



MULTICULTURAL UNDERGRADUATE RESEARCH
ART AND LEADERSHIP SYMPOSIUM

March 29, 2019
LSC Grand Ballrooms C&D



An Equal Access and Equal Opportunity University

MURALS Schedule

9:00a – 10:15a	Registration and Poster Set-Up	Grand Ballroom Lobby
10:30a – 11:45a	Workshops	See page 5
12:00p – 1:00p	Luncheon	Grand Ballrooms C&D
1:15p – 2:15p	SESSION I PRESENTATIONS	See page 6
2:30p – 3:30p	SESSION II PRESENTATIONS	See page 6
3:45p – 4:45p	POSTER GALLERY	Grand Ballrooms C&D
5:00p – 5:30p	Awards Ceremony	Grand Ballrooms C&D



2018 MURALS Winners

Back Row: Rolando Howard, Tyler Thomas-Fenderson, Jude (Brandon) McCarron

Middle Row: Isaiah Martin, Val Hiraki, Jame Fuerte, Whitney (Rae) Marsh, Puleng Marutle

Front Row: Jordan Rose-Williams, Jessica Herrera, Corissa Norwood, Daiszha Cooley, Sabrina Pribyl, David Purcella

Welcome!

Welcome to the fifth 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 fifth 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:

JoAnn Cornell, Director, Asian/Pacific American Cultural Center

Dr. Melissa Edwards, Associate Director, Office for Undergraduate Research and Artistry

Bridgette Johnson, Director, Black/African American Cultural Center

Arlene Nededog, Director of Inclusion, College of Natural Sciences

MURALS sponsors:

- College of Agricultural Sciences
- College of Business
- College of Engineering
- College of Health and Human Sciences
- College of Liberal Arts
- Warner College of Natural Resources
- College of Natural Sciences
- College of Veterinary Medicine and Biomedical Sciences
- Division of Student Affairs
- Graduate School
- Morgan Library
- Office for Undergraduate Research and Artistry
- Office of the Provost
- Office of the Provost for Undergraduate Affairs
- Office of the Vice President of Diversity
- Office of the Vice President for Research
- Office of Undergraduate Affairs
- The Institute for Learning and Teaching

MURALS Advisory Council:

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Amy Hoseth, CSU Libraries

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MURALS Planning Committee:

Arlene Nededog, College of Natural Sciences

Bridgette Johnson, Black/African American Cultural Center

Dr. Guadalupe Salazar, El Centro

Joann Cornell, Asian Pacific American Cultural Center

Marie Tyrell, Student Athlete Support Services

Dr. Melissa Burt Adams, College of Engineering

Dr. Melissa Edwards, The Institute for Learning & Teaching

Dr. Michelle Foster, College of Health and Human Sciences

Miel McCarthy, Collaborative for Student Achievement

Stephanie Zee, University Housing

Tyrone Smith, Native American Cultural Center

A Special Thank You:

No matter how you contributed, your contribution was impactful! Today, because of YOU, we are able to celebrate MURALS fifth year of existence.

Once only an idea, MURALS 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!

~MURALS2019 Planning Committee



Workshops

10:30 – 11:45am

LSC 308: Self Knowledge and Transformative Leadership

Leadership is a difficult concept to grasp. For marginalized folks, we have to add layers of sexism, racism, ableism, homophobia, transphobia, classism and more when thinking about leadership. Join us as we explore societies socially constructed definitions and characteristics of leadership, and what has informed our own development as leaders from marginalized communities.

Presenter(s)/Introduction: Emerald Green (she/her/hers) is in her 2nd year serving as the Assistant Director in the Black/African American Cultural Center. Carl Olsen (He/Him/His) has the honor of serving as the Men's Programming and Violence Prevention Coordinator for the last 5 years. We are excited to work with MURALS students in better understanding and dismantling notions of leadership that are not inclusive of marginalized identities.

LSC 310: Authentic You and Your Resume

Have you ever used a template that you found in Word or Google to make your resume? Have you gone online to a website that will help you format your resume and then they charge you to print it? Does this feel too cookie cutter for you? It doesn't give you the opportunity to present your authentic self on your marketing document (that's what a resume is – your marketing document). In this session you will learn, discuss, and design a resume that is truly reflective of you and what you bring to the table. Come prepared to discuss, brainstorm and write the beginnings of a document that conveys to an employer or graduate school who you are. Already have a resume that you are proud of? Bring it! Let's see where we might be able to "upgrade" it.

Presenter/Introduction: Judy Brobst (she, her, hers)

LSC 312: Adulting Ain't Easy: What Comes After Your Degree?

In this workshop we will discuss the best way to plan for your known or unknown future. Whether you have a strategy, career trajectory or not, we can chat about the best way to sample career opportunities. This will include topics like how to get the most of your CSU education and resources, as well as how to prepare for next steps beyond CSU.

Presenter/Introduction: Michelle Foster (She, her, hers) is an Associate Professor of Food Science and Human Nutrition.

LSC 322: Education Abroad: Enriching Your World & Your Resume

A study abroad experience at CSU can range anywhere from 1 week to 1 year, can help you graduate on time, and stand out in your career post-college. Education abroad isn't just going to class in another country-- it can be experiential, culturally immersive, an internship, or research abroad. Come learn about all the options available to you abroad, funding and scholarships options, and how these experiences will build your resume to support your future career goals.

Presenter(s)/Introduction: Sarah O'Donnell (she/her/hers). Sarah works in Education Abroad and has served students for over 10 years, most recently specializing in research and internships abroad.

LSC 324: Pathway to Graduate Education

Engage in one of nine roundtable discussions with graduate students representing Colorado State University's colleges or inquire about your interests in a professional school (law and/or medicine) for guidance on applying to, funding for, navigating through, and succeeding in graduate and professional programs.

Facilitators(s)/Introduction: Arlene Nededog (she/her/hers), Director of Inclusion, College of Natural Sciences. Dr. Lupe Salazar (she/her/hers), Director, El Centro

