to identify TBDRs that transport essential metals. In particular, we looked at three TBDR genes from an mRNA sequencing experiment that showed a decrease in expression in metal excess compared to metal limited conditions. We first validated those results with a new technique, RT-qPCR. As expected, we found that the expression of these three genes decreased in the metal excess compared to metal limited conditions. We further explored which specific metal caused this difference in gene expression.

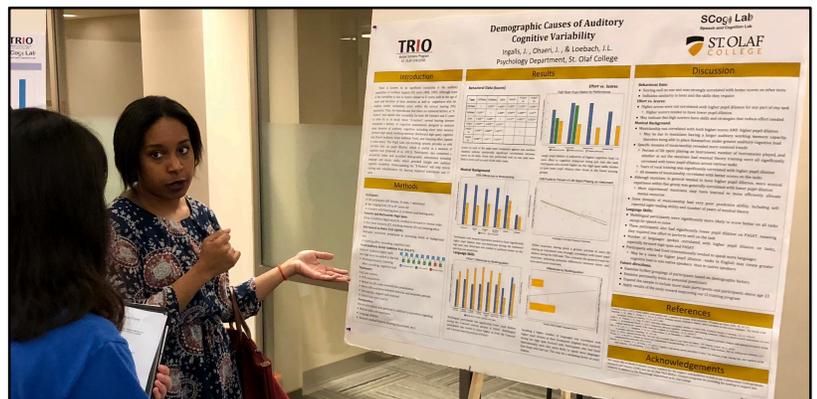
Faculty Mentor: Dr. Jeremy Loebach

Dr. Jeremy Loebach is a first-generation college graduate who received a B.S. in Psychology from Arizona State University, a M.A. in biological psychology and a Ph.D. in Psychology from the University of Illinois at Urbana-Champaign. Dr. Loebach's interests include, but are not limited to, cognitive neuroscience, perceptual learning, and speech perception. In recent years, Loebach has been researching cochlear implants, the psychology of language, deafness, and the deaf culture. Loebach currently holds a position of associate professor of Psychology at St. Olaf College, previously teaching courses at the University of Illinois, Urbana-Champaign, Carleton College, and Macalester College. In addition to teaching, Loebach lends himself to the roles of advisor, mentor and friend. He is a strong advocate for undergraduate research. He leads research at the Speech and Cognition lab (SCogLab) and oversees independent student research. Loebach encourages students to pursue poster presentations and publishing. He has worked alongside students to publish 2 papers and presented 48 poster presentations. Dr. Loebach has published numerous articles in different journals. He considers his 2014 publication on *The Influence of Emotions to Melodic Sequences* as his most rewarding article because the topic was different from his previous research projects. In 2017, Loebach was awarded the Walter D. Mink award for outstanding undergraduate teaching by the Minnesota Psychological Association.



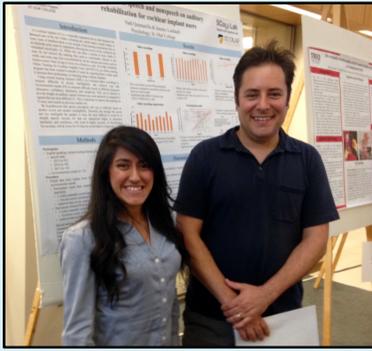
Jessica Ohaeri, 2020
Major: Psychology

“The highlight of my summer research experience was getting to know the lab better and working with my research team and Dr. Jeremy Loebach while looking into potential causes of variability in CI users. Through this experience I strengthened my research skills and learned more about cognitive psychology. Conducting research encouraged me to think about potential research interests in the future. My future goal is to study Psychology at the graduate level.”



Research Title: Demographic Causes of Auditory Cognitive Variability

Abstract: There is known to be significant variability in the success cochlear implant (CI) users find with their implants (NIH, 1995). Although some of this variability is due to factors unique to CI users, similar variability also exists within the normal hearing population, indicating that there may be universal factors behind this variability. In this study, members of the normal hearing population completed a set of auditory cognitive assessments. Additionally, participants' pupil dilation was measured during these tasks as a way of measuring their cognitive effort during tasks. Our analyses focused on how demographic data, including both skills and life experiences, may predict success on the auditory cognitive tasks as well as the effort required to complete them.



