



Graduate College Rebel Research and Mentorship Program

**Congratulations to our incoming 2020-
2021 cohort**



College of Education

ANDROMEDA HIGHTOWER

**Ph.D.
student,
Department
of Teaching &
Learning**

**Advisor:
Dr. Peter
Wiens**



Do you like video games?

Do you think learning with games in the classroom can be fun and educational?

It's possible, but there's still much we need to understand about game-based learning and how to best prepare teachers for the exciting possibilities of using digital games in the classroom. This project will involve conducting a workshop with teachers using Minecraft: Education Edition.

As a critical member of the project, you will be involved at each step of the research:

- reading and collecting literature and discussing findings as a team
- assisting with workshop planning
- learning and playtesting Minecraft: Education Edition
- participant observing teachers in the workshop
- assisting with data analysis, quantitative and qualitative
- contributing to the writing of the manuscript
- co-presenting the research at an academic conference.

NOLA SMITH

Sophomore, working on my Bachelor's degree for Elementary Education

Faculty Advisor: Dr. Peter Wiens

Graduate Student Mentor: Andromeda Hightower



I am interested in researching more efficient ways of teaching through student motivation of entertainment and personal passions. As I move onto my career, I want to be able to provide and teach other teachers how to adapt more efficiently. With the prevalence of online schooling and witnessing firsthand the failure of the school districts system in regards to the pandemic outbreak, I also want to help establish a strong network system that can promote learning even in the most difficult times.

I believe that joining the RAMP program would help me achieve these goals by allowing for my voice to be heard, establishing strong credibility in my character, and growing the skills to research more. There are countless times where, as a student, I felt like I was unheard and belittled due to my knowledge. RAMP will help soothe my voracious appetite to grow and make a difference.

HEATHER THOMPSON


Ph.D. Student


**Department of
Counselor
Education, School
Psychology, and
Human Services**

**Faculty Advisor:
Dr. Samuel Song**



My research interest is related to restorative justice (RJ) practices which can be described as a way to support accountability for student behavior with a focus on repairing harm rather than using zero-tolerance discipline policies that have shown to be ineffective. Zero-tolerance discipline policies are one factor related to the disproportionality in discipline that ultimately contribute to the school-to-prison pipeline. RJ needs to be critically examined as an intervention to understand its effectiveness in the school setting. My research team, advised by Dr. Samuel Song, partners with CCSD to evaluate the effectiveness of RJ practices in schools. My project will focus on the implementation science of RJ. An undergraduate student might participate in various aspects of the research process to include literature reviews, data collection, data analysis, and dissemination of the results at a local or national conference. An undergraduate student might also have an opportunity to co-author a manuscript.

TYLER TULMAN


**Senior, Working
towards my B.S. in
Psychology with a
minor in
Neuroscience**

**Faculty Advisor: Dr.
Samuel Song
Graduate Student
Mentor: Heather
Thompson**



My research interests and career goals lay in the realm of clinical psychology. I would love to someday work with individuals who struggle with mental disorders such as schizophrenia, bipolar disorder, borderline personality disorder, and more. In order to reach these goals, I hope to be accepted into a specialized abnormal psychology PhD program. My acceptance into RAMP is a great opportunity for me to meet individuals who will aid me in my road to further education, as well as reaching my goals. The experiences I will gain from this program are also going to shape me into becoming a better student as I take on the obstacles ahead of me. I am very excited and grateful for this opportunity!



College of Fine Arts

BRIAN HOLLANDER



**M.F.A. student,
Department of
Theatre Arts**

**Faculty Advisor:
Judith Ryerson**



This creative project will be to research and design period and cultural appropriate costumes for a theatre stage show. This consists of implementing a creative, unique, and cohesive design that tells a story for all the characters within the show. During this process we will also be collaborating with faculty, staff, and a design team to ensure all the design elements work together and functions as a cohesive unit.

Specific responsibilities for both myself and the undergraduate student mentee will be to research the historic period, create and construct costumes which consists of purchasing, altering, resizing and revamping existing costume pieces. During this design process we will also develop costume, hair, and makeup plots; conduct fittings; and create patterns to fit design specifications. We will also be developing a PowerPoint design presentation and the show will also be produced on stage here at UNLV with the Nevada Conservatory Theatre.

MICHAEL DUNBAR

Senior, Working
towards my B.S. in
Theatrical Design
and Technology

Faculty Advisor:
Judith A Ryerson
Graduate Student
Mentor: Brian
Hollander



I am curious in researching the different eras of fashion. The evolution of clothing is a fascinating topic and can be influenced by many different things. The theatre is very interesting and has been a part of my life for as long as I can remember so being able to delve deeper into this kind of material with a purpose is something that would benefit me greatly.