Schedule of Presentations

Poster Session I from 1:15pm-2:15pm

LSC			
Room	Time	Poster #	Name
212	1:20-1:30p	1	Selena Aguiniga
	1:35-1:45p	26	Dom Baca
	1:50-2:00p	20	De'Janaye Smith
	2:05-2:15p	60	Connor McHugh
226-228	1:20-1:30p	2	Bethany Andrade
	1:35-1:45p	29	Akosua Antobre
	1:50-2:00p	61	Brissa Chavez Mendoza and Obioma Nwankwo
	2:05-2:15p	108	Jovan Rivera-Lovato
300	1:20-1:30p	4	Adeola Awolaja
	1:35-1:45p	32	Gabriela Colacrai Arikita
	1:50-2:00p	63	Gabriella Moreno
	2:05-2:15p	110	Joyce Xinyi
304	1:20-1:30p	5	Simone Butler
	1:35-1:45p	86	Briana Daniels
	1:50-2:00p	65	Alyssa Padilla
	2:05-2:15p	105	Phillip Ponce
306	1:20-1:30p	6	Christian Cumber
	1:35-1:45p	50	Marlena Giannone
	1:50-2:00p	90	Jayla Hodge and Zahra Al-Saloom
	2:05-2:15p	109	E'Lias Sutton
308	1:20-1:30p	8	Keiko Friar
	1:35-1:45p	34	Dominica Manlove
	1:50-2:00p	53	Crispin Haro
	2:05-2:15p	70	KaMele Eileen Sanchez
310	1:20-1:30p	9	Ahjina Hopkins
	1:35-1:45p	35	Varehya Pratt
	1:50-2:00p	54	Mercedes Hennessey
	2:05-2:15p	38	Marcela Riddick
312	1:20-1:30p	12	Devin Jones
	1:35-1:45p	104	Natalia Plasencia
	1:50-2:00p	37	Maya Siegel
	2:05-2:15p	87	Merry Gebretsadik
322	1:20-1:30p	27	Leo Andrade
	1:35-1:45p	24	Lizeth Arellano and Jennifer Gomez
	1:50-2:00p	51	Elana Gratton
	2:05-2:15p	66	Billy Poon
324	1:20-1:30p	7	Jaquieyah Fields
	1:35-1:45p	52	Miguel Guerrero
	1:50-2:00p	82	Ebonné Alexander
	2:05-2:15p	103	Micela Parker
328-330	1:20-1:30p	3	Carolina Avila
	1:35-1:45p	30	Chian Baumer, Shaylyn Russell, Sammi Lauth, and Juliette Bryant
	1:50-2:00p	62	Jaelyn Neal Elizabeth Montgomery
	2:05-2:15p	64	Paula Mendoza Moreno
372	1:20-1:30p	10	Anna Iripino
	1:35-1:45p	36	Sabrina Pribyl
	1:50-2:00p	55	Alexandria Hopkins
	2:05-2:15p	78	Anteneh Zeleke
374	1:20-1:30p	11	Huining Jia
	1:35-1:45p	56	Carlos Juarez
	1:50-2:00p	98	Zelle Moore
	2:05-2:15p		
386	1:20-1:30p	13	Saxon Martinez
	1:35-1:45p	40	Deven Allen and Aiesha Augustin
	1:50-2:00p	76	Zhiyun (Mariah) Wang
	2:05-2:15p	88	William Gonzalez

Poster Session II from 2:30pm-3:30pm

LSC			
Room	Time	Poster #	Name
212	2:35-2:45p	14	Lexi (Nanci) Orgill
	2:50-3:00p	41	Xandria Amash and Reed Featherston
	3:05-3:15p	25	Dom Baca
	3:20-3:30p	92	Augusta Irechukwu
226-228	2:35-2:45p	15	Rachel Owusu
	2:50-3:00p	46	Desmond Evans
	3:05-3:15p	94	Cinque Mason
	3:20-3:30p	43	Noalani Benedict
300	2:35-2:45p	93	Zion Jones
	2:50-3:00p	31	DeJuan Chapa
	3:05-3:15p	81	Valentine Matongoh
	3:20-3:30p		
304	2:35-2:45p	18	Luis Angel Santacruz
	2:50-3:00p	45	Andrew Cordova
	3:05-3:15p	80	Aderonke Adebayo
	3:20-3:30p	106	Shirley Randolph
306	2:35-2:45p	91	Jayla Hodge
	2:50-3:00p	44	Cheona Colon, Reed Koldenhoven, Victoria Twining, and Tatum Hastings
	3:05-3:15p	67	Adam Prentice
	3:20-3:30p	19	Ronald Sayles
308	2:35-2:45p	22	Hanna Wireduwaa
	2:50-3:00p	48	Hana Belay Gebru, Courtney Hardy, and Corissa Norwood
	3:05-3:15p	57	Casey Key
	3:20-3:30p	83	Aiesha Augustin
310	2:35-2:45p	39	Marcela Riddick
	2:50-3:00p	49	Ryleigh Gellas
	3:05-3:15p	71	Vanessa Sanchez
	3:20-3:30p	84	Venus Cariaso
312	2:35-2:45p	74	Hunter Valdo
	2:50-3:00p	79	Sonia Adame and Fernando Alacron-Avila
	3:05-3:15p	33	V Hiraki
	3:20-3:30p	95	Debbie McGee
322	2:35-2:45p	28	Leo Andrade
	2:50-3:00p	68	Natalie Rios
	3:05-3:15p	100	Rodica Ninguin
	3:20-3:30p	23	Lizeth Arellano
324	2:35-2:45p	21	Kerriana Tatum
	2:50-3:00p	47	Garrett Neal Figueroa
	3:05-3:15p	69	Dominique Rosendo
	3:20-3:30p	101	Jasmine Ontiveros
328-330	2:35-2:45p	16	Patience PuniNimako
	2:50-3:00p	42	Joel Barraza Nava
	3:05-3:15p	107	Kenyatta Richardson
	3:20-3:30p	17	Tanjaha Putman
372	2:35-2:45p	58	Danelle Lazcano-Concelman
	2:50-3:00p	72	Tyler Thomas-Fenderson
	3:05-3:15p	99	Juri Moore
	3:20-3:30p	102	Alexandra Palma and Mecca Hamlet
374	2:35-2:45p	59	Elena Lian, Kristen Krieger, and Caroline Montgomery
	2:50-3:00p	73	Brandon Tighe
	3:05-3:15p	85	Chiekezie Chukwuka
	3:20-3:30p	89	Emily Herburger
386	1:20-1:30p	75	Zhiyun (Mariah) Wang
	1:35-1:45p	77	Matthew Tekle Yohannes, Thomas Marshall, Servando Calderon, and Daniella Ornelas
	1:50-2:00p	96	Ariana Mims
	2:05-2:15p	97	Brynn Moore

MURALS

VISUAL, CREATIVE AND PERFORMANCE ART ABSTRACTS



2018 Winners: Corissa Norwood (second from left) and her family, Puleng Marutle, Ronaldo Howard

Toads Can Have Ears, No WAY!

Selena Aguiniga

Major: Biology

Stages of development, like many processes of growth, exhibit a beginning, middle, and an end; the story of metamorphosis in a toad is a prime example. My painting expands on this theme, utilizing factors such as genetics and the environment of toads. In a lab, I studied the toad ear structure which included an inner, middle, and external portion. Whether a toad exhibits an external ear is hypothesized to be caused by environmental cues, prolonged genetic development, and frequency of sound heard, all at the tadpole stage. The research I conducted attempted to examine the formations of the inner ear, specifically a structure known as the operculum, and how its development may affect external ear development. Using the generic toad life cycle as a reference, the piece visualizes the idea of two different paths, one where a toad has ears and one where it does not. I created this piece to emphasize how the surroundings and genetics of an organism promote change in growth. When I first found out that toads had ears, I was surprised, and my design intends to ignite that exact same feeling to others. The piece uses a combination of acrylic paint, pencil, and modeling clay. Much of my inspiration came from cloud watching, as the clouds pattern of change highly resembled that of metamorphosis to me. Through my art I hope to inspire others about change and that the growth of an individual sprouts not only from the inside, but from the outside as well.

"Trauma"

Bethany Andrade

Majors: Sociology, concentration in Criminal Justice and Ethnic Studies

Transgenerational trauma, defined as trauma that is transferred from a first generation of trauma survivors to subsequent generations, is experienced in many communities of color. The purpose of the poem 'Trauma' is to call attention to how this trauma has long lasting effects on communities and how it changes how people navigate the world around them. In addition, this poem as an ode to the power and strength of people who experience transgenerational trauma. I chose poetry as the medium for my project as poetry has always been used to as a way to understand the world around us, and I believe it was the best way for me to convey these experiences.