**Yadi
Quintanilla,
2020**
Major: Psychology

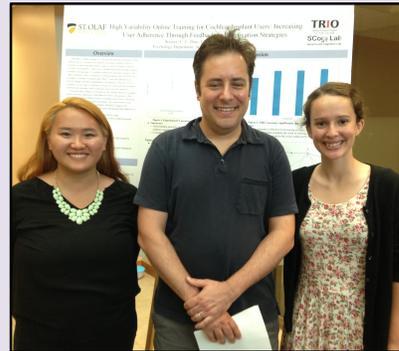
“This summer I analyzed normalization data collected for speech and nonspeech tasks to examine the difficulty of the material and categorize for an online training program created in the lab for cochlear implant users. I enjoyed the challenge of the independent work and really enjoyed when participants came into the lab and saw the great impact they have by helping us collect data. I learned a lot of excel shortcuts, and how to more clearly communicate with lab members, the community, and participants. Through this experience I have gained more research skills that are important for graduate school. My future goal is to attend medical school to then practice general surgery.”

Research Title: High Variability Online Training for Cochlear Implant Users: Increasing User Adherence Through Feedback and Motivation Strategies

Abstract: Although a cochlear implant (CI) can provide access to social, educational, and other new opportunities in the hearing world, it does not fully restore the recipient’s normal hearing. A CI user must learn to hear with their implant, a task that may be complicated by when and how they lost their hearing and for how long they were deaf. Consistent rehabilitative auditory training must take place post-operation. The purpose of the High Variability Online Training for Cochlear Implant users (HiVOIT-CI) is to provide CI recipients a resource to work with their prosthesis and foster the necessary cognitive auditory skills to perform well in real life situations. Our aims include providing effective feedback for CI users through a progress report of their performance and utilizing motivation tactics like rewards to encourage consistent training.

Research Title: Evaluation of Speech and Nonspeech on Auditory Rehabilitation for Cochlear Implant Users

Abstract: Normal hearing listeners (NHL) can converse with a coworker in a cafe while blocking out other sounds in the environment such as other conversations and the noise of the kitchen and espresso machine. Cochlear implant (CI) users often find it more difficult to identify speech and non-speech noises in different environments. Through the High Variability Online Training for Cochlear Implant Users (HiVOIT-CI), training is one way that could reduce this gap in understanding why some CI users do well and others struggle. We examine differences in environmental sounds and speech tasks based on difficulty. Studying the use of environmental sounds and speech in NHL is of interest to better understand what listeners pay most attention to in the tasks compared to what listeners find as most difficult.

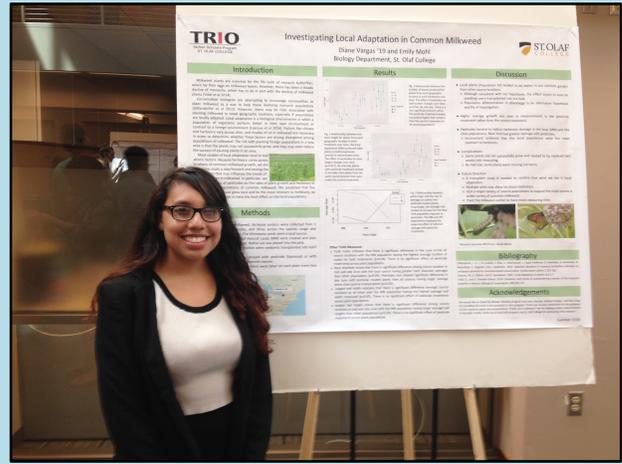


**Jessica Thao,
2019**
Major: Psychology

“My experience was fantastic! I am proud of the growth that occurred in 10 weeks. I gained new research skills, strong connections and perspective on my educational and career goals. I enjoyed the quality company I was surrounded by in lab. My team consisted of a phenomenal group, each member bringing different skills to the table. I learned how to build a professional and personal relationship with other researchers and mentors. I'm still exploring my interests in psychology but I hope to specialize in an area that focuses on the human development of children. In the future, I want to attend a Ph.D. program that focuses on human development and work in a healthcare facility that works closely with infants and children.”

