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VISUAL, CREATIVE AND PERFORMANCE ART ABSTRACTS

March 25&26  
A Virtual Engagement



An Equal Access and Equal Opportunity University

# MURALS Schedule

**Thursday March 25<sup>th</sup>**      Personal and Professional Development      See page 5  
2:30 – 3:45 & 4:00 – 5:15

**Friday, March 26<sup>th</sup>**

12:00p – 12:20p	Welcome	
12:30p – 1:30p	SESSION I PRESENTATIONS	See page 6
1:45p – 2:45p	SESSION II PRESENTATIONS	See page 7
3:00p – 3:45p	Alumni Engagement Poster Gallery Open	
4:00p – 4:15p	Award Ceremony	



## 2019 MURALS Winners

Back Row, from left to right: Brandon Tighe, Cristian Cumber, Dominica Manlove, Jennifer Gomez, Lizeth Arellano, Agusta Irechukwa, Juri Moore, Luis Angel Santacruz

Front Row: Akosua Antobre, Danelle Lazcano Concelman, Zelle Moore, Varehya Pratt, Jayla Hodge, Ryleigh Gellas, Xandria Amash, Reed Featherstone, Jaquikayah Fields (standing)

# Welcome!

Welcome to the sixth annual Multicultural Undergraduate Research, Art, and Leadership Symposium, we truly appreciate your presence. With MURALS, we are intentionally reaching out to students of color in various disciplines and exposing them to a variety of undergraduate research opportunities. Mentoring, presenting research, networking, and learning about multicultural leadership are four main aspects of the program.

MURALS, in its 6th year, has become a true student success collaborative initiative that is made possible through efforts and dedication across campus. These efforts have demonstrated dedication and measurable outcomes that ensure racially minoritized students are affirmed in their educational efforts by providing support to ensure success.

MURALS participants will be able to:

- Increase their interaction and collaboration with students from diverse populations.
- Communicate confidently and constructively about their research/scholarly work with their peers, faculty, and staff.
- Independently synthesize and extrapolate information pertaining to their own research/scholarly work, including lessons learned, strengths, and ways to improve.
- Articulate significance of independent research interests as it pertains to their field, community, nation and/or world.
- Increase professional interaction through interpersonal skills with peers, faculty, and staff.
- Understand the fundamental characteristics needed to become a successful multicultural leader.

## **Acknowledgements and Special Thanks to:**

### **MURALS Co-chairs:**

*Bridgette Johnson*, Managing Director, Diversity, Equity, Inclusion and Student Success  
*Dr. Melissa Edwards*, Associate Director, Office for Undergraduate Research and Artistry

### **MURALS Planning Committee:**

Aileen Weed, Student Resolution Center  
Arlene Nededog, College of Natural Sciences  
Alexis Gomez, El Centro  
Brittany Otter, Student Disability Center  
Joann Cornell, Asian Pacific American Cultural Center  
Marie Tyrell, Student Athlete Support Services  
Miel McCarthy, Collaborative for Student Achievement  
Stephanie Zee, University Housing  
Tyrone Smith, Native American Cultural Center

### **Graduate Student Coordinators:**

Casey Phelts  
Hannah DeZara  
Jasmine Donkoh

A sincere thank you also to all of the Graduate Students who served as Graduate Student Evaluators

And to the many Faculty Guides, Evaluators, and Volunteers

# A Special Thank You:

No matter how you contributed, your contribution continues to be impactful! Because of YOU, we celebrate MURALS sixth year (2020 was cancelled due to COVID-19).

Once only an idea that has now turned into an intentional institutionalized academic enhancement program that provides opportunity for and focuses on historically underrepresented students' academic success.

More than 250 faculty, staff, and graduate students across campus had their hands in molding and shaping MURALS this year by serving as faculty guides, faculty judges, nominators, evaluators and/or volunteers and we just want to pause and say THANK YOU!

~MURALS2021 Planning Committee



# Personal and Professional Development Sessions

Thursday, March 25<sup>th</sup>



## **Session I: 2:30pm - 3:45pm**

Beyond the Researching of a Company – Values, Org Culture and Environmental Scans  
*Greg Head, Associate Director of Career Education, Career Center*

Leadership in a white supremacist, patriarchal, capitalist world  
*Carl Murray Olsen (he/him/his), APACC, Assistant Director*

Supporting Students who are Undocumented: From Campus to Career  
*Amy Cailene (she/her/hers) Career Education Manager, Career Center & College of Natural Sciences*

*Susana Muñoz (she/hers/ella) Associate Professor, School of Education*

*Connie Jaime-Lujan (she/her/hers) Associate Director, Access Center*

*Penny Gonzales-Soto (she/her/hers) Acting Director, Student Legal Services*



Get Out There! - Education Abroad & Semester at Sea

*Vanessa Hayward, Senior Education Abroad Coordinator, Education Abroad*

*Kallan Picha, Director of Admissions and University Relations, Semester at Sea*

Finding Undergraduate Research and Internship Opportunities in STEMM

*Dr. Melissa Burt (she/her), Assistant Dean for Diversity and Inclusion in the Walter Scott, Jr. College of Engineering*

*Dr. Lisa Dysleski, Associate Dean for Undergraduate Programs in the College of Natural Sciences*



## **Session II: 4:00pm - 5:15pm**

Ask Away! Liberal Arts & Scientific Research

*Dr. Shane Kanatous (he/him)*

*Dr. Eric Ishiwata (he/him)*

Tools for Well-Being

*CSU Health Network*

Pathway to Graduate Education

*Arlene Nededog, Director of Inclusion, College of Natural Sciences and Colorado*

*Wyoming Alliance for Minority Participation (CO/WYAMP) Site Coordinator*

*Dr. Colleen Webb, Associate Dean, the Graduate School and Professor, Department of Biology*



Showcasing Your Experiences

*Jenny Kim (she/her/hers) Career Center, Assessment Coordinator*

*Madigan Turnquist (she/her/hers) Career Center, Career Education Coordinator*

Creating Inclusive Presentations

*Brittany Otter (she/her), Assistant Director of Access & Accommodations, Student Disability Center*

# Presentation Sessions

Friday, March 26<sup>th</sup>

## Session I: 12:30 – 1:30pm

<b>Zoom Room 1</b>	<b>Zoom Room 4</b>	<b>Zoom Room 7</b>
<b>Presenters</b>	<b>Presenters</b>	<b>Presenters</b>
13 - Brooke Bennet (STEMM)	1 - Alexa Ware (CA)	8 - Maria Nguyen (CA)
4 - Cristal Dominguez-Vasquez (CA)	22 - Katherine Manzione (STEM)	51 - Fernanda Alarcon-Avila (SSH)
37 - Abighail Tekeste (SLL)	49 - Brooke Hudson (SSH)	70 - Mariela Paul (SLL)
50 - Emily Christine Guerra (SHH)	54 - Janaye Matthews (SSH)	31 - Rachel Jackson (STEM)
<b>Zoom Room 2</b>	<b>Zoom Room 5</b>	<b>Zoom Room 8</b>
<b>Presenters</b>	<b>Presenters</b>	<b>Presenters</b>
2 - Aline Marquez (CA)	20 - Jewelyssa Rodriguez (STEM)	9 - Marlena Giannone (CA)
39 - Dom Baca (SLL)	52 - Garrett Poitra (SSH)	21 - Judith Aviles (STEM)
14 - Destinee Danks (STEM)	69 - Gerson Flores Rojas (SLL)	58 - Kevin A. Clausen (SSH)
		43 - Maya Siegel (SLL)
<b>Zoom Room 3</b>	<b>Zoom Room 6</b>	<b>Zoom Room 9</b>
<b>Presenters</b>	<b>Presenters</b>	<b>Presenters</b>
3 - Binyamin Salzano (CA)	6 - Kasandra Anaya (CA)	10 - Miguel Rico (CA)
16 - Elsa Barcenas Ramirez (STEM)	29 - Mohammad Ramadan (STEM)	17 - Hannah Lucero (STEM)
48 - Babin Dinda (SSH)	53 - Grace Kirk (SSH)	
71 - Alejandra Cuevas (SSH)	59 - Kira Douglas (SSH)	

## Session II: 1:45 – 2:45pm

<b>Zoom Room 1</b>	<b>Zoom Room 4</b>	<b>Zoom Room 7</b>
<b>Presenters</b>	<b>Presenters</b>	<b>Presenters</b>
7 - Lia Moon (STEMM)	23 - Laurel Anderson (STEM)	30 - Natalie Rodriguez (STEM)
26 - Luna Li (STEM)	32 - Ryan Eddings (STEM)	42 - Leo Andrade (SLL)
44 - Nichole Sinaloa Acosta (SLL)	60 - Miya Giffin (SSH)	66 - Paz Pacheco Hall (CA)
46 - Swati Jujare (SLL)		61 - Noah Gonzales (SSH)
<b>Zoom Room 2</b>	<b>Zoom Room 5</b>	<b>Zoom Room 8</b>
<b>Presenters</b>	<b>Presenters</b>	<b>Presenters</b>
19 - Jacob Leavitt (STEMM)	47 - Alberto Moreno (SSH)	28 - Matthew T. Yohannes (STEM)
15 - Dillon Pitamber (STEM)	33 - Soleil Culley (STEM)	40 - Dulce Olmedo (SLL)
45 - Rayne Veazey (SLL)	35 - Vanesa Ramirez Cruz (STEM)	56 - Jonathan Ibarra (SSH)
		67 - Maab Abdalla (STEM)
<b>Zoom Room 3</b>	<b>Zoom Room 6</b>	<b>Zoom Room 9</b>
<b>Presenters</b>	<b>Presenters</b>	<b>Presenters</b>
18 - Itzel Martinez (STEM)	27 - Mahdi Ramadan (STEM)	24 - Lourlie Jannah Baniqued (STEM)
65 - Jennifer Gutierrez (CA)	55 - Jazmin Gonzalez (SSH)	41 - Fernanda Alarcon-Avila (SLL)
57 - Joslyn Orji (SSH)	34 - Tanya Prashanth (STEM)	63 - Sage Mednansky (SSH)
38 - Anh Bui (SLL)	36 - Zabiba Husen (STEM)	68 - Rachel Treitman (STEM)

# MURALS

VISUAL, CREATIVE AND PERFORMANCE ART ABSTRACTS



2019 Winners: Jaqukeyah Fields, Luis Angel Santacruz, Christian Cumber

### **A Love Story Like Queen and Slim**

Alexa Ware and De'Von Washington

*Biomedical Sciences; Sociology*

"A Love Story Like Queen and Slim" is a collective piece combining the painting titled "Reflections" with two spoken word pieces called "A Life with You and Fatherhood". The goal of this piece is to represent the love between a Black man and a Black woman while also depicting the negative representation that law enforcement has on Black people. "A Love Story Like Queen and Slim" represents the love that shapes a black relationship versus the law that confines the black individual. This is a collaboration between De'Von Washington, the author of the poetry and I the artist of the painting, acrylic on canvas. Out of sharing our work, we hope to represent our perspective on young Black love and the law.