Where I am from: Embracing My Roots

Carolina Avila
Major: Psychology

“Where I am From: Embracing My Roots” is a free verse poem that illustrates the loss of ethnic identity through assimilation. This piece is based on the book *Where I am From: Student Affairs Practice from the Whole of Students' Lives* by Susan E. Borrego and Kathleen Manning. The book uses personal narratives written by minority undergraduate students who participated in NASPA's MUF (Multicultural Undergraduate Fellows Program). Students were asked to respond to the phrase “where I am from?”. Reading the student’s beautifully written narratives inspired me to write my own. I am here to tell my story through free verse poetry; how I lost myself through American assimilation and the process of reclaiming what has always been there, my Mexican heritage. Analyzing myself and how quickly I learned to assimilate as a child is heartbreaking. This hardship has made me grow as an individual. I will be pursuing a career in Student Affairs and Higher Education. My dream is to work with international or underrepresented students. By understanding who I am, I hope to become a mentor who can understand my students and be a positive influence to help them embrace all their identities. I hope that this piece will resonate with students and for others to see my vulnerability and inspire youth along with the audience to think about who they are and where they come from.

Humans Discriminate, Mental Health Does Not

Adeola Boluwatife Awolaja
Major: Psychology, General Concentration

My main piece depicts an African American with a happy-faced mask. One of his kids is melting off the mask with a hair dryer. People of color have heightened stigma when it comes to mental health. This drawing is to show how people of color are expected to hide their mental health issues from even the people that love them because of the stigma that society has created. It was drawn with a Pilot G-2 pen. I sketched a version of this drawing on the back of a notebook I was using for one of my classes. I wanted to add more ideas to it to polish it up and give it a message. I want people to open their minds up to how mental health does not discriminate; only we do. The dismissal it gets from society does not dull any challenge that mental health can bring to anyone. I also want to inspire people to use their creativity to cope with whatever they may be going through.

"A World Mended by Leaders"

Simone Butler

Major: Business Finance

My visual piece is a globe split in half at the equator and stitched by gold thread. The thread represents the collective acts of leaders around the world who serve their community in some facet. Each stitch can be interpreted as an individual act of servant leadership, where a leader insights change by serving. While the acts can vary in size, they all work as one to hold the world together. The middle of the world contains the faces of people who are connected to one another by acts of collaboration. I found it important to show the connectedness of community under a world influenced by servant leadership. My goal is to promote cultural relativism. In a system based on cultural relativism the focus is not on any individual, organization, or country that is better than another, but rather identities and cultures are respected, included, upheld, and accounted for. My visual symbolizes a world that denounces individual success and acts in a way that portrays the understanding that nobody succeeds until everyone does. When constructing this piece, I used different colors of felt. The form of the globe consisted of two semi-spheres of styrofoam that are covered in a light tan felt which was sewed together out of triangles. The continents are also felt and the inside of the globe is supported with cardboard. By sharing my work, I hope to plant seeds of change and encouragement in the minds of my audience.

"Look Me in My Eyes"

Christian A. Cumber

Major: Sociology

These photographs capture the censorship and past discrimination Marginalized young men and women have faced throughout the course of history. Showing how large-scale generalizations do no justice of telling an individual's story. My influence has come from the civil rights movement, the Me Too movement, and the Black Lives Matter movement. I am using photography of minorities combined with historical photos of resistance as the medium to portray my message of social unrest. The goal of my work is to show the paradox of these terrible injustices and ideologies, that these strong beautiful men and women have overcame.

Liberating the Black Female Form from Transgenerational Trauma

Jaquikeyah Luvly Fields

Majors: Political Science and Women Studies, Minor: in Spanish

Intergenerational trauma is more than a notion or an idea. Historically (still today) trauma has been deliberately inflicted on all communities of color-especially the black community. Whether it's been verbal, physical, or mental we see trauma manifest into a transgenerational trauma reinforcing hierarchy and acting as a master's tool to have power over the black female form. Anti-blackness was planted, then perpetuated and passed down through generations in our communities; only with the access to education, love and self-reflection will lead one to enlightenment and liberation from internalized anti-blackness. With this I will be including painted visuals of black features that are demonized when truly they are features that are exquisite. I plan to share my ongoing process, which likely resonates with others, on how to un-condition our negative perceptions of the black female form by using education in our everyday lives.

Little Blue: A Children's Book Empowering through Affirmations of Worthiness

Keiko Friar

Major: Interdisciplinary Liberal Arts

What if children with marginalized identities grew up knowing their inherent human value? My illustrated children's book "Little Blue" is aimed at 9-11 year olds in the United States and features narrative stories told by a variety of animals about struggles with conformity, self-esteem and self-acceptance. I was motivated to create this with the purpose of providing children- particularly those with subordinated identities- affirmations of worthiness. Personally, I have struggled with mental illness and lack of belonging in regard to my racial, gendered and queer identities. Therefore, I am making the book I wish I had as a kid, for children all over the country, and perhaps beyond. Specifically, my goal is to impart in readers a sense of compassion, inclusivity and most importantly, confidence that they are enough. It is a lesson all of us can benefit from, and one that oppressions often undermine. My own experiences, as well as those of my community inspired the material. Working with watercolor, I aim toward softer visuals to add a gentle touch to a heavy topic. Ideally my book would be translated to other languages for greater audience accessibility.

From Hazing to Amazing: Using Greek Paddles as Art

Ahjina Hopkins

Major: Communications Studies

My piece is a paddle that I created using matte acrylic paint to capture both the history of hazing and its decorative use in fraternity and sorority culture. I was inspired to paint this because as a member of Delta Xi Nu Multicultural Sorority, Inc. I am often asked if I was beaten while joining my organization. Hazing is the first thing associated with fraternity and sorority life given several incidents reported since the first organizations were established. However today, for many organizations and for myself, the paddle symbolizes sisterhood/brotherhood. They are decorated to represent the organization or the person who is receiving it. Even with the positive switch in connotation, there is a campaign by HazingPrevention.org to completely dissociate paddles from fraternities and sororities. I feel that paddles must remain. Not only is an art form at risk of being eradicated, but so is a portion of history simply because it is negative. What if all negative aspects of history were eliminated? Using research on negative heritage, mainstream memory, and epideictic rhetoric, I will argue why paddles should remain in fraternity and sorority life as physical representations of sisterhood/brotherhood.

Still I Shine

Anna Irpino

Major: Undeclared/Exploring

My art piece is a representation of my emotions and feelings as certain events impacted my life. I have a collection of 4 painted canvas groups. The first three include visual representations of major events that happened in my life, surrounding a larger central painting of a dying star, meant to represent me and my emotions as these events happened. The paintings add on to each other. The first series only has one smaller canvas, a representation of my sisters' diagnosis with depression. The second series included a replication of the first smaller painting, but also includes a visual representation of my grandfathers' diagnosis with Dementia. The third series included these paintings, and a cluster of shadows with word bubbles, my inner voices, constantly bringing me down, manifesting themselves into untrue thoughts I believed others had said/thought. Throughout these paintings, the star in the middle continues to die until it is gone. In the final series, the other three paintings are still there, but instead of nothing where the star once was, a new star is being reborn. This symbolizes how even though these issues are still prevalent in my life, I am learning how to cope with them, and not let them prevail over my life and my emotions.

After the Blank

Huining Jia

Major: Landscape Architecture

This is a fire-new screen wall with flower bed facing the gate of a courtyard combines American natural garden design and Chinese architecture ornament style. A designing program which can unite essence from different styles is my dream and the fundamental reason why I came CSU to accept advanced education in this field. Just like the work, I used American plant configuration and Chinese architecture elements. And then I changed them with my own thoughts to form my unique creation. After the first semester leaning here, I spent my winter vacation practicing in a Chinese ancient architecture company, which gave me many ideas about design. During the process of preparation, I also read some related books of Chinese decoration and natural plant configuration of American gardens. In order to make my thoughts clearer, I am going to show the draft, painting, and models that I am doing now. This screen wall design is a part of decoration which can enable visitors to feel the garden and the owner's artistic taste and knowledge at the moment when they open the gate. Not only can we protect privacy with its help, we also believe the screen wall is a prevention of feng shui outflow. However, the most significant thing is that I plan to show some different thoughts about how to integrate different elements. After watching my work, I hope that everyone will be surprised and say "we never thought that creation from different aspects can also be in this way!"