Faculty Mentor: Dr. Emily Mohl

Dr. Emily Mohl is a scientist who received a M.A. in teaching from Washington University in St. Louis and a Ph.D. in Evolution, Ecology, and Behavior from the University of Minnesota. Her research interests include plant-insect interactions, evolutionary ecology, ecological risk assessment, science education, and citizen science. Dr. Mohl has published several articles on topics in science education and ecology. Also of significance, in 2013 Dr. Mohl received first place on her graduate poster from the Entomological Society of America Student Competition for the President's Prize. Dr. Mohl currently works at St. Olaf College as an Assistant professor in the biology department. She conducts research investigating local adaptation of milkweed as well as methods of teaching science education.



Diane Vargas, 2019
Major: Biology

“I enjoyed being out in the field and coming across frogs, snakes, and colorful birds. I especially enjoyed seeing how monarch butterflies would come to my plots and lay their eggs on my plants. I saw many tiny caterpillars on my plants and as I took growth measurements I would see how they would chew away at my plant. I learned so much about the processes that may impact patterns we see in local adaptation. I learned about different hypotheses that may explain this, and I gained knowledge about different bugs that like to chew on milkweed plants and how to identify them out in the field. I am more excited for graduate school. I want to use all the ecological knowledge I gained and apply it to another project. I want to attend graduate school and receive a M.A. in Conservation Biology. I think that working in conservation biology relates directly to my goals which are to work in an environmental organization. Graduate school will help me by providing me the research experience and graduate school level education that I need to succeed in this field.”

Research Title: Investigating Local Adaptation in Common Milkweed

Abstract: Milkweed plants are essential for the life cycle of monarch butterflies, which lay their eggs on milkweed leaves. However, there has been a steady decline of monarchs which has to do in part with the decline of milkweed plants. Conservation biologists are attempting to encourage communities to plant milkweed as a way to aid endangered monarch populations, but there is a risk in encouraging mass releases of milkweed. This is because milkweed from distinct geographic locations may not perform well when planted in a foreign environment-they may not be locally adapted. This study observed whether common milkweed (*Asclepias syriaca*) displayed patterns that were consistent with local adaptation and found that local milkweed populations on average performed better than non-local populations.

Scholars Participating in Off Campus Research/Internships

Rogelio Becerra, 2020

Majors: Computer Science and Spanish

Position: Information Security Intern

Location: Ingredion - Global Information Security

“This summer I worked on policies and standards that would impact the company. I pulled weekly security training reports and updated data figures. I attended meetings on network access control, network security, and data loss prevention. I worked with Systems Application & Products (SAP) by creating tickets, approving access, and working with business managers. One highlight of my experience was getting to understand risks, vulnerabilities and preventative measures companies deal with daily to protect their data and their clients. Another highlight was getting to understand how to surf the dark web without getting too deep or tied into anything. While drafting policies and standards, I learned how many risks Fortune 500 companies have to deal with. This experience reassured me of my career path since it was an interesting and exciting internship, which helped me learn a lot about cyber security work I was not aware of before. I would like to find a company that will allow me to work with them while also attending graduate school because I want to start my career while continuing my education. For me, graduate school opens up opportunities that were not possible for me before and it helps me increase my understanding of the world of technology as well as keep up with new training.”