My short-term goal is to find work backstage at one of the more popular shows in Vegas. My long-term career goal is to be a costume designer in general and be able to work with some large name Broadway shows. I believe that participating in the RAMP program will help me become a better costume designer and help motivate me towards reaching my goals by allowing me to experience the demands of being a costume designer and working with others.

LAURENCE MYERS REESE



**M.F.A. student,
Department of Art**

**Faculty Advisor:
Alisha Kerlin,
Executive Director,
Barrick Museum of
Art**



- The undergraduate student and I will develop an exhibition in the Barrick Museum of Art's Work Shop gallery space, drawing on the Barrick's collection and artists from the community, and create public programming for the UNLV community.
- The student will learn the process of creating a museum exhibition from conception to finish. They will learn concrete skills, gain resources, and develop creative problem-solving. Skills learned include artist communication, writing development, learning about museum administration, art handling, preparatory work and installation, marketing, and more.
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College of Liberal Arts

**ALDO
BARRITA**



**Ph.D. student,
Department of
Psychology**

**Faculty Advisor:
Dr. Gloria Wong-
Padoongpatt**



- My research project will study how forms of micro racism—racial microaggressions impact marginalized individuals. Specifically, we are interested in the response to these attacks in the form of stress and the coping mechanisms involved in this process.
- My mentee will be managing data collection and trained in statistical analysis for this study. Additionally, my mentee will collaborate in poster development and presentation at a national conference, as well as assisting on writing the manuscript for publication.
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MARVIN FUENTES

**Senior, Working
towards my B.A. in
Psychology**

**Faculty Advisor:
Gloria Wong-
Padoongpatt
Graduate Student
Mentor: Aldo
Barrita**



My name is Marvin Fuentes and I am currently a junior undergraduate student at the University of Nevada, Las Vegas. My current research interests include addictions and social psychology; specifically microaggressions.

Some of my current academic goals include obtaining research training and certification, as well as becoming more involved with research projects that involve my research interests. One of my long term academic goals is to attend graduate school to obtain a Ph.D. in either Clinical or Counseling Psychology. My dream is to have a career in which I can assist patients from marginalized communities on the road to recovery from substance abuse. As a Psychologist, I would like to contribute to efforts that can improve the quality of mental health services available in the United States. Specifically, I would like to do research on the growing opioid crisis in the United States, and illuminate flaws in integrated healthcare in order to improve treatment for all patients. I am interested in this area of study because it is highly needed and currently underrepresented by experts that focus on marginalized communities.

I truly believe participating in RAMP will expose me to information and experience I need in order to be successful in graduate school, and beyond. RAMP clearly focuses on helping students like me providing the opportunity to learn advanced research skills and methods that are invaluable to any aspiring research psychologists.

**BRIDGET
LONGORIA**

**Doctoral
Candidate,
Sociology**

**Simon Gottschalk,
Ph.D.**



Potential undergraduates would assist on my ethnographic study of a nonprofit social service agency looking at the interplay between cultural discourses, organizational framing, and interaction. This study focuses on the interaction between and amongst providers and recipients while considering how macro and meso level forces influence the implicit (and sometimes explicit) interpersonal negotiations that occur between actors in the setting. I am interested in how these negotiations influence both clients' abilities to access needed services and providers' efficiency in providing them. The student will help transcribe interviews and analyze multiple points of data. They will also potentially coauthor a manuscript to present at a sociology conference where I will show them how to network with a diverse group of scholars across the discipline.

ALEXA OROZCO

Senior, Working
towards my B.S. in
Biological Sciences,
Psychology and
a Neuroscience Minor

Faculty Advisor:
Cheryl A. Tillotson

Graduate Student
Mentor: Bridget
Longoria



The desire to positively influence the lives of others while being intellectually engaged and consistently challenged led me to pursue medicine. The similar goals, adjoined with insights acquired through research and hands-on experiences, lead me to pursue a career in Cardiothoracic Surgery.

Committing myself to the world of logical investigate has instilled an investigative mentality and a passion for the scientific process. Research has proven to be an incredible supplement to my undergrad coursework, permitting me to strengthen my conceptual understanding of the material instructed in my science classes and leading to an improvement in my scholastic execution as I have the opportunity to engage in research outside of the classroom.

As a mentee apart of UNLV RAMP, I am supplied with guidance, research opportunities that would help me advance in the Science field. I would obtain the skills and experience needed to be an eligible candidate for medical school. I am a step closer to becoming who I want to be.