Free

Devin Jones

Major: Ethnic Studies

When has America ever been great? In my eyes never. Indeed, the growth of this nation has moved at an extraordinary pace, but at the cost of who and what? This is an original spoken word piece of that who, and the wrongs that this nation has failed to address for centuries.

Brothers by Saxon

Saxon Martinez

Major: Art

Brothers was inspired by my experiences, people that I have met while in the military, and other veterans. Once you leave the military there are not any organizations that resemble the military. As a civilian, you cannot replicate the lifestyle that you once had, regardless of what career you chose. You have to create a new life from the one that you once knew. For me, my new life involves art. This artwork represents a reflection of what I remember and what the military meant for me. Within the military you gain a greater understanding of a collective community. No longer are your successes and failures your own, they are shared by those around you. The figures represent that collective. Within the image each figure is portrayed with anonymity. This anonymity is not to expunge one's individuality. It is designed to allow all those that have served and are serving a place in this image. The landscape surrounding the figures was created to represent different elements in my life and fellow veterans' experiences with loss, depression, and struggle. Despite the darkness, and through their adversities, these figures stand tall to show the viewer that hope continues on.

The Nature of Women

Lexi (Nanci) Orgill

Major: Human Dimensions of Natural Resources

My poem, *The Nature of Women* explores the struggles of modern-day women in America. Despite huge advancements that have been made in terms of gender equality, such as women's voting rights, drastic influxes of women in technical professions, and the right to equal pay, there are still implicit behaviors that many women exhibit which silhouette a male-dominated gender dynamic. I consider myself a strong feminist - but after analyzing my daily interactions for this project, I realized that in the presence of men even I often find myself instinctively moving out of their way, adapting my posture to appear smaller, apologizing arbitrarily, and downplaying my knowledge. This poem seeks to explore the disjunction between feminist ideals and subconscious behaviors such as these, which are exemplified through my personal experiences and are in no way indicative of every woman's thoughts and actions. I employ two main writing choices throughout the narrative to illustrate this disjunction: prevalent illustrations of wildlife to suggest a stark contrast between fierce ideals and tame behavior, and spatial polarity of specific stanzas to mirror the polarity of conscious and subconscious actions. Although much of this poem is structured abstractly, I hope that reading this poem will elicit a self-awareness for both women and men and encourage a pursuit of gender equality not just in deliberate choices, but in implicit behaviors and interactions.

Natural Hair Pride

Rachel Owusu

Majors: Sociology Criminal Justice and Political science

It is important to acknowledge the fact that black history came from Africa. Early in the fifteenth century, African hair was a distinct form of communication. In a way, African hair spoke of age, marital status, ethnic identity, etc. For instance, in the Wolof tribe of Senegal, young women would shave a portion of their hair to tell bachelors that they were single. Due to the history of slavery in America and a strict enforcement of white supremacy after its abolition, the natural hair movement was not always embraced. The manipulation and treatment of black hair in our country has always been an attempt to reinforce Eurocentric beauty, while demeaning Black/African Americans. Following the 13th Amendment, America implicitly and explicitly pushed for the assimilation of Black citizens into the Eurocentric standards. This heavily contributed to the mass production of relaxers and hot combs. These products might have made Black/African American conform to beauty standards; however, they also did a lot of damage to hair. My work is inspired by influences from time and attitude changes, e.g. "Flapper cuts and Finger Waves"; like Josephine Baker, a French entertainer popularized the short haircut that women gravitated towards in the 1920s. Also 'Fro it Out' during 1960s and 1970s, rose to popularity. For instance, Angela Davis wore her fro unapologetically. In May of 2017, I was inspired to go natural and even though I occasionally struggle with self-image (the pressure of wearing hoops to look beautiful or feeling pressured to lay down my edges). To me, nothing matters than embracing my natural hair because it is the closest I could get to being myself.

The Surgical Power of Music

Patience PuniNimako

Major: Neuroscience

Music therapy is the combination of music and neuroscience that aids in patient recovery, healing from traumatic events, and finding new pathways in the brain that people with degenerative diseases can use. I will present on the impact of music on the brain, the various ways in which music therapy can be a "surgical" tool, and I will play a piece my violin that has had healing properties on my brain and ultimately change my life.

Shining Colors

Tanajha Putman

Major: Human Development and Family Studies

My drawings represent physical stereotypes that are purposely over exaggerated because it's something I've witnessed all my life. People making fun of black people and saying they have "big lips", Jewish people having "big noses", or that Asian individuals either have big ears or ... as I hear people jokingly say "can't see" are some primary examples. The random physical features associated with the different races are over exaggerated and are the only part of the drawings with a burst of color because I want people to see how silly it is to generalize individuals based on their physical attributes. My goal is to help people embrace their features and shine. My drawings are composed of graphite and color pencil and the art inspiration/style is based on two of my music and fashion icons Tyler, the creator, and Rico Nasty. Both deviant people who stand out in society and are all for dismissing social norms, stereotypes, and being themselves instead of letting society drag them down.

Allegory of Innocence: A True Depiction of an Immigrant Family

Luis Angel Santacruz

Major: BFA

Classic western art has been presented through displays of wealth and power, gold jewelry, fancy clothing, and most importantly, white men. All of these come together and become the epitome of what people consider to be art history. In my piece, composed of oil on wood panel, I juxtapose this idealized western portrait by demonstrating what it means to be an immigrant family. Allegorical representations are seen throughout the portrait. The red roses represent courage and power; this is important to be seen in my family as my parents needed a copious amount of courage to immigrate to a new foreign place. The power is within ourselves as we persevere through life's struggles as immigrants in the United States. We are all wearing white which is symbolic of purity and innocence. This is a statement in its own as we face stereotypes put forth by the president himself, where we are placed in a dark light and are compared to rapists and criminals. I am part of an immigrant family and have come to know many other immigrant families. I wanted to represent through the use of colors and symbolic fauna, a more realistic picture to show that criminals are the exception and not the rule. My objective with this piece is to help people understand what it means to be an immigrant family in the United States by showing a true depiction of one.

Price of Gold

Ronald Sayles

Major: Journalism & Media Communication

A feature film will highlight the sacrifices as well as the troubles and triumphs a student-athlete must endure during their career. I look to use either Nico Carvacho (men's basketball), Brenna Runnels (volleyball), or Collin Hill (football).

WAVES

De'Janay Smith

Major: Human Development and Family Studies

W A V E S captures the importance of mental health in the Black community while thorough research indicates that although it is an ongoing issue, it is extremely disregarded within society as a whole. Religion, common external situations/experiences, and the role social media plays are themes I've incorporated, to represent the critical education among this contention. My motivation behind my work is the intended creation of more awareness throughout the entire community, the allowance of those who are struggling themselves an approach to more comprehension of the various causes, as well as the offering of healthy practices to guide them through dealing with depression, anxiety, and other mental illnesses - and how we as a community can help one another. The major elements that drove me into my creative process were my own personal experiences as a Black woman in society overall, not to mention the observation of my peers and their struggles and how they are ignored as well. From sharing this work I hope to contribute deeper attention and further education among this issue, and a common goal of looking for ways we can help ourselves and each other on small and larger scales as well.