### **I Couldn't, I Have, I Am**

Aline Marquez

Biology

who I am now. The theme is about how nature and nurture shaped me into who I am today. This mural will not only present myself to others, but it will also show me a clear understanding of the steppingstones I have conquered and those that lie ahead of me. My motivation was to show my growth from my preteen years where I wished I wouldn't wake up the next day through now. Growth, it is a constant feeling I sense; everyday I tell myself that I have conquered many things in life and they have yet to stop me from being the best version of myself. My piece was created with the help of Dr. Edwards, she was able to help me the idea to storyboard my experiences. I want my mural to be seen through a third person point of view and try to capture the emotions as I was going through these experiences. My hope is that this piece will help me better understand both who I am and that I am capable of accomplishing anything I set for myself

### **Lech L'cha**

Binyamin Salzano

*Zoology & Dance*

Lech L'cha is a dance for film consisting of a solo and duet that explore the ideas of self-discovery and finding individuality within community respectively. Lech L'cha is the title of the third parasha of Beresheit (also known as the book of Genesis). It is most commonly translated into English as "Go, go for yourself." This piece takes into account the cultural heritage and individual dominant and marginalized identities of the choreographer and dancers as inspiration for movement and performance. While the opening solo demonstrates the inner turmoil involved in losing and rediscovering your sense of self, the duet explores how we can relate that sense of self to our relationships with others, building each other up without losing who we are in the process. To heighten this dichotomy of community and individuality, the duet is set to a custom remix of two texturally unique tracks of music, isolated to either the left or right audio track. Within this section each dancer is primarily dancing to one track or the other, but through common movement, framing, and video editing techniques, the connection between them is held clear throughout. This work speaks to universal experiences and provides commentary on issues that have consistently arisen over the past year of collective global trauma and practiced isolation. It is my intention that through the movement, audiences will be able to see a piece of themselves, and walk away with a desire to connect with their identities and their community in an intentional way.

## **Reintroducing an Icon: A Story Portrayed Through Art & Science**

Cristal Dominquez-Vasquez  
*Fish, Wildlife, Conservation Biology*

Bison are an iconic species that roamed the Great Plains for thousands of years. Their numbers reached into the millions, bringing the thunder as they journeyed from Mexico to Alaska. Unfortunately, their thunder was silenced by the 19th century when colonizers arrived in North America. What seemed like a never-ending supply, the colonizers massacred scores of bison. Today, their numbers have dwindled to thousands. Bison are now kept as livestock, but there are some places where they roam free again. One such group is in Soapstone Natural Area. In 2015, 10 brucellosis-free bison, a disease that devastates these animals, were successfully introduced and as of 2019, blossomed into over 77 individuals. Since their reintroduction, bison have made a considerable impact on the lives of many. Bison are an integral part of Native American culture, so their presence on native land is held sacred to Natives. Furthermore, bison have strengthened the public's connection to grasslands and understanding of their importance, considering grasslands are usually one of the most decimated ecosystems. Taking this into account, Soapstone Natural Area is expected to thrive because bison are a keystone species, so they have great ecological influence over its biodiversity. Overall, my project will capture the successful conservation story of bison through a unique and artistic lens by taking the population data of the Soapstone bison and creating a painting from it. I hope that this unique approach, will inspire, and captivate an audience that would be perplexed by the dynamics of science.

## **REGENERATION / REBIRTH**

Cynthia Rodriguez  
*Apparel & Merchandising*

through our eyes

The subject depicted is framed by my personal experience; being a Hispanic woman in twenty-first century America. Inspired by artist Vincent Valdez who claims in his dedicated statement that, "Distorted social realities such as economic and racial inequality, conflict, hyper-nationalism, sanctioned violence, and other systemic patterns that historically serve as prelude for democratic decay compels me to reflect on my social environment." Being human is a given but all are not treated as so. Hispanics in particular are lynched by the horrors of society that eliminate our voices; stating the social injustice (poetry and symbols) forced upon Latin-x and Hispanic people in today's American society. Shocked by the denial of such history, representation, and stories that Hispanic women, specifically, have endured and continue to face is proof of such statement. In my piece I aim to create a powerful visual showing this pain of underrepresented Hispanic women. From that pain we are regenerated and reborn; represented by snake imagery and themes. My process consists of mixed media including acrylic on canvas, marker, pen, or graphite. Beginning with a sketch, my creation was born and then filled with color and symbolic motifs. Behind such creative process was the idea to let the passion, rage, and sadness aura about this topic pour out onto my canvas. As this piece stands before you, see that in order to understand the resilience of the Hispanic woman, represented regeneration and rebirth, we must conquer the social injustices as the minoritized in a world full of majorities.

## **Reconnecting: Art through Visual Storytelling**

Kasandra Anaya

*Art Education*

My creation depicts the interconnection between displacement and learning. Incorporating different elements from Pueblo culture, specific elements that are local to different pueblos, and specifically to my associated pueblo of Ohkay Owingeh. Also focusing on different geometric elements are critical factors within Native Pueblo art especially in traditional art forms to showcase the storytelling elements that these symbols represent. My motivation behind this work is to continue decolonizing my art practice and looking to incorporate more traditional knowledge practices within my work to continue reconnecting with my culture and seeing how it intertwines with my current experiences. For my work, I focus mainly on beadwork seeing it as an intertribal craft that showcases different ideas and meanings. In this piece, I used fiber reactive dyed canvas and attached it to a heat reactive stabilizer for my backing for my beading. My creative process began by ideating different concepts and looking at how to include pueblo elements that are central to traditional art practices as well as natural elements that are associated with pueblo traditions and history. By doing this it allowed me to create a piece that encompassed my concept of having symbols of change and resilience shown through both text and imagery. I hope by sharing my work it continues to increase different perspectives of the effects of colonization especially on indigenous communities and how being raised in predominantly white spaces being a biracial person affects different aspects of identity building.

## **Domino Effect: Who are we Questioning**

Jennifer Gutierrez

*International Studies & Spanish*

Among all ethnic groups accounted for on the U.S. census including indigenous identities, Hispanic/Latinx populations hold some of the highest high school dropout rates nationwide. Our society and systems fail to question why and instead stereotypes manifest. Through investigating internalized, institutional, and educational oppression we may come to find who we should be questioning as we reflect on the founding systems. Educational constructs as we know them today evolved from the concepts brought by white, wealthy men; hence, unintentional eurocentrism was embedded into our institutions' curriculums and values. Therefore, other identities' perspectives and experiences throughout history were not discussed or accounted for. As that continues today, it disseminates a feeling of unimportance and shamefulness belittling the identities through which students interpret life. This is further emphasized by staff selection and the structure of a single-stranded, teacher to student relationship. I'm diving into this complexity of our society to remind us all who are we questioning about the foundation of racial subordination and it's a prominent domino effect on marginalized identities, beginning in high school transcending into the professional world. To unravel this I will be presenting statistical information I receive through student-based surveys, quantitative institutional oppression data from academic scholars and personal statements to speak on this internal conflict of educational misfits. Ultimately, I want to open a dialogue on the indirect subordinating domino effect institutional oppression has from multiple standpoints and potential ways in which we can acknowledge and educate on this issue and move forward through unity.

### **Behind the Eyes**

Lia Moon

*Neuroscience*

An important discussion in gender equality is how men and women interact socially. My sketch represents the male gaze versus the female gaze and how social norms, expectations, and stereotypes affect how we view and treat others who have different identities than our own. One theme I wanted to emphasize is how women, sometimes subconsciously, alter their behavior in the presence of men in self-defense or it's a socially ingrained desire to be validated by men. This sketch empowers me, and hopefully other women, to not react to men by censoring their thoughts and actions. The purpose of this sketch is to invoke this sensitive conversation among adolescents so together, we can promote a healthier coexistence. The pencil is my favorite tool because of how versatile it can be when creating. As I sketched, emotions poured through me which led to the story it conveys now. I especially wanted to emphasize that the gaze is not restricted to the eyes, but also influences our actions and perceptions. This in turn magnifies to every level of society as it integrates its way into precedent. After looking at the image I procured, I want people to be disturbed enough to question today's society and wonder what they can do to evoke positive change.

### **Lest We Forget**

Maria Nguyen

*Graphic Design*

Lest We Forget is an illustrative series focused on racial injustices of Asian/Pacific Islander/Desi Americans (APIIDA) throughout history. In this series, I've chosen to focus on the imprisonment of Japanese Americans in camps during World War II, the estrangement of Vietnamese Americans during and after the Vietnam War, the distrust of people from the Middle East after September 11, and the recent brutal treatment of all Asians, primarily Chinese Americans, during the COVID-19 pandemic.

### **The Intersection of Poetry and Mathematics**

Marlena Giannone

*Mathematics*

Poetry occurs all around us, from the songs we listen to every day, to more formal poetry. Poems are an artform. They involve not only words but are often visual, sometimes have a rhyme scheme, a sense of rhythm, and many other aspects. They are always deliberate even when it seems like they are not. Mathematical poetry represents the intersection of something so abstract yet in the end concrete (poetry) with something that often starts out concrete but when you dive deeper into the material gets much more abstract (math and computer science). In my poetry class, I learned about form while simultaneously learning about the Fibonacci sequence, the golden ratio and how to derive it in my linear algebra class. From there I decided to write poetry surrounding the Fibonacci sequence along with any other math ideas I come across. My goal is to show how these disciplines connect and explain why they should intersect more often through structured poetry that represents a well-known, and important, mathematical/computer science sequence- the Fibonacci sequence. The numbers in the first few terms of the sequence can be used to represent the number of words in a line, lines per stanza, or even syllables. The beauty is in the experimentation. I hope people understand the Fibonacci sequence and other mathematical ideas, enjoy the poetry that comes out of it, come to appreciate the intersection of the two fields, and maybe change their way of thinking about one field or the other.

## **A Summary of 2020**

Miguel Rico  
*Civil Engineering*

Today there have been many different scenarios that range from protests for social justice to being in the middle of a worldwide pandemic. As humans we should focus on self-care as our mental health is important because it affects how we think, feel, and act as a human being. Also, working together to be healthy and take care of one another. The year 2020 has been something everyone looked forward to but sadly a year of hard obstacles. But now 2021 has become a new year of hope and the time to reflect on the past year. For this I have made a visual sketch of how I see today's world and how it had been impacted with yesterday's scenarios. We should reflect on how we want the world to be and who we want to be surrounded with.

## **Why Does this feel like Game Over**

Paz Pacheco Hall  
*English & Women Studies*

Why does this feel like GAME OVER is a multi-media poetry collection examining a shifting and unstable political and social landscape from a decolonial, eco-feminist lens.