CELENE FULLER



**Ph.D. student,
Sociology**

**Advisor:
Barbara Brents**



This project involves working with the non-profit organization NARAL Nevada to examine barriers to abortion access in the state of Nevada. I will conduct in-depth interviews with staff and providers at abortion clinics in Nevada. This primary interview data will be combined with secondary data including abortion rates, access to healthcare in the state, socioeconomic status of abortion patients, and other local trends over time relative to the national average. The mentee and I will work together to transcribe and qualitatively analyze the interviews in addition to conducting and interpreting statistical analyses of secondary data.

LATRICA NATHAN

**Senior working
towards my B.S. in
Psychology and
Sociology.**

**Faculty Advisor:
Barbara Brents
Graduate Student
Mentor: Celene
Fuller**



My current area of research interest are African American children and reprogramming years of generational curses and learned behavior. The mental and societal combination of things that attribute to becoming or not becoming successful functioning members of society are important. I would like to continue to research for solutions for the already identified issues that plague lower income and minority families. Professionally, I would like to be able to practice private therapy with a focus on children. Being an adoptive mother of two boys I would also like to work with the foster care system. Participating in the RAMP program will help me reach these goals in many ways. It will give me valuable research experience. It will give me networking and learning opportunities from individuals at all levels. It will help me prepare for graduate school. As well as help me prepare for possibly becoming a RAMP mentor.

**DANIEL
PEREZ**



**Ph.D. candidate,
Anthropology**


**Adviser: Karen G.
Harry, Ph.D.**



The title of my project is "An Experimental Understanding of Virgin Branch Puebloan Subsistence through Ground Stone Technology". This research is an experimental archaeological undertaking in which late prehistoric subsistence strategies are considered through the analysis of ground stone technology (e.g., manos, metates), associated use-wear patterns with cultivated and wild food resources (e.g., corn, pine nuts, sunflower seeds), and the processing of non-food products (e.g., animal hides). The focus of this project will be on discerning use-wear patterns applicable to both interpreting the archaeological record as well as answering larger questions of subsistence strategies through indirect methods of archaeological inference.


The likely role of the mentee for this project will involve: (1) reading select, relevant journal articles; (2) collaborating in research design; (3) processing various materials using experimental ground stone tools; (4) analyzing and understanding different use-wear patterns on ground stone tools; and (5) co-presenting a conference research poster.


KARI GOOLD


**Senior, Working
towards my B.A. in
Anthropology and
minors in Criminal
Justice and Sociology.**

**Faculty Advisor: Dr.
Karen Harry
Graduate Student
Mentor: Daniel Perez**



 I am a senior majoring in anthropology with minors in criminal justice and sociology. My research interests are in anthropology and geography. My long-term goal is to obtain a PhD in anthropology or geography in the future so I can become a professor at a university. In the upcoming fall semester I will be applying for programs specializing in geography focusing on using the GIS systeming.

 For the Graduate College Rebel Research and Mentorship program (RAMP) I am excited to be working with Daniel Perez. Participation in this program will better my research skills before I start my own research. This program will set me apart in applications because I will have experience few undergraduate students have. Daniel Perez is a respected PhD candidate at UNLV and the skills I will learn from him are endless.

ELIZABETH JOHNSON



**Ph.D. student,
Anthropology**

**Advisor:
Dr. Peter Gray**



Cats are not just today's fuzzy overlords of the Internet. According to the Humane Society of the United States, they are also the most popular companion animal in the US (2019): some 86 million cats live in 39 million American households. Yet we are still learning about the roles of cats in Americans' lives. My study aims to examine the potential benefits that women derive from their cats, specifically, whether women's salivary oxytocin (OT) levels increase during after-work interactions with their cat compared to a control condition.

Participants are asked a series of demographic questions designed to describe their current living arrangements, income and relationship with their cat. Cat interventions are recorded via a video file, so that data can be synchronized with survey materials. It is my hope that an undergraduate mentee is able to gain an understanding of tools and techniques to decipher the collected data into results.

ARIANNA PORTILLO



**Senior, Working
towards my B.S. in
Kinesiological
Sciences.**

**Faculty Advisor:
Jeremy Meronuck
Graduate Student
Mentor: Elizabeth
Johnson**



- In the future, I hope to become an exceptional Physical Therapist. Through my participation in the RAMP program, I plan on furthering my comprehension of anatomy and physiology and wellness in order to prepare me for what lies ahead. Being a part of For the love of cats: Women's oxytocin responses to
- interactions with cats, allows me to contribute to my career and research goals by researching a holistic method to positively impact human physiology and mental health. I am excited to be a part of a program that will
- challenge me and encourage me to become a stronger member of the Las Vegas community.

KARLI NAVE



**PhD Student,
Department of
Psychology**

**Faculty Advisors:
Dr. Erin Hannon,
Dr. Joel Snyder**



Prior research has suggested that human's brain activity *entrains* to the rhythm that they perceive in an auditory stimulus. Prior work has also suggested that rhythm perception abilities can be predictive of language abilities in children. However, to date no one has examined whether children show this same rhythm-related brain activity, or whether it is predictive of language abilities.