Water Wishes: A Short Story on Water Crises in America

Kerriana Tatum

Major: English and Political Science

I wanted to present what I believe I'm best at: writing. I believe through fiction, people can grasp concepts easier through themes in relation to characters. So, I think that depicting a water crisis in America shows that social justice and basic human rights issues aren't limited to other countries. Social justice being one of my main passions, I decided to incorporate concepts learned in my Environmental Poetry course with Camille Dungy into my fictional writing, while tying in factual research from water crises in America. My goal is to raise awareness and create dialogue around water injustice using fiction as a medium to capture attention. Environmental justice is not actually something I am familiar with, so I am taking on this project to better inform myself as well as others that while resources --resources to assist basic human rights-- ARE indeed available in this country, are not distributed evenly. By sharing my work, I am allowing myself to be vulnerable by exposing my usually-hidden writing to the criticism of others (as a gain for myself) but my ultimate goal is to open eyes and ears to the realities of people just states away from us. I also am dedicating myself to examining the privileges I have, i.e. simply being able to take a shower at the end of a long day. I want this project to be about dialogue and improvement however possible, even by the simplest actions.

A Letter to My Sister: The Story of a Ghanaian Girl Transitioning to a Woman in the US.

Hanna Wireduwaa

Major: Biochemistry

I am a Ghanaian girl from West Africa. This is a personal life story about my background and how my life's journey has been especially after moving to the United States. I have grown to know different sides of life, what it really is about and how it is a struggle when you're alone. I am very excited to share this story with my sister and everyone. I want her to know that life isn't as she has imagined or seen in movies where it portrayed a simple and blossom life of people. It is very important for her to know that not all people will be there just for her and to make her happy, but there is usually someone who will listen and care no matter what your situation is. That it is better to be your weird self and own it because that makes you stand out and some people will like that about you. In this story, I will share about my relocation to the states and the transition to life here, including adapting to new culture, environment, language, weather, and people. Meeting new people who are entitled to their own opinions is very confusing and challenging. It is a story about the life experiences I encountered since I was a child, and I want to tell her now for her to be strong mentally, physically and spiritually.

Stones of a Path

Lizeth Arellano

Major: Mathematics Education

This is a poem representing a metaphor of how I see a Latinx person navigating life through different systems of oppression. The poem is meant to have those reading understand the struggles immigrant families go through to create a better life, not only for themselves but for their families. This metaphor came about as a way to explain the Caminos program. The Caminos program is a research-based mentorship program to get Latinx high school graduates to seek higher education. I tried to relate the path as a way of life and tying it into my parents starting to lay the stones to the path of my life. It refers to how they have laid most of it themselves and the government very rarely provides an extra stone. At the same time, it is still tied into the path they have created and eventually I have to start furthering the path for myself while still not having as many advantages as others.

The Tree of liberty

Dom Baca

Major: Art with a concentration in Graphic Design and Electronic Art, Minor: Business

The United states is known as the land of the free and the home of the brave. The Idea of freedom and the American dream are common ideals in western civilization. The American dream gives the idea that anyone can lace up their boots and with hard work, any dream can be accomplished. Unfortunately, although this ideal sound pleasing, it is not the case. Systemically, people of color face more hardships because of a societal system that is made to represent westernized ideals. This piece was made to represent how systemic oppressions stop freedom and progressive growth in the United states. This three-dimensional piece is made of glass jars, a tree branch, and pieces of the United States flag. Each jar is a different size and shape to reflect the variety of different oppressions that can be seen in the modern world. The branch appears as though it is continuous, but each piece is segmented and placed in different jars. The branch reflects a lack of growth because of its containment in the jars. This piece was made by first sizing, cutting and fitting the branch into each jar. Then each segments of the United States Flag were placed in the jars. Next, the jars were stacked into vertical columns and placed next to each other so they may read as a rectangular shape. My objective with this piece was to represent the effects of systemic oppressions in the United states and how they affect the progression of society.

Invasion of Privacy

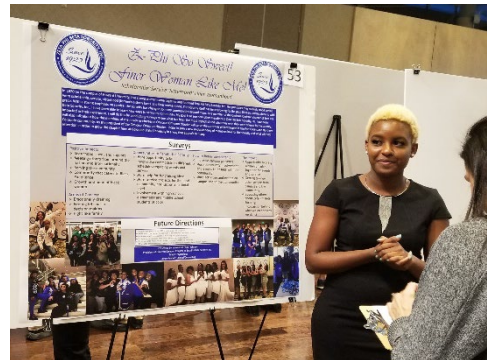
Leo Andrade

Major: Apparel and Merchandising

In this piece, I wanted to depict the inner feelings I once had about how I constantly portrayed myself as my “ideal self” at all times, which took a heavy toll on my self-esteem. The theme I wanted to capture relates to the feeling of constantly being watched, even if you’re alone in your most vulnerable state of being, and not being free to drop the facade created. For this reason, I portrayed myself wearing a chest rig with security cameras attached to it as though I’m a target. Because of my major in apparel and merchandising, I was able to gain a sense of confidence by using my own personal style. This piece is sentimental because I utilized many of the techniques I learned in digital technologies lectures and applied them throughout the drawing. An example of one technique applied to the piece was done with the manner in which the garment textures were originally created all on Photoshop. I wanted to capture the streetwear style in the garments I drew for my self-portrait as a way to demonstrate how they make me feel unfazed by my previous insecurities. The way I framed the portrait was an ode to fashion graphic design and editorials. What I hope to get out of sharing my work is that the arts have the ability to not only heal insecurities but also to help one grow from them.

MURALS

SERVICE LEARNING & LEADERSHIP ABSTRACTS



2018 Winners: Sabrina Pribyl and David Purcella, Jame Fuerte, Ally Johnson

Tu Camina Y Yo Te: You Walk and I'll Guide You - Caminos Program

Lizeth Arellano and Jennifer Gomez

Major: Mathematics Education; Human Development & Family Studies

Radical hope and promise meet an emerging majority-minoritized nation, empowering Latinx and Indigenous youth to rise up with critical counterstories that challenge current anti-Mexican/Indigenous and anti-Dreamer sentiments. Such unjust forms of oppression are confronted through critical mentorship through service learning in the Caminos Program at a local Fort Collins high school. We are the coordinators of the Caminos Program, a collegiate pathway program for Latinx and Indigenous students to graduate from high school and pursue and obtain higher education. Caminos is a research-based program that contributes to knowledge development, educational improvement, and policy implications for 90-100 high school Latinx and Indigenous students. The research helps to promote educational advancements and pathways to higher education for these students we mentor. This research is meant to explicate our commitment to advance social justice with Caminos high school students. This program utilizes community cultural wealth, a research perspective fostering the advancement of student aspiration and hope, to use social networking within the Latinx community, while navigating and resisting systems of oppression. We recognize the difference the Caminos Program has on the high school students because 69% self-report knowledge about college and career pursuits. As coordinators, we use critical race counterstory telling as a method of recounting our experiences as Latina women uplifted as we learn, facilitate, mentor, and grow with the Caminos students. Our counterstories reflect our lived experiences to raise critical consciousness about social injustice, while also highlighting our strengths and possibilities of upholding our cultural wealth together with the Caminos students.