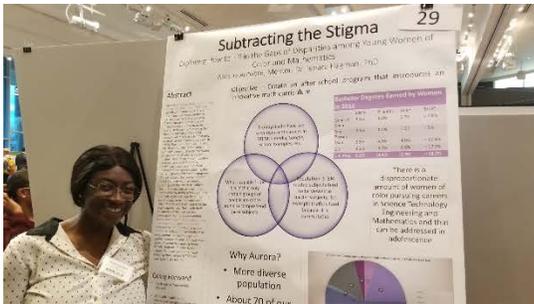
## **A One-Way Ticket**

Valeria Casillas  
*Biomedical Sciences*

In society, people are quickly defined by one's appearance but what about the story behind a person? Sharing my story was motivated by my personal experiences as a woman with a Hispanic background. The goal I intend to portray by doing this piece of art is to give others a sense of who we are, our culture, and our experiences. I want people to gain insight. My creation depicts bits and pieces of the journey I have been on. The sweat, tears, happy moments, and realizations that have led me to become the person I am. The main theme of this piece is "The American Dream". This refers to the ideal by which equality of opportunity is available allowing the highest aspirations and goals to be achieved. The Latinx community sacrifices everything in order to have a better life for themselves, and not everyone knows that. The pieces started out being created by putting an image of a Latina right in the middle, and from then on everything else surrounding it. For the medium, I wanted to do something more accessible, so I went with an online website. This allowed my creative process to be more fluent and obtainable with what I wanted to incorporate. After creating this piece of work, I hope that I get a lot of output from it. You could say that I am invested in what other people get out of it, I want to hear what they have to say about this.

# MURALS

## SERVICE LEARNING & LEADERSHIP ABSTRACTS



2019 Winners: Akosua Antobre, Varehya Pratt, Lizeth Arellano and Jennifer Gomez

### **Educational Equity for ESL Students**

Abigail Tekeste

*International Studies & Political Science*

Through my experience as an English Second Language (ESL) student and working with ESL students in FT Morgan high school, I have noticed the disparities that exist within the education system for ESL students. During my first year at CSU, I worked with students at Fort Morgan high school through the Key Communities with a focus on Education and Diversity, which further developed my interest to continue working with them. Through adversities such as language barriers and legal status, access to higher education is hindered, and my goal is to target this by creating a system of workshops centered around higher education through applications and scholarships for the seniors at Ft Morgan high school.

### **Vietnamese Student Association at CSU Improving Diversity**

Anh Bui, Krist Tran, and Tam Nguyen

*Biology; Chemistry; Biological Sciences*

For Vietnamese students like ourselves, it is harder to adapt to new predominantly white environments like college. As we suddenly question if we even belong here. Our goal for this project is to represent our community and create a sense of belonging by creating Vietnamese Student Association (VSA) chapter; A safe place for all Asian Cultures, but especially focused on Vietnamese. Other Asian affinity groups exist on campus, especially through the Asian Pacific American Cultural Center (APACC) however, likely due to the Vietnamese population size, there is not one that specifically provides awareness for our heritage or support away from home. We would bring exposure of our Asian Culture here to Colorado State and this chapter would build relations with other chapters from other schools and host events together in order to bring different VSA communities together. I believe that an VSA chapter would benefit the Asian community in the long run and create that safe space for all students, but especially for students of color and of Vietnamese descent. In order to start this organization, we have met with the coordinator of APACC and started the registered student organization filing process with SLiCE office in order to get the club started. In conclusion, we invite students to join and share our culture as well as to encourage the idea to create more diversity spaces here at Colorado State.

## **Circle Forward: Using Restorative Practices to Combat Incidents of Bias**

Dom Baca

*Art*

Colorado State University has a serious issue. Every year on CSU's campus there are hundreds of reported incidents of bias, as well as many that go unreported. With the debate about how we can hold others accountable for the harm they cause when participating in incidents of bias without hindering the first amendment right of free speech President McConnell has called upon the CSU community for answers. With the help of Dr. Patricia Vigil, Dr. Tom Cavanagh, Dr. Lindsey Pointer, as well as other faculty, myself and other student facilitators we propose to lead a Restorative Justice response to address incidents of racism, bias, and equity at Colorado State University and to work proactively to prevent these incidents from occurring. The way this could be done is by allocating funds to help train facilitators within the CSU community to lead Community Circles and Restorative Conferences. There will be a monthly meeting with the Restorative Justice Team to review the incidents addressed and provide further experiential training with case scenarios in alignment with Culturally Relevant Pedagogy addressing issues of racism, sexism, homophobia, antisemitism, and other topics of concern. During the fall semester of 2020, teams of two facilitators each will run the Sustained Restorative Dialogue process with interested students. This will help the university mitigate and restore the harm done when incidents of bias occur, thus creating a culture of care and culture through restorative principles and culturally appropriate relationships and interactions.

## **Adverse Childhood experiences (ACEs): How it's literally getting under our skin**

Dulce Olmedo

*Human Development and Family Studies*

For many years adverse childhood experiences (ACEs) have been looked at as a way to explain emotional, behavioral, and learning issues, as well as mental health issues. In recent studies, it has been found that ACEs have increased the risk of physical health problems later on in life. These health problems include but are not limited to lung cancer, cardiovascular disease, obesity, and stroke. This alarming discovery has found these experiences can be so severe and traumatizing, that it is literally getting under the skin and causing physiological alterations. ACEs have also been linked to affecting brain structure and development, along with alterations of the immune system and even the way DNA is read and transcribed. To measure ACEs individuals are asked to fill out the ACEs quiz which is a series of ten yes or no questions, focused on childhood maltreatment and household dysfunction. Unfortunately, populations that are especially susceptible to the health disparities due to ACEs are those who are economically vulnerable racial and ethnic minorities. These correlations are critical to be able to formulate better more effective preventative measures in both the developmental and medical communities. This discovery can lead to a longer life expectancy and better quality of life.

## **Resources for the Underrepresented**

Gerson Flores Rojas

*Journalism*

My name is Gerson Flores Rojas and for my MURALS project I want to focus on delivering the very much needed resources to student organizations that protect and shield marginalized students. ASCSU is the student government at CSU that manages student fees and allocates where the money goes and how it is used. Oftentimes though, they forget just how much certain student organizations need the resources. Sometimes there isn't enough representation within the student council to fully represent these marginalized groups. For my project I want to focus on increasing the representation students in the immigrant community, DACA students, and undocumented groups get. These groups are often overlooked, and it is our responsibility to make sure they are not. I will begin working with the senate to get these propositions shaped up, and passed. Many senators are already working to improve the living conditions of students at CSU and convincing them won't be difficult. But there are others that represent a darker side of CSU that do not represent the full student body. Working with them won't be easy, but by connecting with those at MURALS I believe I can do it. All I need is a platform where I can share this idea and hope others join me. Our fellow students need us more than ever and it would be neglectful on my part to stand by knowing I can do something to help.

## **Mental Health Support for Undocumented Students**

Fernanda Alacron-Avila

*Psychology*

Research and lived experiences show that undocumented students have to navigate college with added stressors. These added stressors can contribute to the development or the severity of depression and anxiety. Furthermore, mental health resources are inaccessible to undocumented populations due to cost and distrust. It is because of these obstacles that my project focuses on making mental health accessible to undocumented students at CSU. For over a year, I have helped create a strong relationship between Dreamers United, a student led organization on campus for undocumented students, and a multicultural counselor from the CSU health network. This is in an effort to: 1) destigmatize mental health for undocumented students in a safe space 2) expose a counselor at CSU to the undocumented student community and 3) increase student's knowledge over how to improve their mental health. This project is unique as I utilize my own identity as an undocumented student to accurately assess the needs of a rightfully hard to reach community. The effectiveness of this relationship will be measured through a pre and post survey. A pre survey was conducted during the Fall 2020 semester and a post survey will be conducted during the Spring 2021 semester to measure a change in student's beliefs about mental health, student's comfort with CSU counselors and knowledge over mental health. Future steps include analyzing the results of the post survey and expanding resources for undocumented students outside of Dreamers United by seeking structural change at the CSU health network.

## **Branching Out**

Leo Andrade

*Apparel and Merchandising*

The purpose of my project "Branching Out" is to help low income and minority students get access to resources and knowledge necessary for achieving higher education in the arts. Studies by the U.S Department of Education have proven that these students do in fact face less exposure to arts resources. For my project, I have partnered with Compass Community Collaboration School to bring workshops and mentors to students who want to gain knowledge and skills that will benefit them before and during college. I work closely with the school's leader and educational psychologist in order to brainstorm what options I can bring students. I want to work closely with students who want to go to college for the arts and technology. So far I have taught small workshops that target specific career/hobby interests such as intro to sewing and now intro to graphic design. This semester I've helped students with virtual meetings to help them brainstorm ideas for their own personal and school projects. I'm also currently organizing a virtual seminar where students at Compass will be able to ask current design and tech college students questions they are curious about. I'd like to have this project set up to the point where once I graduate the school can independently keep recruiting mentors for their current and future students. What I've learned thus far is that every student has special needs and are diverse in their interests and talents.

## **Creating Resources and Cultural Solution to Homelessness**

Mariela Paul and Bemnet Tefera

*Human Development and Family Studies; Sociology & Political Science*

As students that have worked with populations experiencing homelessness, we understand that there are barriers and blocks that prevent people from gaining the opportunity to escape homelessness. People often suffer from chronic homelessness, which means there are individuals who struggle finding the support they need for a year or more. In terms of children and young teens who are homeless, they often have physical and mental effects like increase in depression and anxiety, low self-esteem, less likely to finish school, etc. Therefore through our project, we strive to create a better environment that allows homeless people to ask for help. Our project focuses on providing a helping hand to adults and children in Fort Collins. To lessen the burdens of homelessness, we're going to create a website that families can use in order to find useful information. The website will provide information on where to get food, overnight shelters, job applications, and resume guidelines. It will also be a place where children can get access to educational tools, games, and YouTube videos on learning. In order to succeed in this project, we hope to make sure families feel cared for, provide families with necessary resources, and have a mentorship program that helps young children adapt to their surroundings. In the future we hope to see our project expand and explore the structure ways in which homelessness is perpetuated. By doing so, we plan on furthering our project by bringing the website to organizations located in Denver and possibly working with Rams against hunger.

## **Space to Speak, giving youth a leading voice in the sexual violence prevention movement**

Maya Siegel

*Business Administration*

"Founded in February of 2019, Space to Speak started as the shared goal between two CSU college freshmen to reach out to other young survivors as a resource of support. Since then, we've become a youth-powered organization dedicated to giving young people a leading voice in the sexual violence prevention movement. Young people need a leading voice. We need representation so that other young survivors know they aren't alone, and so that we can work to create solutions to reduce sexual violence for future generations. Since our launch, we have been committed to serving survivors through our survivor community that serves as a safe space for survivors and allies to engage in vulnerable conversations, our educational guides (which we often make in collaboration with other organizations or members of our community), and our across-issue campaigns. In collaboration with FreeFrom and the Survivor Coalition Project, Space to Speak helped raise over \$118,000 for survivors experiencing domestic violence (who reached out in need of support) from April to July of 2020! Our organization has been featured in Huffpost and MTV."

## **外国語: A Bilingual Bridge To Another World**

Nichole Sinaloa Acosta

*Biomedical Sciences*

Learning a second language can have many benefits in one's life such as improved mental function and memory, providing more career options to choose from, and exploring and understanding different cultures. Despite this, students often begin learning a foreign language around middle school, if not much later. To be able to speak as well as native speakers, it is recommended to learn the language by age 10. In addition, learning a foreign language as an adult can be challenging due to time constrictions and other responsibilities. To address this, my goal is to inform parents of young children and elementary schools in the United States of America about the positive effects of learning a foreign language. To achieve this, I will collect research demonstrating the benefits of learning a foreign language and testimonials who have gained increased career options due to their language abilities. I will create pamphlets and social media content to distribute this information with the hope to have all schools begin teaching foreign language in elementary school. Language studies could also be taught in churches, camps, or clubs. I will advocate for incorporating improved language learning methods such as journal entries, presentations, and conversations between students to go beyond simply learning vocabulary and sentence structures. With this implemented campaign schools could engage in more foreign language student experiences such as first-hand cultural immersions to improve their language skills as well as potential career opportunities.