In the current study, Karli and her mentee will use electroencephalography (EEG) to non-invasively measure children's brain activity while they complete a musical beat perception game. They will also measure children's phonology and reading skills to estimate the relation between rhythm perception and language development.

The mentee for this project will:

- Recruit participants
- Learn how to collect EEG data
- Learn how to process & interpret EEG data
- Present at the OUR research forum
- Present at an academic conference (w/ Karli)
- Have the opportunity to contribute to a manuscript for publication.

As an advocate for open science practices, Karli has pre-registered this project on OSF, which you can access here:
<https://osf.io/4rcjh>.

CHRISTIAN HUNTER



**Junior, Working
towards my B.S. in
Biological
Sciences and B.A.
in Psychology**

**Faculty Advisor:
Dr. Erin Hannon
Graduate Student
Mentor: Karli Nave**



As a former student studying Music Composition and Theory, and a current student interested in neuroscience, my primary research interests combine both my creative side in music and my interest in science to explore music cognition and perception in infants, children, and adolescents. I am interested in discovering the relationship between a child's development and their musical ability, and if music can play a key role in educational learning.

My career goals include graduating with my B.S. in Biological Sciences and B.A. in Psychology and applying for medical school to become a psychiatrist. RAMP will teach me important research skills that I will use for the rest of my undergraduate career, during medical school, as a physician, and beyond. Most importantly, I hope participating in RAMP will help me learn what it means to be a scientist; one who is always curious, approaches challenges with logic and reasoning, and arrives confidently to conclusions with substantial data.



College of Sciences

ANNE VILLACASTIN



**Ph.D. Student,
School of
Life Sciences**

**Advisor:
Dr. Jeffery Shen**



My study involves developing biotechnological tools that improve the cultivation of rice – a globally important crop that feeds 70% of our world’s population. I do this by identifying important genes in rice that would allow production of higher yielding varieties despite pressures from environmental stress. The end goal of this project is to contribute to global efforts against food insecurity.

My undergraduate research mentee will be equipped with hands-on knowledge in performing plant stress assays, implementing molecular techniques to assess gene and protein expression levels, and using bioinformatics to elucidate the mechanisms by which our genes of interest control how rice responds to abiotic stress.

I am passionate about my project and would like to share that with an undergraduate who holds the same interest in scientific research. I hope to encourage my mentee to form a deeper understanding of and appreciation for the scientific method and efficient data dissemination.

FREDRICK BRAGG JR.



**I am a Sophomore,
working towards my
B.S in Biochemistry**

**Faculty Advisor:
Frank van Breukelen
Graduate Student
Mentor: Anne Jinky
Villacastin**



I have a great interest in the power of computation to better understand biological processes. Such as with DNA and RNA expression, or even the biomolecular interactions between proteins. My goal is to one day be able to construct a software program that will be able to accurately predict and show 3-dimensional protein interactions. The rebel RAMP program will allow me to participate on a research project that will not only increase my knowledge; but also, increase my skills with computers with a personal experience. I also, will get the opportunity to meet and work with colleagues that can collaborate with in the future.

CHANDLER HASSAN

Ph.D. student,
Department of
Chemistry &
Biochemistry

Advisor:
Dr. Ernesto Abel-
Santos



My research project, "Effects of Spore Calcium and Dipicolinic Acid on *Bacillus anthracis* Virulence," seeks to examine which factors contribute to the lethality of anthrax infections. The goal of the project is to elucidate new understanding of the mechanisms used by *B. anthracis* to thwart our immune systems and cause disease.

The project relies on a unique combination of traditional *ex vivo* and modern *in vivo* techniques from several biological and chemical disciplines in order to answer our research questions. The undergraduate student mentee will be responsible for assisting on all parts of the project: culturing and sporulating *B. anthracis*, culturing mammalian cells, performing spore germination and cell viability assays, sample analysis via inductively coupled plasma spectroscopy, molecular cloning and transformations.