Stopping the School-to-Prison Pipeline

Dom Baca

Major: Art with a concentration in Graphic Design and Electronic Art, Minor: Business

No parent or guardian sends their child to school expecting them to go to jail opposed to graduate. Sadly, this happens far more often than one might think because of the school-to-prison pipeline; in which school's funnel minority student into incarceration. Since the 90s, schools have introduced systems of behavioral management in response to fear of crime; these systems include zero tolerance policies and mandated suspensions as a result. This has caused suspension rates in schools to rise despite there being a decrease in juvenile crime. In order to stop the school-to-prison pipeline and end racial disparities in high schools, we need to challenge and combat racism by advocating for the silent minorities/underrepresented populations so that a more equal and fair society can be created. This can be achieved through a new system called Restorative Practices. Restorative Practices include techniques such as enhanced conflict resolution utilizing counselors and focusing on student learning the effects of their behavior as oppose to immediately resorting to punishment. This helps students stay in the classroom learning opposed to involving the police when an issue arises. In my project, I am working to help implement Restorative Practices into high schools across Colorado. I am obtaining my license in Restorative Practices and networking with local high schools to train others and implement them. I hope to be able to expand this technique throughout the state of Colorado and become a model for other states to incorporate Restorative Practice as well.

Branching Out

Leo Andrade

Major: Apparel and Merchandising

The purpose of my project is to help low income and minority students get access to the resources and knowledge necessary for achieving higher education in the arts. Studies by the U.S Department of Education have demonstrated that these students do in fact face less exposure to art resources. For my project, I have partnered with Compass Community Collaborative School to bring workshops and mentors to students who want to gain information 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 seek to attend college for arts and technology. To date, I have begun setting up small workshops that target specific interests such as sewing, and later I will develop ones for digital technologies and visual art. Next semester I'm hoping to establish a course that will guide students in choosing their career choices while also teaching them how to use digital technology programs such as Adobe. In the future, I would like to recruit additional CSU volunteers to teach skills to students of diverse interests. My vision is to create a self-sustaining program that can independently recruit 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 and that mentors and exposure to the arts help them succeed.

Subtracting the Stigma: Exploring How to Fill in the Gaps of Disparities among Young Women of Color and Mathematics

Akosua Antobre
Major: Mathematics

There is a disproportionate amount of women of color in the STEM field, specifically mathematics. This is the result unequal representation in STEM as well as lack of access to STEM education. For this reason, many women of color make that crucial decision in adolescence that they are not suitable for STEM careers, where it is decided that only a certain group of people can excel in STEM. The goal is to create an initiative, specifically an after-school program in a middle school, that better motivates young women of color to excel in mathematics. Using the combination of research provided on early childhood education and current interests of the specific students, this will structure an after-school program. The objective is that women of color excel in all aspects of academics, starting with the “hardest” subject, math. This includes gaining more perspective by asking a focus group of student’s questions regarding their performance in mathematics and what they believe they need to better their experiences. Next, with their feedback a curriculum can be developed. With this intervention, there should be an observed increase in engagement and more positive attitudes in mathematics, as well as other derivatives of mathematics like engineering and technology, for young women of color. An ideal move forward would be exposing more female students of color to the notion that every career pathway including those in the STEM is an equal possibility for them.

Actualizing Inclusivity in Higher Ed. A Case Study of CSU’s Student Disability Center.

Chian Baumer, Shaylyn Russell, Sammi Lauth, and Juliette Bryant
Major: Sociology and Psychology; Psychology; Anthropology, Human Dimensions of Natural Resources;
Undeclared Global Social Sciences

Legislation and policy changes have enhanced enrollment of students with disabilities in higher education. These changes include the provision of accessible facilities and services in educational institutions to minimize barriers to equal participation in education. We will use CSU’s Student Disability Center (SDC) as a case study of a change in order to contextualize the following themes; accessibility and accommodations, support systems and services, social climate and students with disabilities’ experience on college campuses. By analyzing quantitative data regarding the center’s resources and services, as well as students’ own experiences, we examine how SDC has moved beyond legislation to help students learn and strengthen skills in self-identification, self-advocacy, and self-pride. Importantly, as the officers of - Delta Alpha Pi Honor Society - an organization that advocates in the interest of students who use SDC resources, we also examine where campus-wide improvements are needed to maximize disabled students’ social and academic success. We aim to raise awareness for SDC’s role within the wider CSU community and continue a dialogue with non-disabled students and faculty about the importance of disability support services in higher education. Ultimately, we want to learn how we, as a registered student organization, can better work across identities to change tradition here at CSU and in different ways, thereby not only ensuring equal participation in education but creating an inclusive environment.

U-Turning the Life of Youth

DeJuan Chapa

Major: Human Development & Family Studies

Almost half of the world's youth are born in to cycle of risk that will shape and determine their future in a negative way. At this time, they will soon be labeled "high risk youth." This concept immediately negates all other identities that the youth may hold, marginalizing them into a category based off of circumstances they can't change or predict. Our youth grow up and tend to survive through the cycle but fail to break it when they up bring more treasures into this world. We can break this cycle of oppression in our youth using mentorship; the guidance, influence, and direction given by a mentor. That is why I have named this project "U-Turning the Life of Youth". My work is through an organization called "Campus Connections" on the CSU campus. Students who demonstrate leadership on campus and myself mentor youth. This mentorship can look like a lot of things from walk & talks, to supporting school success, I/we are here for the development of the youth. Once the mindset of the youth has be altered positively they tend have more school attendance, less substance abuse, fewer behavioral problems, and enhanced emotional well-being. These things allow the direction of these marginalized youth to U-Turn, allowing and excelling them to reach their authentic purposed buried in the stereotypes and inequitable conditions. From here, I want to invest in these children in the long run through continuous mentorship and check-ins to see the progress of these youth.

Meals Around the World: Experiencing Culture Through a Different Lens

Gabriela Colacrai Arikita

Major: Food Science and Human Nutrition

The primary function of food intake is to supply the human body with nutrients necessary for development and growth. Nevertheless, when considering the social aspect of human beings, food intake plays a bigger role than just a rout for nutrition. For many cultures, food serves as a unifying characteristic of a community where traditions are built, and as a marker for social status and social identity. Although, American cooking is a melting pot of numerous cuisines from around the world, children often do not have the opportunity to reflect on the cultural diversity, origin or uniqueness of food ingredients. Based on this, the Food Science and Human Nutrition department of the College of Health and Human Sciences have developed a 3-week summer cooking camp to introduce children from ages 6-12 to the different foods around the world. Over the course of the 3 weeks, children will be exposed to one dish and spices that represent the essence of the local culture. From days 1 to 4, children will be exposed to the culture and food from Africa, Greece, India and Brazil respectively. The last day will be reserved to introduce the children to alternative sources of protein used in various countries such as insects. Over the week, the children will explore and have discussions about the different meals around the world. Following introduction to the daily topic youth campers will get 'hands-on' experience by helping cook the dishes. The purpose of this program is to have children exposed to unique and different cultures around the world. This will allow then to further develop their eating palette via increasing their acceptance to diverse and ethnic foods while further understanding how multiple cultures influenced American cuisine.

Working Across Identity: Improving Collaboration and Understanding Between CSU's Student Diversity Offices

V Hiraki

Major: Health and Exercise Science

The continued push for visibility and acceptance of marginalized identities has been an integral part of the development of societies across the world. Intersectionality describes the overlapping of peoples' various identities and how they experience oppression or discrimination through them. This research aims to investigate the degree of diversity and learning across identities specifically within Colorado State University's Student Diversity offices. Student and staff perception of the programs and services provided to them through these offices will also be addressed. Data was gathered via a Google Forms survey sent out through the diversity offices' email lists as well as through personal distribution and collection of hard copies of the survey. Current key results indicate that while the majority of people do feel comfortable entering offices that they do not identify with, only a minor percentage of participants actually tend to visit the offices that do not align with their identities. Current data also signifies that the majority of survey participants desire to see more collaboration between diversity offices in various forms. Through the data collected, two events were constructed, and feedback was gathered from participants following the events. One event focused on the desire for social gatherings and the other event was focused on educating student staff across difference. Findings may then be utilized to help increase collaboration between identities and improve the intersectional framework of larger institutions outside of the university environment.