Alex Cavender, 2019

Majors: Philosophy and Religion

Position: GSEF Research Assistant

Location: University of Iowa

Title of Project: Sex, Love, and God: Common Ground and the Roots of Disagreement Within the Church’s Homosexuality Debate

Faculty Mentor: Dr. Diana Cates

“This summer I worked closely with my mentor reading and discussing the contemporary and historically relevant texts relating to Christian (mostly Catholic) sexual ethics. In my research I suggest a way of thinking about human sexuality that raises key questions that may foster fruitful dialogue between the two sides. The highlight of this summer was getting to know my mentor and meeting other amazing scholars. I learned a lot about my research area and how to conduct research in a disciplined manner as well as what I need in a mentor. I also learned more about the value of having a community of peers to live with and discuss research with. This experience confirmed my desire to go to graduate school, do research, and live in academia. I love this sort of life and feel I could do it forever. My mentor really helped me narrow my interests in graduate programs and I feel better prepared to apply and succeed in graduate school. I hope to pursue my Master’s in Theology/Religion before deciding whether to pursue a Ph.D. in Theology, Philosophy, or Classics. I want to become a professor and believe I might be good at it.”

Nadine Dogbe, 2019

Major: Biology

Position: Research Assistant

Location: National Institute of Health

Title of Project: Development of an International Survey Assessing the Perception of Genome Editing in Individuals with Sickle Cell Disease

“This summer, I developed an international survey to assess the perception of people living with sickle cell disease of gene editing with CRISPR. The survey will be administered in France, UK, and the Netherlands. The highlights were starting a research project in collaboration with an investigator that has a study group in Sierra Leone, and the publication of my previous summer project in the American Journal of Human Genetics. This summer project was my first work experience in a global health setting. My goal is to be exposed to global public health practices. I will be interning at the Togolese ministry of health working on strengthening their health systems during Interim and Spring 2019. I hope that this experience will help me decide between health policies and management or health systems. I will apply for a Master’s degree in the UK after graduation and apply for a doctoral degree in the following years.”

Tamira Fuentes, 2019
Majors: Psychology and Spanish

Position: Intern
Location: La Casa Norte Community Engagement

“The highlight of my experience was serving those who were in need by providing them vital information about the emergency shelter system that exists in Chicago. I learned about the homeless population that exists within Chicago, and how there is a huge need for emergency shelters to properly serve youth and families. I also learned how DCFS works within Chicago. Some of the children that are in hospitals are usually placed there and then into a shelter or foster system depending on their situation. Through this experience I had interactions with patients that are in situations where the hospital has temporarily become their home. In the future, I hope to serve children in hospital settings. I would like to complete a M.A. degree in Family/Child Life in order to properly serve those who are in need of social and emotional support. I also want to work in a non-profit that works specifically with children who have high Adverse Childhood Experiences and resiliency scores. The Children’s Advocacy Center is a place I would like to get involved to see how a Child Life Specialist serves children and families.

Jean La Fontaine, 2019
Major: Latin American Studies

Position: Mellon Maise Researcher
Location: Carleton College
Title of Project: Bio-coloniality, Neoliberalism, and the Gendered Politics of Indigeneity in Contemporary Peru
Faculty Mentors: Dr. Wes Markofski and Dr. Constanza Ocampo-Raeder



Amber Juran, 2019
Major: Biology

Position: Research Assistant
Location: Genes & the Environment REU at the University of North Dakota
Title of Project: Cadmium Exposure is Detrimental to Heart Development and Function
Faculty Mentor: Dr. Kurt Zhang

“For this project, I imaged and measured embryonic heart samples from mice who were exposed to cadmium prenatally to observe whether cadmium has an impact on heart development in utero. I also performed electrocardiograms (EKGs) on adult mice who were exposed to cadmium after birth to measure the same types of effects after heart development is complete. The highlight of the summer experience was getting to take the reins on the EKG portion of the project. My lab had never previously performed EKGs on mice so I got to collaborate with a professor from another lab who regularly does EKGs on zebrafish, read a lot of papers to learn everything I could about EKGs and actually performed and analyzed the EKGs, working on everything from handling the mice to reading and interpreting the results. I learned a lot about heart development, anatomy, and physiology this summer, as well as gained a lot of skills I probably would not have the opportunity to learn elsewhere, like running EKGs. My goal is to pursue a Ph.D. in genetics and ultimately a career in biomedical research. This summer definitely helped cement that plan in my mind as the right decision. I hope to work in either oncology or cardiology. Graduate school is important because in order to pursue the kinds of research I hope to spend my career on I will need the kind of specialized knowledge that comes from a graduate program.”