## **The Denver School of Thought Model: A New Model that allows for the pursuit of your Passions**

Rayne Veazey  
*Biomedical Sciences*

The US public school model was built around the Industrial Era to allow for a larger population to enter the workforce, however, there has been little evolution within public education. Most traditional public schools are still using the lecture format where students are talked at rather than incorporating students into their own learning. Research has determined that people learn better when they are interested in topics versus learning for outcomes such as for tests. That led us to create the Denver School of Thought model, (DSoT) which allows for student-directed learning through their passions and interests. In 2017, School Design Club conducted a two-week DSoT "Pilot Journey", with Denver Public School students (12-17), teachers, and administrators. Collectively, they tested our model investigating the self-directed learning track. Students could employ different learning methods i.e., a student could choose the self-directed track for Algebra and the lecture track for Chemistry. Overall "Pilot Journey" was successful and students and staff members felt that they were productive and more intrigued to be in a space that promotes learning. We believe that when students are allowed to pursue passion topics, they will be able to meet district and state standards. This model aims to promote responsibility, determination, critical and analytical thinking. Graduates will be competent global citizens by being able to adapt, innovate, and self-advocate. Our hope is to expand this model to target more students, especially those that are less privileged to become passionate about learning and pursuing their interests.

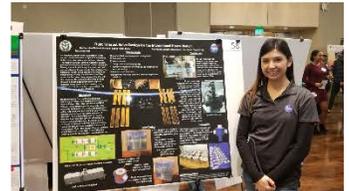
## **Powered by Partners: Empowering Youth through Mentorship**

Swati Jujare  
*Biomedical Sciences*

It is critical that children have the guidance they need to lead them on a healthy path, steering clear of drug/alcohol use, violence, and other crime. Though many children receive this support from their parents and families, many do not and are labeled as "at-risk," more prone to adulthoods characterized by mental illness and unemployment. This can, however, be nipped in the bud by introducing a peer mentor in an at-risk youth's life at a young age, which is the mission of the Powered by Partners organization. Partners matches peer mentors with at-risk mentees between the ages 7 and 17 to be a support system in their lives, so far supporting over 500 youth in our community. Utilizing a research-based program, Partners pairs mentors with mentees methodically in order to ensure that the partnership is the most effective in helping the youth excel both academically and socially. Post-mentorship data collected by the organization has proven that having a mentor does, indeed, improve the confidence and interpersonal skills of the mentee. As a mentor myself, I have been able to serve as a positive role model for my mentee by developing relationships through weekly mentor-mentee meetings, participating in volunteer work together, and coordinating with the mentee's academic counselors. By presenting this organization, I aim to recruit members of the CSU community to sign up to become a peer mentor at this local Fort Collins organization and leave an everlasting positive mark on a youth's life.



SCIENCE, TECHNOLOGY, ENGINEERING, & MATHEMATICS ABSTRACTS



2019 Winners: Xandria Amash and Reed Featherstone, Ryleigh Gellas, Brandon Tighe, Danelle Lazcano Concelman

## **Reconstructing the Natural Barrier to Promote Biodiversity and Health**

Adelina DeSantis

*Biology*

The destruction of natural habitat promotes disease in susceptible animal populations. A worrisome trend of species continues to disappear, and total biodiversity has dropped significantly. Through lack of biodiversity, alarming rates of disease, mutant genes, and competition between species for usable resources has increased. The remaining precious natural resources must be maintained, clean, and habitable for the species that has survived. This has not been the case and the majority of natural resources continue to be exploited. We are now seeing the consequences that affect humans such as an increased risk of animal to human disease transmission. In this project, I will discuss the effects of habitat loss across the globe, susceptible animal populations, with an emphasis on amphibians, and the diseases found to have the most impact on ecosystems today. The purpose of this research is to educate methods of preventing animal-human disease transmission, such as preserving natural habitats, in order to promote healthy populations. By working with, and prolonging our natural resources, all can live in unison.

## **The Acne Reducing Face Mask**

Brooke Bennett

*Biomedical and Electrical Engineering*

COVID-19 has impacted many in regard to physical, social, and mental capacities and the most constant reminder of its effects are our face masks. Wearing masks has changed the everyday appearance of individuals and is required to attend school for kids and work for professionals. Wearing masks 8-12 hours per day has caused an increase in acne or "maskne", a breakout of acne around the jawline, chin, nose, and cheeks due to mask wearing over long periods of time. My goal is to advocate the need for a new versatile, functional, effective, and breathable acne reducing mask to boost confidence, while still validating the importance of mask wearing. And because there is such a large demand for masks often city, state and country-wide, these newly designed ones must also be eco-friendly to prevent contributing to environmental waste. By conducting a survey to collect data from teens, adults, and medical professionals about their recent challenges with mask wearing in relations to acne, it will help to justify the significance of creating a product that is combating this challenge experienced by many people daily. These results, will be used to emphasis the immediate need to engineer new and better masks that are eco-friendly, effective against viruses, adjustable, versatile, while ultimately reducing acne. COVID-19 may not be the only disease causing the need for mask use therefore a functional mask that prevents loss of confidence is a necessity.

### **Far from Home and Normal**

Destinee Danks

*Zoology*

My research project represents the ongoing and hidden struggles that aren't public knowledge or experienced by everyone. It focuses on women of color that are first generation currently attending school. Common themes throughout my research are loneliness, confusion, and growth to overcome challenges. This means to me, that there are hardly any acknowledgements during these student's time in college, especially if they aren't local and live far away. They are put in a new way of life and culture that is very stressful. My goals behind my work are to give a platform for students that are first generation and aren't from their college's area, forcing them to change or forget their identities. The research I've created is being presented through data and inductive coding. I hope that my work called Far from Home and Normal gives those struggling, a piece of mind, knowing that they aren't alone. In addition, more support from others to help those experiencing the same situation.

### **The Path to Practice (Surgery)**

Dillon Pitamber

*Biomedical Sciences*

My goal is to inform any interested individuals through the process of becoming a practicing surgeon. I know that myself and others will be able to complete all of the steps to achieve this goal. This is incredibly important to everyone interested in becoming a surgeon like I am and even those who are looking to apply to medical school or other specialties should find it incredibly informative and interesting. For the methods, I will first research all steps so that I understand the path completely then I will also interview a few surgeons and physicians to learn more about the process firsthand. The final product will be a flow chart illustrating the process of becoming a surgeon that will be used to inform.

### **Coffee!!: How does caffeine work? And how does it reveal the process of addiction?**

Elsa Barcenas Ramirez

*Biochemistry*

Caffeine is a commonly consumed beverage. As a stimulant, it can change or affect different aspects of our body's biology. Many develop resistance to this substance. The process of tolerance to caffeine can help reveal the patterns of addiction. The goal for this project is to explore the mechanisms of caffeine in our bodies, caffeine dependence, as well as which age group is most affected by it. The methods for this included studying peer reviewed research on the process of how caffeine affects biological functions, and what factors contribute towards caffeine dependence. Additionally, we will survey students across campus to calculate how much caffeine they consume, and compare these values to other age populations. The data will be used to determine the scope of caffeine dependence and possibly addiction across campus. If results indicate that college students tend to be more susceptible to caffeine tolerance and therefore addiction compared to other age groups, then we could provide information and resources as a follow up for students to access their caffeine consumption, and possibly make changes.

## **Determining use of alternative genes to increase microbial production of ethylene via high-throughput assays**

Hannah Lucero  
*Microbiology*

Ethylene is a widely popular chemical used in the process of creating polyethylene and polystyrene, both of which are used in plastic packaging. Currently, the creation of ethylene relies on fossil fuels which creates high CO<sub>2</sub> emissions. As an alternative, anaerobic microbial ethylene production has been discovered as a by-product of sulfur salvage metabolism. It was found that engineering the bacterium where this pathway was first discovered with distantly related orthologs of the MTR-1P isomerase (mtnA) and MTRu-1P aldolase (ald2) pathway genes increased ethylene production compared to the original enzymes. Our goal is to search for additional, effective ald2 and mtnA orthologs that have the potential to further increase ethylene production. Candidate genes were identified by searching environmental sequence databases and come from environments such as wetlands, forest soils and bioreactors. Two hundred pairs of candidate genes were synthesized into plasmids and transformed into E. coli cells. Using a high-throughput spectrophotometric assay, we tested these constructs for enzyme activity in the ethylene synthesis pathway, identifying genes with higher activity than known controls. To date, we have tested all of the mtnA genes and a majority of the ald2 genes. Among top performers are linked pairs of mtnA and ald2 genes from the same organism, suggesting this pathway may be efficient in their particular environment. Additionally, our top thirty high-performing ald2 candidates have been validated in vivo demonstrating the effectiveness of our functional metagenomics pipeline to identify component genes to engineer an optimized microbial ethylene production system.

## **Do Women of Color Have a Harder Time Starting A Business?**

Itzel Martinez  
*Mathematics*

Have you ever wondered how many businesses are owned by women? To take it one step further, how many businesses are owned by women of color? The answer is quite simple, not many. There are about 5.4 million firms that are owned by women of color. This may sound like a lot but when you look at the number of firms operating in the U.S., which is 30.2 million, it barely makes about 18% of that number. What many women who try to get into this industry have stated is that not only do they feel isolated from the male entrepreneurs, but they find it difficult to get funding for their business because women don't fit the profile of a successful entrepreneur, which is viewed as male. The loan approval rates for businesswomen are 15-20% less than it is for men. One thing that can be done in order to make things slightly easier for women of color to know what they should expect when starting their own business is to make two 5-year financial plans, one stating a more traditional route that many businessmen would take and one showing what women of color might find more realistic and comparing the two. One thing that would differ between the two plans would be the number of loans taken out and the amount of each one because women are expected to have excellent credit and this will determine how much they will be approved for.

## **Assessing the Validity of Laboratory Training Programs Focused on Cultivating Self-confidence, Comfortability, and Laboratory Success in Students from Marginalized Populations**

Jacob Leavitt  
*Biochemistry*

The environments of collegiate laboratories are strenuous, especially for new and transfer students from historically marginalized populations. These students frequently describe their first experiences as uncomfortable, demoralizing, and unsuccessful. This should not be the case; labs should be about exploration and growth, a place where failure in pursuit of learning is encouraged. It is therefore ironic that students describe laboratories as places where they are not only penalized for failures but, more egregiously, made to feel they are incapable of conducting laboratory work. My proposed solution to this profoundly systemic issue is ungraded laboratory training spaces focused exclusively on nurturing self-confidence, comfortability, and success in the laboratory. The CSU United in STEMM program, in collaboration with the Office of Undergraduate Research and Artistry, is currently conducting a semester-long, paid training program that includes 25 students from various marginalized identities. Participants discover, plan, and execute multidisciplinary techniques in a space that promotes peer-teaching and fosters laboratory success. Upon entering the program, participants completed an intake survey regarding pre existing technical knowledge and personal feelings about laboratories. Additional assessments will be conducted mid-way through and upon completion of the program. Participant's progress will also be tracked through the remainder of their laboratory experiences at CSU. Data acquired from all assessments will be analyzed alongside comparable populations of students who did not participate in programs to assess the validity of training laboratories focused exclusively on cultivating self-confidence, comfortability, and success in the laboratory.