Be Yourself and Own It!

Dominica Manlove

Major: Health and Exercise Science

A movement designed to defeat the perception of beauty and spotlight the uniqueness in being different and yourself! Society's ideologies influence women of color and of mixed races to believe that they are not beautiful in their own skin if they do not fit a certain criterion, persuading women to change themselves in order to be "beautiful". As a result, young, curly-haired women grow up without self-love for their unique hair, and often damage it in attempts to straighten it. The focus for 'Be Yourself and Own It' is to establish a curly hair movement. During this educational movement we will unravel beauty and self-love over the Spring Semester. I have connected with cultural groups, women's support groups, entrepreneurs for skin and hair care, and hairstylist to bring together and showcase in a one-day event. We highlight self-care tips from hair care to skin along with nutrition advice. We present and display different hair and skin type journeys with hopes of bringing awareness and spreading self-love to young ladies. With curly haired demonstrations, experts, bloggers, activists and stylists, we delve into culture and understanding through workshops. The 'Be Yourself and Own It' movement strives to influence love and passion for diversity throughout the community, this is a safe place where individuals are accepted for whom they are. It is important to encourage uniqueness and uplift one another instead of making beauty a competition. I hope to expand this movement to k12 schools around the world for our youth to learn about themselves and their unique beautiful differences.

Classification of a Developed Country- Kenya, East Africa

Varehya Pratt

Major: Apparel and Merchandising

Throughout regions of Kenya, secondary schools are unfortunately not accessible to all because school fees are prohibitively expensive, which leaves many children who are adamant about learning, to be deprived of their education. To understand the classification of a country's level of economic development, it is important to consider whether the country is developed, developing or newly developed. Majority of the countries in Africa, precisely Kenya is considered to be a newly developed country. There are vast reasons for this matter, but the primary one that can jeopardize a country the most is literacy rates. This indication is between both men and women which can be also generalized for children in this case. This presentation will be on the qualifications of what Kenya has instilled within their country and my personal responsibility I've taken upon with helping implementing change in the community while also changing the stigma of education within Kenya, specifically in Samburu. I will also be talking about a charity that is profoundly captivating throughout this region because they sought out the problem within literacy rates in the community and made it their mission to provide equitable opportunities for Samburu youth. This program established on our campus is not only changing students' lives, but also contributing to a change in their country's classification of becoming more developed. I hope by sharing this story will captivate many to follow the journey of changing the percentage of student that have accessibility to higher education throughout Africa and in general, help a student in need.

Puppy Pals

Sabrina Pribyl

Major: Statistics

We all experience different challenges as we grow up and try to learn in school. Those obstacles can manifest anywhere from physical and learning disabilities to how we are treated and everything in between. Each trial may deeply discourage us, potentially limiting our growth in the classroom and impacting how we view education during our formative years. As a CSU student, my past personal experiences inspired me to find a way to empower those with disabilities by improving the learning environment through positive additions. Through the partnership with another CSU student with a similar vision generated our program Puppy Pals. This program takes grade school students with disabilities out of the classroom and into the CSU environment and incorporates service animals to practice reading, writing, and speaking skills. The animals provide students with disabilities a non-judgmental and empowering support system. This then helps to decrease some of the intimidation students with disabilities often feel and gives them a positive educational experience. Hosting these learning sessions on a college campus invites these students to picture themselves there, encouraging them towards higher education. We've established partnerships with Canine Companions for Independence and local families to create weekly afterschool sessions with students and animals. Students who've participated in Puppy Pals have shown better confidence in social interactions, comfort with school subjects, and involvement in the classroom. We hope to expand Puppy Pals to more students and demonstrate further the positive impact animals and college campuses combined can have in the classroom.

Space to Speak, Re-Opening the Conversation of Sexual Violence with Our Peers

Maya Siegel

Major: Business Administration

This year, I found the courage to speak about sexual violence: a topic that I've wanted to speak on since my personal experience with it five years ago. I started by writing an article called, 'Changing the Stigma of Sexual Violence' and, after finishing it, decided to start an organization with the goal of helping young survivors feel less isolated by their experiences. Space to Speak is a youth run organization that focuses on the effect sexual violence has on young people and strives to raise awareness of the issue through education and by encouraging conversation between young people. In April, we are launching Letters to Our Peers, an initiative where students volunteer to write a letter that explains why talking about sexual violence matters to them and how it has affected them or their friends. The letters will be collected at the end of the month and then colleges within the same state will exchange letters and read each other's'. In a few years, we hope that colleges across the country will participate in this initiative annually. For the past month, I have been working tirelessly to bring my idea to life by talking with survivors, pitching to anyone who'd listen, coding the website, applying for funding, and researching privacy policies to avoid being sued. I know I have a lot of work left still, but I am excited to support young survivors across the globe.

A New Lens for Education: An Interdisciplinary Approach to Learning Outside of the Classroom

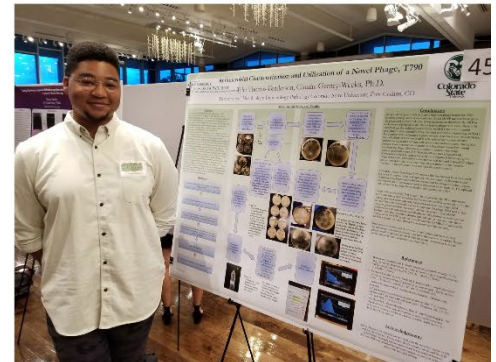
Marcela Riddick

Major: Zoology

Born and raised in Southern California, I was able to see how one of the most diverse areas in the United States still had unmet needs when it comes to minority groups thriving and breaking cycles of oppression. With the public-school system lacking, I was fortunate enough to attend private institutions before coming to Colorado State University. These institutions did not lack their own challenges, specifically in diversity. While my schools provided me with an academic foundation, my mom took it upon herself to make sure I excelled in non-traditional forms of education outside the classroom. Though Fort Collins has become a second home, my goal is to go back to Southern California to fill in the gaps that minority groups hold through non-traditional forms of education. I will introduce a company that utilizes researched-backed methods to elevate communities through art, education, and philanthropy. To start addressing the large-scale problems, I will start at the community level. There are four main things I must do to carry out my mission. 1. Develop my business plan, 2. secure investors and create a network to start filling my professional gaps. 3. Determine executable actions to work towards my business endeavors and lastly, 4. Carryout executable actions. By elevating underrepresented, underfunded, and underappreciated communities, I will not only be contributing to those communities but to society as a whole. Once economically viable, I hope to implement my initiative in other cities beyond Southern California.