Bashir Ali, 2020

Major: Biology

Position: Research Assistant

Location: U of Washington Friday Harbor Labs

Title of Project: Chinook Salmon: Experimental Analysis of the Nursery Function of Three Habitat Types for Chinook Salmon in the Salish Sea. River Otters: Physiological Analysis of River Otter in a Marine Ecosystem

“This summer I carried out two research projects, one on river otters and one on juvenile Chinook salmon. The latter took most of our time because it was an experiment that involved over 300 fish and 40 individual treatments. We discovered major findings for the experiment that involved the endangered Chinook salmon and it is expected to be published in the Proceeding of The National Academy of Science (PNAS).”

Diana Chaidez, 2020

Major: Political Science

Position: Immigration Services Intern, Social Entrepreneurship Scholars

Location: International Institute of Minnesota

Margeaux Cohen, 2019

Majors: Exercise Science and Chemistry

Position: Physical Therapy Shadowing Student

Location: Wieber Clinic - University of MN

“A highlight of my experience was when a therapist taught me a manual technique and asked the patient if I could try it on them. Over the summer, I performed simple upper extremity nerve gliding, joint mobilizations, neck massaging and stretching, and lower extremity passive stretching techniques all under the guidance of a therapist. It was incredible to have this kind of hands-on experience while still in my undergraduate career! Not only did I learn more about the anatomy of the human body and the healing process, but I also came to understand more about the job of a physical therapist. I aim to attend graduate school and achieve a Doctor of Physical Therapy. Hopefully, I will be able to perform as a Naval physical therapist in order to serve my country, hone my skills, and work in one of the most flexible environments for physical therapists.”

Aislinn Mayfield, 2019

Major: Biology

Position: Research Assistant, Cell Biology

Location: Harvard Medical School

Karina Mojica, 2019

Majors: Psychology and Spanish

Position: GSEF/SROP Research Assistant

Location: Michigan State University

Title of Project: Differences in the Perceived Adherence of Community School Standards Across School Sites

Faculty Mentor: Dr. Ignacio Acevedo-Polakovich

“This summer, I worked with Dr. Ignacio Acevedo-Polakovich and his Community Aid-Lab. I participated in professional and personal development workshops and networking sessions. The highlight of the summer was the opportunity to work with Dr. Acevedo-Polakovich and his graduate student Sara Stacy. They worked with me to not only have a great research experience, but they also had me go through a series of trainings that allowed me to learn more about what I wanted to do after graduating from St. Olaf. After hearing about other projects, I learned that there is research out there for everyone! This experience shaped my future goals, gave me a better idea about going to graduate school for School Psychology, and gave me a better sense of the work environment that I thrive in. I want to be the best school psychologist I can be; to be there as a professional and as a person that students can rely on to listen to them and support them.”

Sonam Palmo, 2019

Major: Chemistry

Position: Intern, Health Scholars Program

Location: Hennepin County Medical Center

Jamonte Strawder, 2019

Major: Sociology and Anthropology

Position: GSEF Research Assistant

Location: University of Michigan Ann Arbor

Sofia Reed, 2020

Majors: Chinese and Economics

Position: Research Assistant, recipient of Magnus the Good fellowship

Title of Project: Agricultural Memories of Yilan: An Excavation of Local Literature and Life Stories