TIFFANY MATA



**Senior, Working
towards my B.S. in
Biological Sciences**

**Faculty Advisor: Dr.
Ernesto Abel-Santos**

**Graduate Student
Mentor: Chandler
Hassan**



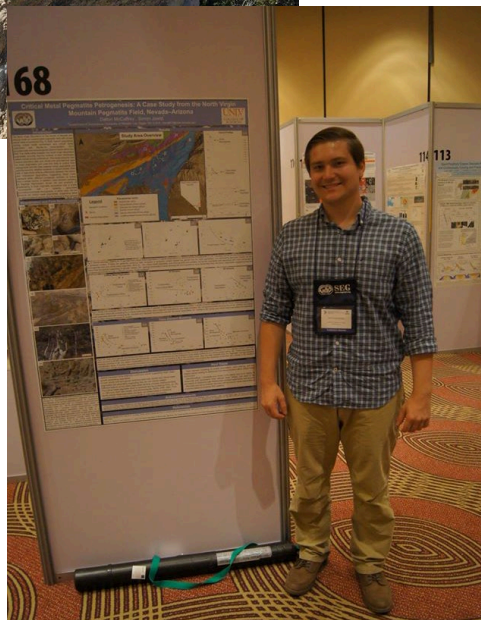
I am currently pursuing a bachelor's degree in Biological Sciences with a minor in Neuroscience. My primary goal is to pursue an MD-PhD. I would like to further investigate organisms that cause disease such as *Bacillus anthracis*. One day, I hope to conduct my own research and having scientific skills would help me in answering questions to some of the most challenging questions that have yet to come.

RAMP was definitely the perfect choice to enrich my future endeavors. I want to enhance my knowledge in laboratory techniques such as culturing mammalian cells, spore germination assays, etc. Not only would I receive proper training in laboratory techniques, but also the opportunity to present at local and national conferences. I am grateful to be able to work with a devoted mentor.

DALTON MCCAFFREY

Ph.D. student,
Department of
Geosciences

Dr. Simon Jowitt



U-Pb Dating of Rare Metal Granitic Pegmatites in the Virgin Mountains, NV

Granitic pegmatites are important resources for many rare metals (e.g., Nb, Be) used in modern, green, and military technologies. However, these geologic systems are poorly understood. This study uses U-Pb dating of zircon, a common mineral in pegmatites, in the Virgin Mountains of Nevada to constrain the timing of intrusion of these magmas and their relationship with granites in the area. Understanding this would provide insight into the formation of these unique geologic systems, whether related to a specific geologic event or multiple events.

The job of the mentee would be to aid in field work (sampling, geologic mapping), sample preparation (rock crushing and sifting), mineral separation, and possible assistance with Laser-Ablation-Inductively-Coupled-Plasma-Mass-Spectrometry. Once analysis is complete, the mentee will also be taught how to build figures and make interpretations for this data.

THOMAS BOES



**Senior, Working
towards my B.S. in
Geology**

**Faculty Advisor:
David Kreamer**

**Graduate Student
Mentor:
Dalton McCaffrey**



The RAMP program will allow me to participate in sample collection, mapping, sample preparation for zircon analysis (crushing, separation, etc) of approximately eight samples, and possibly visiting the LaserChron to assist with the LA-ICP-MS, involving U-Pb dating and trace and rare earth element (TREE) analysis. I will assist with plotting and editing geochemical plots of whole-rock data in excel and edit them for publication.

Participation in the RAMP program will provide me with vital research experience needed for graduate school. I will use this opportunity to advance my knowledge in geology outside the normal classroom learning environment. The program will help me achieve my career goal within secondary education, inspiring the next wave of geologists.

ELIZABETH MONROE



**Ph.D. Student,
Department of
Chemistry**

**Faculty Advisor:
Dr. Cory Rusinek**



My research project will focus on developing a tool for the assessment of oxidative stress, namely the detection of hydrogen peroxide (H_2O_2) and peroxynitrite (ONOO^-). Finding a practical and efficient way to study oxidative stress would grant us a deeper understanding of several neurodegenerative diseases as well as age-related cancers. Electrochemistry is a multi-disciplinary field that offers inexpensive analytical methods with the sensitivity we require.

The undergraduate mentee and I will characterize different types of electrode materials to find one which can provide the required characteristics in the detection of H_2O_2 and ONOO^- . We will also compare our electrochemical results with those obtained with conventional spectroscopic techniques.

The goal of this collaborative research will be to generate a peer-reviewed research article as well as to present in the society for electroanalytical chemistry (SEAC) student session.

PAULA CORDERO

Senior, Working
towards B.S. in
Biochemistry

Faculty Advisor:
Dr. Cory Rusinek
Graduate Student
Mentor: Elizabeth
Monroe



I am interested in electrochemical research, specifically in the use of electrodes to detect peroxides and reactive oxygen species. I plan on attending graduate school to pursue a Ph.D. in chemistry and hope to work in a laboratory setting or in academia after obtaining my doctorate degree. Participating in RAMP will allow me to gain research experience and working with Elizabeth will give me a chance to learn what graduate school is like from a current Ph.D. student. Conducting research as a RAMP member will allow me to hone my laboratory and research skills.