## **How Height Affects Everyday Aspects in people's Lives**

Jewelyssa Rodriguez  
*Ecosystem Science and Sustainability*

After a year of living in a national pandemic, I have noticed changes in the way that myself and students around me complete their schoolwork. Pre-pandemic, or prior to 2020, most of my notes for classes were written on paper, and any essays that were written on the computer had to be printed out; even worksheets and quizzes were hard copies. Now our classes are virtual, and we have made the switch from taking notes on paper to using computer and virtual applications, such as Word and Canvas. My goal is to explore how this transition from paper has affected pollution, and if there are other ways that the pandemic has led to an increase or decrease in environmental pollution. I hypothesize that pollution that is correlated with paper trash decreased, while pollution attributed to greenhouse gases, electricity, and fabric trash will have increased. I will create a survey that consists of questions demographic as well as their pre and post pandemic paper consumption compared to their computer/virtual usage, along with other clarifying questions. I will also look at different studies and experiments that pertain to the amount and causes of pollution emissions from both paper and electricity. Upon obtaining results, I plan to create educational programs that will inform others of their impact of consuming different resources, and how to reduce the amount of pollution by knowing the least polluting methods

## **Undergraduate STEM Students with Marginalized Identities**

Judith Aviles

*Biology*

For this study, I looked at 10 undergraduate STEM students with marginalized identities assignments out of 39 students. The assignment that prompted this study were the students writing a letter to their fourth-grade self, reflecting on the ways they have changed to the things that have remained constant in their lives and what they wish their fourth-grade selves to know. Sources for this material were collected through a first-year learning community program revolving around students with a declared major in STEM. The reflections of the students were collected and coded using an inductive thematic analysis. At this moment I am still conducting my research and have not been able to conclude any results or findings.

## **The Impact of Altitude Training on NCAA Division I Female Swimmers' Performance**

Katherine Manizone

*Statistics*

This study investigated the effects of collegiate altitude training on collegiate swimmers' times, for those with previous altitude training background and not. The objective of this study was to test the hypothesis that having trained collegiately at altitudes of above 5000 feet and training pre-collegiately at altitudes of above 5000 feet compared to altitudes of below 5000 feet will result in different observed time drops between collegiate and high school best times. We considered swimmers from four NCAA Division I, Mid-Major conference colleges located in Colorado at altitudes of approximately 5000 feet, spanning best pre-collegiate and collegiate times of 167 sprint event, 164 middle-distance event, 69 distance event swimmers were collected. The subjects were matched for event specialty (sprint 50 yard freestyle, middle distance 200 yard freestyle, or distance 1650 yard freestyle), and whether or not they trained at altitude prior their collegiate careers. Time improvements from best pre-collegiate times to best collegiate times between altitude groupings across all event groups. We conclude that there is no significant drop in time between swimmers who swam at below 5000 feet in elevation prior to their collegiate careers and those who swam at or above 5000 feet in elevation. We further evaluated changes by school and found significant differences in time drops between school for 1650 yard distance freestyle swimmers.

## **The Intersection of Computer Science and Biology**

Laurel Anderson  
*Biomedical Sciences*

The world is becoming increasingly dependent on technology, bringing new methods of data analysis into existence. If these methods would advance biological research, they should be made more accessible to scientists in those fields. My project ventures to identify the most common types of computer science programs used in biological research labs for data collection including different coding languages or programs, such as artificial intelligence. I will gather their function and efficiency as compared to non-coding tools. This experiment includes surveying researchers to ask if they use any computer science programs in their research, which types, for what, and if they think it is more efficient than analog methods. Afterwards, non-coding and coding methods will be compared for speed and accuracy. This information will divulge the most used programs and the specific applications in biological research labs for these methods. If results indicate that coding methods are more efficient, that data should be used to educate more researchers in the field on the methods so they can become used more widely and going forward introducing a computer science portion to biology degrees so upcoming researchers can become familiar. If results demonstrate that coding is not currently applicable to biological research, the next steps should be to work with computer science experts to find ways it could be incorporated to advance scientific research.

## **Cycling through Diabetes: The Impact of Diabetes on the Mitotic cycle in Wound Healing**

Lourlie Jannah Baniqued  
*Chemical and Biological Engineering*

Diabetes is a disease that prevents the body from producing or responding to the hormone insulin. One of the effects of diabetes in the body is longer wound healing. In wound healing, mitosis, the cell cycle that divides one cell into two daughter cells, happens by replicating the skin cells which make copies that then cover the wound. Because diabetes causes longer wound healing time, we can hypothesize that mitotic cycle is also affected by the disease. Through extraction of skin cells from healing wounds, both from people with and without diabetes, and studying the cells under the microscope and biologically to assay the timing and process through each phase of mitosis. The results of this research can be used to further investigate what causes this time difference. If the hypothesis is validated, researchers may think of a way to regulate and normalize the mitotic cycle in a person with diabetes, and this can significantly help older people with diabetes because as we age cell regeneration diminishes. If the hypothesis is null, then researchers may look at other possible reasons of longer wound healing for diabetic people.

## **How IgE affects people with asthma and how the mechanisms of asthma medications work to interfere with the process**

Luke Davis  
*Microbiology*

IgE is one of five types of antibody found within the human body and is responsible for helminth (parasite) infections, along with allergen responses. People with asthma can have asthma attacks or episodes that are triggered by allergens along with other triggering factors. When an asthma attack/episode is occurring due to allergens entering into the body through mucous membranes, and attaching to the IgE antigen receptors, the muscles surrounding the throat and pathways into the lungs get tight and inflamed. Along with this response due to the activation of IgE on mast cells, chemicals get released that produce mucus within the airways, worsening the effects of asthma. Mucus has both benefits and drawbacks within the body. When produced mucus provides the body a way to prevent pathogens or any other foreign invader (ie allergens) from migrating further into the host's body and potentially damaging it. The drawback or at least within this scenario, mucus makes it more difficult to breathe for people who live with asthma. Now that the general idea of asthma has been explained the mechanisms at which asthma medications can interfere with certain responses from the activation of certain molecules. Many of the asthma medications out today focus on relaxing the muscles that contract and inflame to make it easier to breath and helps to interfere with other parts of the process.

## **Can You Speak Cat: Creating an educational platform on cat facial/body language**

Luna Li  
*Zoology*

Cats are often misunderstood since they have subtle and complex facial/body cues making them seem unapproachable. The information gap of properly interpreting cat facial/body language can cause dislike or prejudice against cats or worse, cause dangerous human-feline interactions to escalate. The goal of my project is to create an educational tool for the general public to learn how to read cat body/facial language. If more people understand how to correctly read cats, it could ease some of the common cat misconceptions, increase adoption rates in shelters, and decrease or prevent dangerous human-feline interactions brought on by lack of awareness. To accomplish this, a general population subject group will be asked to fill out a survey with questions about cat facial/body signals. That data will be used to compile a collection of common and misunderstood cat cues and pair them with comparable human facial/body expression. Next, the subject group will retake the initial survey again, to determine the effectiveness of the comparisons by measuring any changes in the subjects' scores on reading cats. When modified methods result in greatly supporting enhanced cat literacy, the human/cat association survey will be transitioned into a learning platform to be used by schools, shelters, vet clinic, etc. Going forward this tool would be incorporated in children's learning as to normalize understanding cat cues from an early age.

## **Is Social Media Making You Antisocial?**

Maab Abdalla and Makida Worku  
*Mechanical Engineering; Biological Science*

Social media has proven to be extremely impactful in connecting people, allowing for an easier way to communicate and spread information. However, despite the benefits of social media there have also been many negative side effects on human health, specifically for mental health. Social media present specific standards of beauty, entertainment, and success which creates a foundation for algorithms to continue to promote unrealistic expectations. Social media plays a significant role in human communication today, which means that its impacts are widespread. It is important to acknowledge and identify its negative impacts on mental health, especially since mental health issues are still stigmatized. The goal of this research is to discuss how the technology surrounding social media is currently designed to promote certain standards which lead to mental health issues. This research is focused on determining the implications of these standards on self-perception, outlook, depression, anxiety and other mental health issues. Research shows that the majority of people who seek help for mental health issues do not receive help due to limited access. More education around mental health results in more research into major effects of mental health like social media. Studies show how social media algorithms re-inforce biases/standards which creates a space where people experience fatigue, isolation, and dissatisfaction. Based on the research, we can conclude that social media is detrimental to mental health and that it is necessary to do more research on the relationship between social media and mental health.

## **Mutant DISC1 protein formation effect on the development of Autism**

Mahdi Ramadan  
*Biochemistry*

In this thesis, I will observe how dysfunctionality of DISC1 proteins lead to neurological disruptions causing autism. DISC1 or Disrupted in schizophrenia 1 is a protein found to be correlated with the formation of psychiatric disorders. Today autism (ASD), a neurobehavioral disorder, is being examined through the view of genetics as this will bring insight in further understanding the genetic development of autism. When observing DISC1 protein, its functionality is highly essential within cells as it places a large role in neural development as well as neural plasticity (Le Strat et al). In this paper we will also explore the formation of DISC1 as well as its structure to understand its protein-protein functionality. Although correlation between the development of schizophrenia and DISC1 has been seen, autism spectrum disorder and DISC1 follow minimal research as the development of autism is heterogeneous. To expand, autism thus can be developed from environmental changes, as well as genetic factors. Furthermore, Kilpinen's research done on 98 Finnish families by evaluating 16 DISC1 markers will be used to determine the connectivity between DISC1 and autism spectrum disorder (Kilpinen et al). With this, further therapeutic treatments may be observed after studying the correlation to enhance the livelihood of people with ASD.

## **Vanadium - Will this Element Protect Your Brain?**

Matthew T. Yohannes

*Neuroscience*

In the late 19th century, a number of scientists discovered an element called "vanadium". It's been used in treatments for a variety of diseases. Well known therapeutic applications of vanadium compounds include various anti-diabetic and anti-cancer properties. Several studies have made observations of the many neuroprotective effects associated with vanadium compounds. Certain studies have also shown that in cases of stroke and spinal cord damage, vanadium compounds have been used to prevent neuronal cell death and injury. They mainly do so by acting as Protein Tyrosine Phosphatase (PTP) inhibitors. Phosphatases are an important class of enzymes that can remove phosphate groups from various biomolecules, and they are thought to be involved in the development of neurological disorders. In order to model vanadate's effectiveness, we can use programs such as PyMOL to download crystal structures of various proteins, and then conduct structure activity relationship (SAR) studies, which can allow us to identify how various vanadate compounds bind to notable targets, such as PTP1B (Protein Tyrosine Phosphatase). Through carrying out these studies, we can then verify how these vanadium compounds can prevent the phosphorylation of biomolecules.