Faculty Mentor: Dr. Hsiang-Lin Shih

Location: Taiwan

“This summer we spent a month in Taiwan learning about the food culture and experiencing it for ourselves. We learned from museums, explorations of various food markets, working with local farmers, and the sheer experience of a completely different terrain and culture. We compiled these experiences, as best we could, into a thinglink to share the stories we learned as well as our own experiences and how they have been altered by this research. The highlight was traveling to Taiwan and spending five weeks learning about agriculture in Taiwan. Experiencing the cultural differences was the most fascinating part of the project. Throughout my project, I learned the ins and outs of the problems small farmers in Yilan face. We learned about the impact the Hsueshan tunnel has had on Yilan and the impact the farmhouses have had on farming. Participating in this project has helped to motivate my Chinese learning and taught me a lot about myself and my skill sets. This has shown me that I am an academic and I look forward to continuing my studies in graduate school. Graduate school is an opportunity to further my learning and pursue my interests.”



Nyajima Tut, 2020

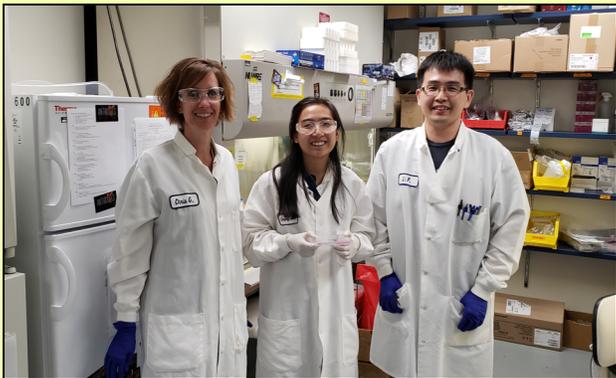
Major: Vocal Performance

Position: Musical Assistant

Location: Centre for Neuro Skills

Title of Project: Music Therapy

“My summer experience was enriching for me because of the various experiences that I had and the many skills I learned. I gained better skills on guitar, multiple patterns and techniques on the hand drums, and learned lots of new songs, titles, and genres. This experience gave me good insight into the many possibilities and professional opportunities that music therapists can have. It also allowed me to see that I still have so much more to learn and practice to be a successful music therapist. I am committed to apply to graduate school and facilitating music therapy/educational practice in South Sudan and other international countries. I am now even more encouraged in narrowing down good graduate opportunities in music therapy because I have seen a lot of the different skills required of me to succeed in this profession. Graduate school is where I will be able to learn and grow and practice to get to the level of musicianship that I aspire to.”



Sunny Vuong, 2019

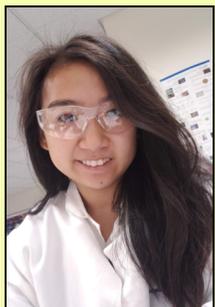
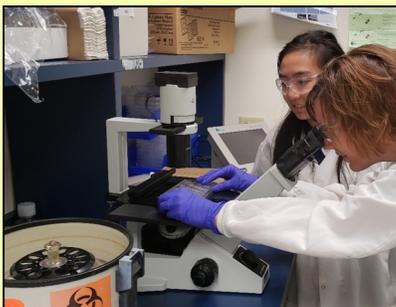
Majors: Chemistry and Chinese

Position: Intern

Location: Bio-Techne

Title of Project: Antibody Development

“This summer I was able to learn about T cells and how these cells are important for antibody testing and development. Through this internship I learned more about immunology and was able to network with my fellow interns and coworkers. Working in a company has shown me that if you need help with anything, don't be afraid to ask because everyone is learning along with you. This experience helped me realize that I can always work in a company like Bio-Techne to explore what I want to do in the future but I believe that I am ready to apply for graduate school in Biochemistry, Molecular Biology, or Cell Biology. My future career goal is to become either a scientist that would develop new products or a research associate that works in the lab on projects for development. I believe that graduate school is important for my future goals because I will learn additional research and communication skills to shape my development in research.”



Va Yang, 2020

Major: Environmental Studies

Position: Paraprofessional

Location: MN State Energy Office of the MN Department of Commerce



A special thank you to **DUA VANG**, McNair alum, for her help this summer as our McNair Assistant!

We wish you the best as you pursue your Ph.D. in Microbiology at Iowa State University!