LORENA SAMENTAR



**Ph.D. candidate,
School of Life
Sciences**

**Advisor's Name:
Dr. Nora B.
Caberoy**



My research project is on the development of a novel therapy for Alzheimer's disease. We are testing the hybrid protein that we have engineered both in cellular and mouse models. Thus far, our results are promising and we are excited to be on this race towards the development of an Alzheimer's therapy.

My undergraduate mentee will be trained on the basic techniques and concepts of cell and molecular biology from bacterial transformation, plasmid purification, PCR and cloning, Western blot, and cell culture. Opportunities to apply these technical skills in doing a focused study on the interaction of two proteins that might have implications in neurodegeneration will be provided. I hope that my journey with my mentee will lead to a strong grasp of basic molecular biology research, a poster or oral presentation, a co-authorship in a publication, and more importantly, a greater passion and appreciation of doing science.

AURORA EMINI


**Junior, Working towards
my B.S. in Biological
Sciences with Minors in
Neuroscience and
Political Science**

**Faculty Advisor:
Dr. Nora Caberoy**

**Graduate Student
Mentor:
Lorena Samentar**



My research interests include development and understanding of novel therapies of Alzheimer's and how we can apply those to neurodegenerative diseases like multiple sclerosis and other neurological disorders. I am interested in underlying factors that lead to damaged neurons or neuron death and how applications of molecular biology can provide results. Participating in RAMP will provide me with knowledge on neuronal proteins and their interactions. Working with Lorena will help me develop more technical skills in the lab as well as provide a thorough understanding of Alzheimer's disease through data collection and analysis. I plan to pursue a career in medicine and further apply these critical skills in future projects. This experience is a great opportunity and I am excited to participate in Lorena's research.



Howard R. Hughes College of Engineering

GEORGE WILLIAM KAJJUMBA

Ph.D. student,
Civil and
Environmental
Engineering &
Construction

Advisor:
Dr. Erica J. Marti



Background: Water is a cardinal pillar of life; without it, life is impossible. However, if it is not managed well, it is a conduit for contaminants/diseases that have affected us for centuries. Our current project focuses on advancing water reuse and treatment—a solution to billions of people living in water polluted areas and water scarce environments like Las Vegas

Why work with us? If you enjoy hands-on work in a laboratory with water/chemicals, have patience to work methodically through a procedure, and like to challenge yourself, then this is the project for you. The research experience will allow you to understand better how to design solutions for communities, determine an area of interest, and jumpstart your careers as a researcher and/or prepare you for graduate school.

Roles: (1)Perform a literature review to modify the proposed study plan, (2)Set up experiments, (3)Collect and analyze data, and (4)Draft report and/or journal article.

SAVANNA VACEK


**Sophomore,
Working towards
my B.S. in Civil
Engineering**

**Faculty Advisor:
Dr. Erica Marti
Graduate Student
Mentor: George
William Kajjumba**



Generally, I am interested in environmental engineering and water resources. My research and creative interests include water quality, water treatment, and water reuse.

Engineering is the most prominent goal in my life. I aim to first receive an undergraduate degree in civil engineering. I plan to minor in solar and renewable energy as well. Further, I hope to cement my knowledge of Spanish and become fully bilingual while obtaining a minor in Spanish. I plan to earn a graduate degree in a field related to environmental engineering.

Participating in RAMP will help me gain skills that will prepare me to be "research ready." These skills will be useful to my future career goals and prepare me for graduate school. I aim to shadow, train for a specific task, learn how to better collect and analyze data, or conduct a research design. Ultimately, RAMP will allow me to gain valuable research skills, prepare me for my career in water resources, and prepare me for graduate school.

**SURAJ VENKAT
POCHAMPALLY**



**Ph.D. Student,
Mechanical
Engineering**

**Advisor:
Dr. Jaeyun Moon**



PROJECT DESCRIPTION:

We will study the surface interaction between carbon-based porous materials and toxic pollutants soluble in water, resulting in the development of new efficient remediation processes and materials for groundwater recovery, especially at the Department of Energy (DOE) nuclear sites. In this project, we will produce biochar (carbon-based porous matter) from biomass feedstocks, subsequently to modify the biochars to enhance their sorption capability, and finally to use it for effective purification of groundwater from toxic pollutants. My undergraduate mentee will be helping with the material characterization on Scanning Electron Microscopy (SEM) and performing some tests like the contact angle measurement test. They will also do a literature review on new materials and methods which support the project.

ASHTIN HOFERT

**Senior, Working toward
my B.S in Engineering;
Mechanical Engineering**

**Faculty Advisor: Dr.
Jaeyun Moon
Graduate Student
Mentor: Suraj
Pochampally**



I am interested in materials engineering with a focus on application that aid in environmental improvement using sustainable solutions. I have particular interest in the purification of pollutants from various media including water and air. As a career, I would like to work on the production of purification methods in a laboratory setting while engineering technology that will implement these solutions into the real world.