## **Synthesis and Stability Exploration of Vanadium-Containing Polyoxometalate (Me<sub>4</sub>N)<sub>6</sub>[V<sub>15</sub>O<sub>36</sub>(Cl)]**

Mohammad Ramadan

*Biochemistry*

Polyoxometalates have become a popular discussion over recent decades for their properties in a range of fields, from medicinal chemistry to material chemistry. Polyoxometalates are large cage structures that consist of a cluster made up of transition metals and oxygen atoms that may also be centered around an anion central atom.<sup>1</sup> In a polyoxovanadate, the transition metals are vanadium atoms. These and other vanadium containing compounds demonstrate great effects on STZ induced diabetic rats in animal studies. All of this progress has been very beneficial to the advancement of vanadium containing pharmaceuticals, however there is a major drawback to working with vanadium. Vanadium is a trace element that can exist in the human body in units of micrograms. For vanadium to be effective against metabolic diseases such as diabetes, the dose may be too toxic and harmful. Diving deeper into understanding the stability of these compounds under biological conditions is vital for approaching a contender for anti-diabetic vanadium containing compounds. The purpose of this project is to synthesize and perform stability tests on a promising polyoxovanadate, (Me<sub>4</sub>N)<sub>6</sub>[V<sub>15</sub>O<sub>36</sub>(Cl)]. V<sub>15</sub> has shown to be effective in diabetic studies. Chemoprotective studies on the compound, has provided insight on the chemoprotective properties of V<sub>15</sub> and its reduced effects of toxicity.

## **Ecological Niche Model for Stanleya Pinnata and its varieties**

Natalie Rodriguez

*Biology*

The purpose of this research project is to examine selenium (Se) hyperaccumulation in *Stanleya pinnata* as an adaptive mechanism. *Stanleya* is a genus endemic to the Western USA, and one of the few genera that contain hyperaccumulators. What function does the non-essential element Se have for these plants, and what has driven the evolution of this trait? These questions are at the heart of my project, which combines my interests in both conservation uses and plant physiology. Through creating ecological niche models for all *Stanleya* species, I hope to be able to observe where certain hyperaccumulators exist and if there are any correlations between the location of these plants and soil type, elevation, variety, climate, etc. I aim to investigate whether gain or loss of Se hyperaccumulation in *Stanleya* follows biome/niche shifts, and if hyperaccumulators have distinct ecological niches from non-hyperaccumulators. I expect to map the distribution of *Stanleya pinnata* hyperaccumulators and to be able to address the questions listed above. More specifically, I plan to have a finalized ecological niche model for *Stanleya pinnata*, including all (4-5) varieties. After georeferencing and data cleaning, which has already been done, I am currently using QGIS to complete climate layer processing and ecological niche modeling. This data will possibly be used in a research paper examining Se accumulation in *Stanleya* and how it contributes to plant fitness, as part of a larger project in the Pilon-Smits lab.

### **Amphibian CTmax**

Rachel Jackson

*Fish, Wildlife, and Conservation Biology*

How organisms will respond to warming temperatures is of key concern for scientists in the 21st century. Uncovering relationships between thermal tolerance and environmental temperatures is the first step towards predicting responses to warming temperatures. Performance and physiology for some species, such as amphibians, is almost entirely dictated by environmental temperatures, heightening the risk of warming for these organisms. In this study, we investigate trends in thermal tolerance along elevation gradients for two amphibian species that occupy the same habitat, the Coastal tailed frog and the Coastal Giant salamander. These species occupy cold, fast-flowing montane streams in the Pacific Northwest where their elevational range represents a natural thermal gradient. Combining thermal tolerance experiments with current stream data from multiple populations across both species, we will investigate whether these two species have similar evolved physiological responses to environmental temperatures. We will then use temperature projections to calculate when future temperatures are expected to exceed thermal tolerance capacities for these species. Taken together, these data will allow us to understand whether these two amphibian species' thermal tolerances have been similarly shaped by stream temperatures and whether they have similar vulnerabilities to future warming.

### **Colocalization of PACAP within Estrogen Receptor Beta Neurons**

Rachel Treitman

*Fish, Wildlife, and Conservation Biology*

Pituitary Adenylate Cyclase-activating polypeptide (PACAP) has been found to innervate certain parvocellular and magnocellular neurons located in the bed nucleus of the stria terminalis (BnST). The BnST has been known to coordinate states of anxiety and stress and plays an essential role in maintaining homeostasis. By localizing PACAP neurons within the mouse brain, specifically the BnST, more can be understood regarding the contribution PACAP plays in these neuroendocrine functions. Research focused on using immunofluorescence to locate PACAP, localizing the cell groups in comparison to receptors that express estrogen receptor beta. Estrogen receptor beta neurons (Erbeta) function to modulate several biological processes, including those involved in anxiety. Since these are involved in similar processes, colocalization of PACAP within ERbeta neurons would suggest functional similarity. Wildtype ERB-eGFP mice were bred and genotyping on ear punches was used to confirm the genotype of these mice. The females then underwent vaginal cytology to determine the stage in the estrous cycle for optimal timing of sacrifice. ERB-eGFP mice were then killed using transcardial perfusions and the brain tissue was fixed in PFA. The presence of both the neuropeptide and ERbeta neurons was discovered using immunohistochemistry with biotin amplification. Upon initial observation, PACAP was seen to colocalize with some of the ERbeta neurons. Further cell counts will quantify the specific amount of colocalization, between PACAP and ERbeta, if any.

## **Can Tesla Save the world**

Ryan Eddings

*Business Administration*

Typical business strategy focuses on short-term profitability in order to be attractive to the stock market and raise capital. This leads to sustainable initiatives being viewed as an expense that harms stock market reputation. Tesla, an electric vehicle and lithium battery manufacturer, accelerates the world's transition to sustainable energy by focusing on renewable energy. Tesla's strategy is different because it focuses on long-term gain while momentarily sacrificing profitability. Tesla still raises capital to further invest in the company by leveraging global excitement around sustainability with strong PR campaigns to raise stock market valuation. Tesla's business model and financial strategy are important because it proves a company can pursue sustainability while being one of the most valuable companies in the world with a market capitalization of \$847.7 billion. Many companies avoid pursuing sustainable initiatives because of the high costs negatively impacting profitability. Tesla can indirectly save the world by providing a framework these companies can replicate, progressing the global mission to limit carbon emissions and avoid global heating to two-degrees celsius.

## **Bees at the Table: Ecological and Cultural Connections between African American and Native American Cuisines What could that mean in today's climate crisis?**

Soleil Culley

*Biology*

"What are the ecological and cultural connections between squash bees, African American, and Native American food cultures? Two subfamilies (Peponapis and Xenoglossa) were identified as bees of interest because their host plants (Cucurbita) could be connected to food cultures. Cucurbita was found to be a common host squash species found throughout North and South America. Searches in academic literature databases connected cultural and ecological knowledge to agricultural history of the Trans-Atlantic slave trade. Skilled slave labor and products were not the only trading goods; various plants were transplanted during the Trans-Atlantic slave trade. Throughout history squash became more integrated in food culture as seen throughout a series of cookbooks created by Native and African American people. Phylogenetic history of squash bees and Cucurbita connects both groups to species in Africa with divergence events caused by dispersal into milder climates. This research connects squash bees to food cultures, and the possible consequences that today's environmental conditions have on cultural food systems due to today's environmental conditions.

## **Eating Chemicals: exploring food choice with molecular gastronomy**

Tanya Prashanth

*Biological Science*

In recent years, there has been an increasing trend in food preparation, molecular gastronomy, that alters the chemical composition of foods to change the appearance and texture while maintaining the same flavors. While more commonly found in fine dining restaurants, the increasing demand for molecular gastronomy has transitioned into casual restaurants' menus. Fort Collins is an involved college town with a large student population, but the COVID-19 pandemic, greatly decreased customers. A majority of FoCo's 18-24 student population is unfamiliar with molecular gastronomy, potentially explaining why restaurants in Fort Collins haven't widely adopted this trend yet. Therefore, I will first test students' preference for molecular gastronomy prepared foods. Groups of people will be given rounds of different food items to eat; one prepared traditionally and by using a molecular gastronomy method. Afterward, participants would fill out a multiple-question survey to record their observations and responses. I hypothesize that students more familiar with the food concepts will be more likely to try and prefer food prepared by molecular gastronomy. The results of this study could help restaurants in Fort Collins participate in this increasing food trend and better attract customers in order to help recover from the financial losses due to the COVID-19 pandemic.

## **Latina Women in STEM**

Vanesa Ramirez Cruz

*Health and Exercise Sciences*

For this study, 8 assignments from first-generation Latina women majoring in Natural Sciences were used from a class of 40 students of varying identities. The prompt for the assignment was to write a letter to their 4th-grade self discussing how their perspectives have changed or remained similar and what they would like their younger selves to know. The course in which this assignment was collected pertained to a first-year learning community program focused on students having declared a major in STEM and holding a marginalized identity. This project will focus on the experiences that these women have shared in these letters and further analyze whether they contain similarities due to overlapping aspects of their identities that may have brought a comparable upbringing. Once inductively coding their responses, this study revealed that even though many of their struggles aren't verbally shared with one other, they have experienced similar challenges that have led them to this similar point in life.

## **Seasonal and Diurnal Prosthetic Gel Lining for Prosthetic Limb**

Zabiba Husen

*Biomedical and Chemical and Biological Engineering*

A common issue with prosthetic limb patients is the volume limb loss caused by diurnal, daily, and seasonal changes, particularly in cold weather. This can lead to discomfort and poor use of the prosthetic. A study from the Journal of Rehabilitation Research and Development found an average diurnal percent change of -0.18% (mL) across all subjects. The insufficient "solutions" include increasing or decreasing external elements such as padding, air bladders and socks, but these methods are temporary fixes for diurnal volume gain, not loss. Generally, these options do not compensate for seasonal or diurnal fluctuations. Other supposed solutions include a vacuum-like structure, which emulates the proposed lining however, it adds a significant amount of weight to the overall design and requires a hyperbaric system. The use of these methods are also arduous and require the removal of the artificial limb. My solution to this issue is two-fold: create a permanent aqueous water-based gel liner that expands in the cold, and a mechanical double-walled contractionary/expansionary device to allow adjustment by the liner. The contractionary device will appear with one solid piece of metal on the outside, and four separate pieces in the interior, with the gel liner in between. The mechanical piece will be covered with a synthetic lining to prevent contact to the residual limb. This limits the amount of manual adjustment, reduces contact points between the skin and prosthetic, corrects potential volume fluctuations in the limb, and provides shock absorption to the residual limb.