The RAMP will provide me with the opportunity to become more familiar with a laboratory setting while expanding my scientific knowledge. This program will give me the opportunity to improve my understanding of academic literature as it pertains to complex subjects and give me the chance to aid in the writing of our own novel research. This experience will help me develop as a scientist and engineer, thus helping me down the path of lifelong research and development.

YASAMAN SAEDI

Ph.D. student,
Department of
Civil and
Environmental
Engineering

Faculty Advisor:
Dr. Jacimaria
Batista



Perchlorate (ClO_4^-) has been detected in groundwater and soil systems throughout the United States for the last two decades. This contaminant is known to block iodine uptake by the thyroid gland. Perchlorate biodegradation has been successfully observed in low saline areas. While the feasibility of biodegradation in high saline area using natural occurring bacteria has not been documented well.

Purpose: isolate, identify, and characterize perchlorate reducing bacteria in high saline area to degrade perchlorate.

The undergraduate mentee will be supposed to conduct the following tasks:

- Conduct literature survey on salt tolerant bacteria and perchlorate biodegradation.
- Help to set-up the experimental design.
- Help to sort data which will be obtained from the experiments.
- Write a short technical report on what she/he will conduct during one-year research.

NOOR KORDI



**Senior, Working
towards my B.S. in
Biological Sciences
and minor in
neuroscience**

**Faculty Advisor:
Jacimaria Batista
Graduate Student
Mentor: Yasaman
Saedi**



I have an interest in research studies that revolve around matters related to public health and biological civil circumstances. That may vary from determinants of epidemiology, disorders and sources of disease that have an impact on a population. I am currently a biology undergraduate student with aspirations of attending a medical school in the future.

Working within the RAMP program will provide me with an opportunity to involve myself in research that will help me to better serve my community.

This study is related to the detection of Perchlorate in our groundwater and soil systems. Perchlorate is significant, because it has an impact on our populations health when it comes to our endocrine systems. The search and accomplishment of a treatment that may be implemented to dispose of these harmful salts, will improve our public health. My overall aspiration is to practice as a physician in an underprivileged community.



School of Integrated Health Sciences

ANDREW ORTIZ



**Ph.D. student,
Department of
Brain Health**

**Faculty Advisor:
Dr. Jefferson
Kinney**



Alzheimer's disease is a neurodegenerative disease that is characterized by progressive synaptic and neuronal cell death, learning and memory deficits, and overall cognitive decline. There are several genetic and non-genetic risk factors that substantially increase the likelihood of developing Alzheimer's disease. One of the largest is Type II diabetes, which can confer up to a 4-fold increase in developing the Alzheimer's disease. Additionally, a surprising 80% of all Alzheimer's disease patients have Type II diabetes, or some degree of insulin resistance/glucose intolerance.

My research aims to investigate the overlapping mechanism between these two devastating modalities. Specifically, I am interested on how glial cells and a chronic immune response in the brain play a role in Type II diabetes and Alzheimer's disease.

Undergraduate mentee:

- Semi-quantify proteins levels via western blotting & immunohistochemistry.
- Analyze and interpret data
- Gain fundamental research experience and skills that will prepare them for graduate school.

AVA PLATT

**Senior, Working
towards my bachelor's
degree in psychology
with a neuroscience
concentration**

**Faculty Advisor:
Jefferson Kinney,
Ph.D.
Graduate Student
Mentor: Andrew Ortiz**



I am a research assistant in the Cellular and Molecular Brain Research Laboratory where we investigate the mechanisms of Alzheimer's disease. Type II diabetes is amongst the greatest non-genetic risk factor for developing Alzheimer's. The project that I have been working on aims to investigate the mechanisms between type II diabetes and Alzheimer's.

My interests include neurobiology and how molecular, cellular and neuronal processes are altered in neurodegenerative disorders in addition to how they operate on an adaptive level during memory formation.

My goals upon graduating are to pursue a doctoral degree in neuroscience to better understand the brain and conduct impactful research that will benefit the public health of the world. By joining the Rebel Research and Mentorship Program as a mentee, I have the chance to conduct a research project with my mentor and gain mentorship that will benefit me in applying to and entering graduate school.