# MURALS

## SOCIAL SCIENCES & HUMANITIES ABSTRACTS



2018 Winners: Augusta Irechukwa, Juri Moore, Jayla Hodge, Zelle Moore

## **The Gray Wolf- What Will Happen to Colorado's livestock with Wolve Reintroduction**

Alberto Moreno

*Political Science*

Proposition 114, The Gray Wolf Reintroduction Initiative (2020), was narrowly passed by Colorado residents through a ballot initiative on November 3, 2020. The highly contentious proposition passed with a margin of 1,590,299 yes votes (50.91%), and 1,533,313 (49.09%) no votes. This proposition was designed to direct the Colorado Parks and Wildlife Commission with the ability to produce and implement a comprehensive plan to reintroduce gray wolves west of the continental divide by the end of 2023. Various interest groups and organizations have advocated for the proposition, reasoning that bringing back wolves has potential to have similar effects as seen in Yellowstone: improving ecological conditions by assisting in controlling elk and deer populations, thus mitigating over-grazing that leads to erosion. Conversely, interest groups and organizations have also led a campaign in opposition, citing that wolves are already appearing in western Colorado, declaring this initiative is a misuse of taxpayer dollars. Also, reintroducing wolves to western Colorado will severely hinder Colorado's agricultural sector, especially the beef cattle industry. It's stated in Proposition 114 under Clause (4)(a) that the General Assembly "shall make such appropriations as necessary to fund the program" including fair compensation for livestock losses", However a lack of communication and education revolving the multiple negative affects wolves can have on living livestock is evident. By analyzing both arguments of Proposition 114, we can explore possible, feasible amendments that may be made to the initiative, as well as potential ways to move forward successfully.

## **Addressing Mental Health Stigmatism in Active-Duty Service Members**

Alejandra Cuevas

*Political Science*

My research captures the difficulties service members face when dealing with mental health, and the stigma that surrounds it. During my active-duty service, I personally struggled with mental health, and two of my Marines attempted to commit suicide. Unfortunately, one did not survive, and they were both struggling with mental health. My objective is to shed light on this issue which is rarely addressed and is seen as a weakness in service members, and hopefully bring about change. When I was struggling, stigmatism stopped me from receiving help because I did not want to be seen as weak. I experienced maltreatment, such as being told that leaders are not allowed to have bad days. I want to bring awareness to this issue and promote change because it can save the lives of so many service members; it could have even saved the lives of 4 service members that I know who took their own lives due to mental health struggles. I will be using the iPoster method to present my research which discusses my friends' personal experiences as well as mine. I would like to promote change in the form of more advanced mental health training taught by mental health professionals instead of service members. Ultimately, I want to change the way mental health in the military is handled because it can save so many lives, and because I know personally what it feels like to be in a lonely dark place and be treated differently because of it.

## **India's Response to the Rohingya Crisis**

Babin Dinda

*International Studies & Anthropology*

"The Rohingya Crisis has slowly started to gain traction on the international stage as more and more refugees flood the neighboring countries of Myanmar. Since 2013 Indian provinces neighboring Bangladesh and Myanmar i.e., West Bengal and Assam have witnessed a gradual increase of infiltrating Rohingya refugees. This steady increase of permanently settling refugees has been a cause of grave concern for the Indian Government and adding fuel to the fire, the recently re-elected right-wing-nationalist government has taken decisive stands to expel the refugees as well as calling them a breach of national security. This research analyzes the Indian foreign policy strategy, economic policies, and its regional ambitions, and their effects on the state's response to the crisis. The study concludes with policy recommendations to reform India's refuge and immigration process, and multilateral ventures ensuring the protection of the refugees amid regional political and economic competition between India and China."

## **The Divide Between Black Athletes and Historically Black Colleges/Universities**

Brooke Hudson

*Political Science*

"Why are Black athletes committing to and attending Predominantly White Institutes instead of HBCU's? This is important because the past year in the United States has shed light on important racial issues. The National Collegiate Athletic Association (NCAA) being compared to modern day slavery, black bodies are being exploited and the "white man" is benefitting. My goal is to identify the major factors that go into why Black athletes choose to attend a PWI. The hypothesis is that HBCU's receive significantly lower amounts of funding for athletics even though they are D1. Also HBCU's do not have the recognition that PWI's do within the NCAA, so when a high school athlete gets an offer from a PWI and an HBCU, their choice is usually a PWI. I will send out a survey to athletes at 5 PWI's and 5 HBCU's. Questions will vary from why they committed, when they committed, what sport they play and how is/was their experience at their respected colleges. I do not have results, but I will use the research to further move the conversation regarding the black athlete experience in Division 1 athletics. If the results show what is expected I think I would try to become an advocate for funding within athletics for HBCU's. I hope this research would spark a conversation between athletes to really think about why they choose the schools they attend, and if it's solely for funding reasons and for show."

**Feeding Sovereignty: Understanding Regenerative Kinship Relationships within Indigenous Food Sovereignty Movements**

Emily Christine Guerra  
*Ethnic Studies*

The purpose of this study is to provide a definition of food sovereignty located within Indigeneity. In alignment with this purpose, the study centers on the following research questions: What is food sovereignty? And, how are food and sovereignty necessary for enacting Indigenous traditional lifeways? My aim in this research is to articulate the relationship between food sovereignty and kinship relations within Indigenous societies and communities. Principally, this research project explores the research questions in relation to Indigenous knowledge and practices. In order to accurately address the research questions posed, my study draws on methods from contemporary literatures, practices and e-sources of Indigenous food sovereignty. Moreover, the results from this study will demonstrate the relationship between food and sovereignty within Indigenous societies as they are connected to roles and responsibilities. Finally, from sharing this research my hope is to demonstrate current practices of culture regeneration and engagement with traditional ways of being and ways of knowing.

**"Seguimos en las Sombras (Still in the Shadows)": A Multisite Qualitative Analysis of COVID-19's Impacts on Working Latina Mothers in Colorado**

Fernanda Alacron-Avila and Natalia Plascencia Gonzalez  
*Psychology; Women's and Gender Studies*

This ethnographic research examined the impact of the COVID-19 pandemic on immigrant working Latinas in three significant economic sectors in the State of Colorado. These sectors include: Morgan County known for agricultural labor, Roaring Fork Valley known for tourism and recreation and the Denver Metro area known for service employment. Our research is crucial because other reports have failed to integrate the intersectional identities of immigrant working Latinas. Further, our research is unique as we utilized our own identities as strengths in an effort to produce culturally sensitive and moral research. As undocumented immigrant Latinas we were able to bypass distrust and language barriers which are common obstacles when participating in research with marginalized communities. In an effort to amplify these women's voices as opposed to rewrite them, we conducted one-one-one semi-structured interviews. We emphasize this aspect of our research because of how critical it is to the creation of authentic, long lasting connections and relationships. While we hope to use our research to highlight the needs of these communities right now, it is our intention to do so in a way that extends agency rather than reduce. Through the use of thematic coding we identified three core concerns: 1) financial insecurity; 2) low personal and household health; and 3) uneven access to information, resources, and support. We hope that this research assists state agencies, public health providers, and philanthropic foundations in their efforts to create culturally-relevant and linguistically-accessible resources for immigrant working Latinas and other vulnerable populations.

## **Comfort, Affirmation, and perseverance amongst marginalized students in STEM**

Garrett Poitra

*Psychology*

In the present project, I explored what common and individually expressed factors contribute to perseverance in marginalized students, specifically in undergraduate STEM programs. Currently, approaches to improve retention rates in marginalized groups focus on ways to elicit a desire to stay in STEM. Not only does this approach hold problematic implications, it also impedes systemic intervention by falsely attributing the impetus of student retention to marginalized students rather than the system. The goal of this project was to suggest potential areas for systemic change by focusing on what factors marginalized students identify as positive contributions to degree attainment. This was done using a deductive coding analysis of 40 student responses to various prompts focused on identity, helpfulness, and detriments in undergraduate STEM programs at CSU. The most important findings indicate that students benefit most from a strong sense of community that holds cultural dynamics similar to that of their household as well as feeling though their experiences are not trivialized or dismissed. Presently, an inability to feel comfortable, compounded by the trivialization or dismissal of student experiences hinders well-being in marginalized students and subsequently their ability to persevere in STEM fields. As such, further research will need to find ways in which we can foster a sense of belonging by means of validation.

## **I Think My Movie Screen Broke: How Aphantasia Affects Reading**

Grace Kirk

*Biomedical and Mechanical Engineering*

This research project concerns the phenomenon "aphantasia". Aphantasia is described as the inability to picture images in the mind's eye. Although much is still unknown about aphantasia, scientists have done multiple tests, concluding that aphantasia is a justifiable neurological situation that affects people in varying degrees. For some, myself included, the inability to envision images is most prevalent when reading. Scientists conclude that the effects of aphantasia affect very few people, but just how few? By conducting a survey, I will be able to explore the degree to which people experience aphantasia, more specifically, how aphantasia affects people when reading fiction novels. To execute this, I am surveying up to 100 people, diverse in age, academics, and ethnicity. Since aphantasia is not very quantifiable, my questions consist of simple but open-ended inquiries surrounding images one can see when reading, such as the level of detail, if any, presence of colors, sounds, and more. I hope to gain a more concrete idea of how many people experience any degree of aphantasia and what the most common experience is among people who appear to experience it. In addition, I want to explore both a more concrete definition and what experiences qualify as having aphantasia. After exploring this phenomenon with fiction novels, I would like to investigate if aphantasia relates to a presence and lack of internal dialogue and how/if having aphantasia affects dreaming and the vividness of dreams.

## **Mother Nature Wrath**

Isabelle G. McGuire

*Psychology*

Climate change is no new topic to the public but it is brushed under the rug every time it is relevant to a crisis. In recent years we have seen extreme weather patterns all around the world as a result of our actions. Texas had no water or power for two weeks due to a winter storm they have not seen since 1985. Fires are not new in Australia but the new year started with fire they have never experienced before. These devastating Australian bushfires kill more than half a billion animals. We have also seen this in California, with the fires growing in size across the state causing thousands to leave their homes. These extreme weather patterns are leaving places unprepared for what is coming to them. I want to advocate for the importance of everyone taking action against further climate change. It is easy to point the blame, but we are on a ticking time bomb awaiting the next disaster. My goal is to demonstrate the importance of environmentalism to the public through interactive social media content. TikTok, with over 600 million monthly active users, and like platforms can have a global reach and share that everyone is responsible for climate change. My content will express the importance without bombarding our audience with a massive amount of information to create light-hearted information everyone can enjoy while being educated about climate change.

## **America's responsibility to invest in reparations in the form of healthcare initiatives for descendants of enslaved Africans.**

Janaye Matthews

*Biomedical Engineering & Electrical Engineering*

The National Center for Health Statistics (NCHS) has data going back over 100 years that document pervasive racial disparities in health. For example, while heart disease and cancer are leading causes of death across all races, Black Americans are 30% more likely to die prematurely from related conditions. This data is coupled with centuries of documented abuse including rape, forced sterilization and medical experimentation, increased death rates due to chronic conditions, lack of access to adequate care, and a longstanding culture of distrust in the medical system. This abuse may have originated with the kidnapping and enslavement of Africans in the 17th century; however, it has perpetuated over four centuries and continues to impact their descendants today. The conversations on reparations have remained theoretical since the post-Civil War Special Order #15, yet there is a present need for follow through on reconciliation between the U.S. Government and the Black American community. Using economic analysis from Craemer et al., this proposal outlines an alternative to single monetized payments as reparations, instead utilizing the funds to establish long-term health-based solutions. The implementation goals include eradicating the disparaging health rates in major areas, including maternal health and chronic disease, improving the relationship between the Black community and medical practitioners, and providing conduits through which more Black Americans are exposed to medical professions. Through these efforts the U.S. can equitably combat generational trends that have left Black bodies at higher risk of suffering, while simultaneously begin to engage in the process of reconciliation.

## **Gonstead Chiropractic- How is it different than regular chiropractic and How effective is it?**

Jazmin Gonzalez

*Biology*

How is Gonstead Chiropractic work different than regular chiropractic? And how is this type of holistic care beneficial and helpful to people? Gonstead chiropractic care has proven to help many people. So this project and this type of holistic care are important because many people could be suffering due to subluxation and they could be helped by visiting a Gonstead Chiropractor. My goal is to explain the importance of Gonstead Chiropractic work and to show people the real results of patients who have been to a Gonstead chiropractor and explain the possible results that one can obtain from getting adjusted. I will do so in a less formal way than a research paper/project. I will introduce what Gonstead Chiropractic work is, its goals, techniques, and results. I will also include a video/pictures of tools used in Gonstead and their purpose. For the results part of the presentation, I will share my personal results and experience with Gonstead chiropractic as well as share the experiences of others. I will do this by getting short testimonials from a few people who have worked with a Gonstead Chiropractor and put those into the presentation. And finally, I will connect those results and experiences to the importance of overall health and longevity and the importance of holistic care.

### **First Generation Experiences**

Jonathan Ibarra and Hinzan Diarrassouba

*Psychology and Computer Science; Economics*

The experiences of first generation students are typically very adverse due to not having experience within their family to be able to navigate college. In this study, we are analyzing the experience of first generation students in their first year of college. We are looking for some of the hidden patterns that have shown usefulness for navigating unfamiliar academic environments within first generation students. We gather a data set from the Amplify science outreach seminar in 2018 about their final assignment in the seminar. We used deductive coding to pull out themes that were related to the struggles of first generation students. We have yet to come up with any significant result or findings at the moment, but we are hopeful to come up with conclusions further down the line.

## **The rise of women in politics across the world**

Joslyn Orji

*Political Science & Ethnic Studies*

Both nationally and globally, the world of male-dominated politics has witnessed a steady surge in female representation. In other words, we are beginning to notice an upward trend of women across the world becoming more involved in politics. Serving as representatives, female political leaders are in positions of power to level out the inequality gap among the sexes. It is a shift in the power dynamic which many individuals are unfamiliar with yet is necessary for an enlightened shift in the appropriate representation of women everywhere. The past few years have been largely momentous for women, especially those in politics. In the United States alone, six women have launched campaigns for the highest office in the country--the office of the United States President. As a young woman of color that is studying political science in a predominately white institution, it is inspiring to witness an era of trailblazers. This is a time where we are not only seeing this power shift but also the capabilities and achievements of not just women but black women and women of color as well. However, in most cases, there comes with this position of influence the presence of intimidation. This intimidation is not intentional rather it is the confidence that is perceived as threatening to a female leader's male counterpart. I aim to study the results of the ongoing 2020 United States 2020 Presidential Primary elections by finding a possible correspondence between the achievements of the female candidates and the reactions by their higher-ranking male counterparts.

## **Don't Hate Asian Americans**

Kevin A. Clausen

*Animal Science & Microbiology*

The purpose of this project is to shed light on the nuances of racism towards the Asian American community. Given events occurring in the past year - particularly the COVID-19 pandemic - violent crimes and racist attacks against the Asian-American community have increased dramatically. These acts of racism have been precluded by decades of a model minority myth that has consistently pitted the Asian American community against other minorities. There has also been a noticeable lack of coverage on these attacks compared to other recent attacks against minority groups.

## **Marginalized Media: A Look at the Perceptions and Portrayal of Minorities in TV and Movies**

Kira Douglas

*Biology*

People want to see diverse representation in the media, especially TV and movies, but don't know how it should be depicted. Many of us have become used to the normalization of stereotypes often reinforced by microaggressions in the TV media which hinders the ability to actually address stereotypes and progress past negative depictions of diversity. This study investigates how marginalized college students at CSU want to see like-individuals represented in TV and movies. A survey was created with questions about various popular TV shows that include and portray various marginalized groups; the questions asked about participants' feelings and perceptions. The survey was sent to SDPS offices as well as the sororities and fraternities in the Multicultural Greek Council and the responses were compiled into charts, graphs, and quotes. Out of 18 responses to date, 89% self-identified as a member of a marginalized group. Marginalized identities included race and sexuality, as well as gender and religion. 61% of respondents said social issues should be represented in media with no exceptions, 33% said social issues should be addressed but there are exceptions including kids shows, and 6% said that social issues should not be addressed in media. This data signifies that marginalized groups want to see better representation of themselves and more representation of social issues. In the future I would like to receive more feedback and expand the study to see if parents want to see social issues in kids shows.

## **Culture, Disaster Relief, and Housing Development in the Philippines**

Miya Giffin

*Cultural Anthropology & Ethnic Studies & International Development*

The Philippines is a region of the world known for its geographic diversity and far reaching containment of islands in the Pacific, as well as being one of the most culturally diverse countries in the world. Because of the vulnerability to natural disasters, due to the geographic location of the Philippines, and the vast cultural diversity of the country, the need for aid is present. But more particularly, the question of how to approach and implement aid in a manner that fosters positive rehabilitation arises. Lack of consideration of the cultural and spiritual significance behind the ways communities in the Philippines construct their housing, such as the functionality of the materials and structures used, within aid efforts to rebuild during disaster relief can have tremendous negative effects on vulnerable Filipino populations. I argue that there is a lack of bridging aid efforts and home rebuilding with the purposes of considering the cultural and social purposes of vernacular housing processes in the Philippines and fostering full recovery after disasters. I also analyze the methodologies and history of development efforts and how some aid frameworks do not prioritize the well-being of native populations or consider the role that cultural practices hold in rehabilitation.

## **Racism and Mental Health: Stigmas Facing Black and Latino Men**

Noah Gonzales

*Undeclared*

While conversations regarding mental health have been growing over the years, Black and Latino men remain absent. The weight of depression and anxiety are supplemented by racism and discrimination; therefore Black and Latino men face challenges with seeking and accepting help. The lack of diversity in the mental health field and stigmas against men seeking help further isolate Black and Latino men. This project examines the impact of masculinity and racial discrimination on the mental health of Black and Latino men. I interviewed Adam Jon-Aparicio, a counselor at the CSU health center, who specializes in counseling people of color and LGBTQ+ community. Adam works to destigmatize the effects of the "macho man" mentality and racial barriers on men seeking mental health treatment. The dominant themes of the interview were: the causes of stigma against mental health in men of color, lack of preventative care, shortage of diverse counselors, and limited access to mental health services for this demographic. My findings display that help is harder for men of color to access because of society's negative view of emotive men. Due to the lack of diversity within the mental health field, men feel outcasted because they fail to find help that represents them. Another barrier to access is cost and lack of knowledge of insurance coverage. Additionally, constructing preventative care is crucial to avoiding negative mental health outcomes. Future research could focus on surveying men of color about mental health stigmas that they face.

## **The Invisible Epidemic: Maternal and Infant Mortality Rates in the United States**

Olivia Chatman

*Human Development and Family Studies*

African American women and their infants continue to die at twice the rate of their white counterparts. These disparities in outcomes have led to the U.S. being the only developed nation where maternal and infant mortality rates continue to rise. The root of this problem is found deep in American history and the historical treatment of this population since Africans were first kidnapped from their native nations in 1619. This topic is particularly significant in light of recent racial tensions in the United States. Therefore, this project will (1) characterize the historical, social, and cultural factors associated with racism in the United States since 1850 (when maternal/infant survival records began); and (2) examine racism in the U.S. medical field (disparities in outcomes, access, and trust). Literature review findings will be synthesized and visualized using ArcGIS technology, cutting edge software that visualizes complex historical data. Preliminary findings indicate that the disparities in health outcomes as represented in the U.S. trends for increased maternal and infant mortality rates are neither new nor surprising. The discussion will focus on interpreting the medical findings in light of a broader U.S. historical context. Immediate action is needed. This integrative approach has the potential to highlight innovative ways to address this problem and will highlight novel targets for preventative intervention.

## **If Butter Doesn't Kill You, Settler Colonialism Will**

Sage Mednansky

*Psychology*

Visual consumption of Land O'Lakes' Mia the Butter Maiden from 1928 to 2020 contributes to romanticized, sexualized stereotypes of "Real Indians" in the United States and fuels ravenous, ongoing settler colonialism that devours Indigenous women's bodies and being. Pairing theories and methods of visual rhetoric with decolonial and Indigenous feminisms, my project argues that Mia the Butter Maiden's depiction exposes the historic and contemporary structure of settler colonialism that imposes a strict gender binary upon Indigenous women which opens themselves and their lands to violent regulatory practices such as Blood Quantum and land acquisition. Specifically, the visual strategies employed in the Land O'Lakes packaging over time, such as dismemberment and lightening of skin tone, are rooted in discursive logics of white supremacy, settler colonialism, and heteropatriarchy which subjugate, assimilate, and ultimately eliminate Mia the Butter Maiden. She hands over the "land" and is removed from the packaging. These advertising strategies constitute and perpetuate a reality in which Indigenous women endure disproportionate violence demonstrated through the epidemic of Missing and Murder Indigenous Women (MMIW) and rape. Through symbolic and material disappearance of Indigenous women, the settler public interprets itself as rightful inheritors of land. This research is significant because it connects material and symbolic violence targeted upon Indigenous bodies -- both land and human. I urge the necessity to create and distribute images of Indigenous women in ways that challenge domination on individual, institutional, and systemic levels and assert their presence such that their lives and lived experiences are life- and wellness-affirming.

## **The Effect of Positive and Negative Reinforcement in Persuading Individuals to Be Environmentally**

### **Conscious**

Serena Lovely

*Fish, Wildlife, and Conservation Biology*

Positive and negative reinforcement, such as praising or scolding, are methods which people use to alter the actions and opinions of others. However, the type of reinforcement resulting in a successful change in people's opinions and actions, may vary between individuals and topics. For the purpose of this study, successful is defined as creating a change in people's opinions and actions. This research explores whether positive or negative reinforcement attracts or deters people from acting in an environmentally conscious way. Environmentally conscious actions include any action taken with the purpose of helping the environment. If we can identify the most effective pattern of reinforcement, then environmental advocates can modify their approaches. I hypothesize that negative reinforcement deters people from acting more environmentally conscious even if they had the desire to act in this way. Surveys will be used to observe the experiences people from all backgrounds have had with the two types of reinforcement and how it affected their actions that followed the interaction. There will be a series of surveys to first capture their particular environmental conscious actions and experience with positive and negative reinforcement followed by one about their in-depth experiences, perceptions, and reactions to various types of reinforcements. Whether the expected results invalidate or validate the hypothesis I will encourage environmental advocates to take the most effective approach when attempting to persuade individuals to live more environmentally conscious.

# Notes

# Notes