**CHARLI
AGUILAR**

**I.H.S. Ph.D.
Candidate
Department of
Integrated Health
Sciences**

**Advisor: Dr.
Graham R.
McGinnis**



Circadian variation in sensitivity to Hypoxia

- Circadian rhythms are physiological and metabolic changes in all living organisms that follow a daily cycle. Hypoxia (lower levels of oxygen in the air) affects people when traveling to altitude or using commercially available tools to simulate altitude. This investigation seeks to understand how the time-of-day an individual is exposed to hypoxia may influence how their body reacts to it.
- Participants of this study will be exposed to hypoxia in the morning and the evening. Blood samples will be collected and analyzed in our lab. Findings from this investigation could inform individuals of important time frames of opportunity (to elicit benefits) or time frames of vulnerability to hypoxia.
- An undergraduate mentee would be essential to collection of data, sample processing, and lab tests. They would also be able to participate in manuscript writing. I would encourage a mentee to review literature as well.

CAITLIN REYNOLDS



**Undergraduate Student,
Department of
Kinesiology and
Nutrition Sciences**

**Advisor: Matthew
Dellasala (McNair
Scholars Institute)**

**Graduate Student
Mentor: Charli Aguilar**



I am an undergraduate student entering my senior year of the Nutrition Program at UNLV. During my junior year I completed the Grad Rebel Advantage Program, and I am also a McNair Scholar. I am a Sports Nutrition Intern for UNLV Athletics, where I have gained experience in learning how to support an athlete's growth and recovery through nutrition. I aspire to attain a Master's degree and become a Registered Dietitian.

My research interests include circadian rhythm and metabolism. I specifically want to better understand how a disruption to circadian rhythm can impact biological processes.

Involvement in RAMP will help me grow in all aspects that come with being a researcher. Having a mentor will allow me to gain firsthand experience with the research process, which I will then be able to apply to future studies.

MILAN PANTOVIC



**Ph.D. student,
Department of
Kinesiology and
Nutrition Sciences**

**Faculty Advisor:
Dr. Brach Poston**




Bimanual actions are required to accomplish numerous activities of daily living. Aging and neurological disorders can cause impairment of bimanual skills, such as eating, dressing, and typing. Typing skills in particular have become a highly important bimanual activity in everyday life and workplace.

One possibility for improving typing skills might be the use of a non-invasive electrical brain stimulation technique known as transcranial direct current stimulation (tDCS) during typing activities. This technique can modulate brain excitability and improve motor learning and performance in both healthy and clinical populations.

The RAMP Program will provide an opportunity for an undergraduate student to learn the latest techniques in the fields of human motor control and learning. In addition, obtaining research experience and publishing a paper while an undergraduate will greatly aid the student in obtaining future career goals.

NICHOLAS M. PUDAR


**I am a junior,
working towards
my B.S. in Nuclear
Medicine**

**Faculty Advisor:
Dr. Brach Poston
Graduate Student
Mentor: Milan
Pantovic**



Tasks such as writing or typing can become routine in most individuals' lives. Neurological disorders that impair motor control can make simple and daily tasks more difficult to complete. Finding a way to improve these problems is what my research interests are centered around. Rather than resorting to invasive techniques such as surgery, non-invasive techniques such as stimulation of the brain can be used to help improve daily tasks in affected individuals.

My future goals are to matriculate into medical school and become a radiologist specializing in the brain, and to integrate myself into the local healthcare community. The RAMP program offers many opportunities to become a better student allowing me access to opportunities in my desired field of research, that being motor control. The RAMP program will allow me to succeed in preparation for my future career through valuable connections and research opportunities.

RACHEL ALI RODRIGUEZ



**PhD student,
Neuroscience**

**Faculty Advisor:
Rochelle Hines**



Epilepsy results from excessive firing of neurons. A key site in the control of neuronal activity patterns is the axon initial segment (AIS). It remains to be determined how the morphology and composition of the AIS is affected in epilepsy.



We will analyze AIS morphology including length, width, tortuosity, and periodicity though development. Our mentee will learn Golgi stain analysis on the confocal microscope, immunohistochemistry, laser scanning microscopy, and data analysis. He/she will also gain experience from transcordial perfusions, tissue collection, and animal husbandry.



This project will give us understanding of the functional implications of AIS morphology and organization, providing new insight needed to develop therapies to control neuronal signaling.

AMANJOT KAILEY

**Junior, Working
towards my B.S. in
Biological Sciences**

**Faculty Advisor:
Rochelle Hines
Graduate Student
Mentor: Rachel Ali
Rodriguez**



I have been a student of science my entire life, I choose to live knowing I left no stone unturned. Research is a never ending field, and I am honored to be working with Rachel Ali Rodriguez on the restructuring of the axon initial segment in a mouse model of developmental seizures. I look forward to adapting to a new environment and learning new skills that can shape me into a better candidate for medical school. Throughout all my years of schooling I have pushed myself to conquer all my obstacles to achieve my dream of becoming a Cardiovascular Surgeon. The RAMP program has given me the opportunity to expand my horizons and it will help me pave my way to success, one step at a time.