MURALS

SCIENCE, TECHNOLOGY, ENGINEERING, & MATHEMATICS ABSTRACTS



2018 Winners: Jesscia Herrera and Jordan Rose-Williams, Jude McCarron, Tyler Thomas-Fenderson

Pregnancy Detection in Captive Mammal Populations

Marcela Riddick

Major: Zoology

In the realm of large captive animals such as marine mammals, there is a lack of non-invasive techniques for detecting pregnancy. My research proposes small-scale experimentation to define a relationship between nutritious energy consumption levels and eating behaviors of pregnant and non-pregnant female mammals. By completing the said experiment on rats, I hope to develop a captive mammal pregnancy protocol that can be used on larger animals. Early detection is imperative in captive populations where conservation and reproductive efforts are often the primary purpose, so animals can get the nutrition they need to have a successful pregnancy. I hypothesize that pregnant females will exhibit higher motivation for training in order to acquire more nutritious food than their non-pregnant counterparts. My experiment would include establishing a rat colony consisting of time-mated (pregnant) and non-mated (non-pregnant) female rats in addition to including males for a basal control. Training for all rats would include a consistent reward system of foods varying in nutritional value to test my hypothesis. If the hypothesis is validated, then I would use the information to develop a similar protocol to test in other captive mammals eventually implanting it on a larger scale for animals such as captive dolphins. However, if my hypothesis is nullified, I would explore the behaviors not correlating with the physiological need of the animal; maybe there is a Darwinian puzzle to be cracked. Ultimately, my goal is to better serve captive mammals, particularly in reducing invasive techniques for pregnancy detection.

The Lack of Diverse Representation in STEM

Deven Allen and Aiesha Augustin

Major: Psychology; Anthropology

Faculty and career positions in STEM fields have a history and reputation of consisting mostly of white males. This ultimately diminishes the ideas and voices of other identities that are not often invited or encouraged into these spaces, limiting the variety that research could have and needs. Our goal is to demonstrate the benefits of increasing ethnic diversity in STEM fields at all levels. We will survey individuals, beginning at Colorado State University and eventually expanding to the broader community, thoughts about, goals for, and current status of STEM jobs. From this, we hope to better assess the diversity or lack thereof in STEM fields at Colorado State University. If ethnic diversity in STEM is severely lacking, we would make proposals suggesting ways to fill the gaps to ensure a better future. If instead, areas of STEM at CSU are rich in diversity, we will look to identify contributing factors in order to create a model to be used elsewhere. With the results from our project, we intend to further the conversation about increasing ethnic representation in STEM but also spark ideas that lead to the creation of programs that encourage and create space for that diversity.

Mapping Mérida: Detecting the Prevalence of *T. gondii* in the Parks of Mérida

Xandria Amash and Reed Featherstone

Major: Chemical and Biological Engineering; Civil Engineering

Toxoplasma gondii is a protozoan parasite commonly found in felines and is known to cause the disease toxoplasmosis which primarily affects children, pregnant women, and immunocompromised individuals. *T. gondii* is typically transmitted through contact with contaminated feline bodily fluids and can survive outside of a host for up to a year in ideal conditions. There have been numerous cases of illness and even spontaneous abortions in pregnant women associated with *T. gondii* infection in Mérida, Yucatan, a tropical city in southeast Mexico inhabited by many infected feral cats. Understanding the prevalence of *T. gondii* is crucial to identifying how to prevent the parasite from causing an epidemiological crisis. Recreational parks were identified as a potential major source for transmission of *T. gondii* due to their popularity among children and women as well as feral cats for defecation in the sandpits. For this experiment, Google Maps was used to identify and efficiently route 50 parks in Mérida, where soil samples could be collected and tested for the presence of *T. gondii*. In the month-long span of the project, a total of 54 soil samples, as well as detailed observations, were collected from 27 parks at two different depths. Nested PCR amplification and gel electrophoresis techniques were employed to determine the presence of *T. gondii*. Future experimentation will include additional sample collection and testing. Upon sufficient data collection, statistical analysis will be performed in order to create a demographical representation of *T. gondii* tool that will aid in public health awareness.

Geometry in the Euclidean Plane

Joel Barraza Nava

Major: Mathematics

The purpose of this project is the study Euclidean Geometry through linear transformations. For our purposes, we will limit ourselves to the Euclidean plane. We will be observing those linear transformations that contain invariant properties as well classify those that preserve distance i.e. isometries. This will lead us to examine those sets of points that are congruent, such as those that create triangles and squares. These considerations will evidently lead us to the Frieze groups which are characterized by both direct and indirect isometries. These Frieze groups may consist of translations, horizontal and vertical reflections, glide reflections, as well as rotations. Development of Euclidean Geometry through linear transformations will set us up to be see applications of these geometric transformations. Some art that we will observe are some basic Islamic geometric patterns. Our purpose here is to search for those basic shapes in these patterns, that when we apply transformations can arrive at the whole geometric pattern.

Surveillance of Flaviviruses in Puerto Rico Mosquitoes

Noalani Benedict
Major: Microbiology

Zika virus is a zoonotic arbovirus that was introduced into Puerto Rico in 2017. In order to identify a potential non-human reservoir species for Zika virus in Puerto Rico, an accurate and specific assay must be used to identify samples that carry Zika virus RNA. A Zika virus specific Loop Mediated Isothermal Amplification (LAMP) assay was developed that detects Zika virus RNA independently from Dengue virus and other Flavivirus RNAs. The LAMP assay can detect nucleotides without a separate reverse transcription step and can be performed on crude homogenates. This project screened wild caught mosquitoes from Lajas county Puerto Rico for Zika virus RNA with LAMP and confirmed the results with Reverse Transcription Polymerase Chain Reaction (RT-PCR). Samples positive for Zika virus RNA would be investigated for genomic DNA of possible reservoir species. Additionally, peri-domestic animals were screened for Zika virus RNA. LAMP assays for the housekeeping gene Beta-Actin and Dengue virus serotype 2 were also designed in this project.

To Smoke or not to Smoke: Comparing Campus Health Impacts in the Wake of the Smoking Ban

Chenoa Colon, Reed Koldenhoven, Victoria Twining, and Tatum Hastings
Major: Biology; Biomedical Sciences; Mathematics; Natural Resources Management

In 2018 the Colorado Governor, John Hickenlooper instituted a smoking ban in state buildings, affecting state university campuses as well. Colorado is known to have a high prevalence of teen vaping and smoking. Our project focuses on the respiratory health differences between campuses in Colorado that have legislature laws preventing smoking (i.e. nicotine, vape, or other drugs) as compared to campuses that do not. In this experiment we are comparing the campuses of Colorado State University Fort Collins where there is a smoking ban and The Colorado School of Mines where there is not. We used published health data information from the CDCs National Environmental Public Health Tracking Network and concentrated on respiratory problems. To better understand the impact of the ban and exposure to smoking, we examined data from at least one year prior to the ban in addition to after its inception. The research outlined in this report attempts to bring attention to the negative public health effects that smoking contributes towards the air quality and the rest of the environment. Ultimately, our goal for this project is to use the data collected in hopes of influencing more universities to integrate laws against smoking on campus.

Detection of *Spongospora subterranean* subsp. *Subterranea* in potting mix may prevent potato industry losses

Andrew M. Cordova
Major: Biochemistry

The obligate parasite *Spongospora subterranean* subsp. *subterranea* (*Sss*) causes powdery scab disease on potato (*Solanum tuberosum*). Global potato consumption is the greatest among all non-grain food crops. *Sss* forms galls on the roots and also infects potato tubers. The tubers develop surface wounds filled with sporosori; aggregates of resting spores. The resting spores have a chance to germinate and infect new solanaceous hosts including tomato. *Sss* as a pathogen and virus vector is an emerging concern to the potato industry. Commercial potato farmers rely on certified clean minitubers (seed potatoes) grown in potting mix. We recently detected *Sss* in potting mixes. Quantitative polymerase chain reaction (qPCR) has been used to reliably detect high and low levels of *Sss* in field soil. However, in potting mix results remain unclear for samples where low levels of inoculum are suspected. We tested several potting mix samples in which low levels of *Sss* were expected. The results returned variable CT values making it difficult to determine the presence of *Sss*. As an alternative biological assay, we use tomato plants as hosts for the pathogen in potting mixes. The baiting assay plants are grown then stained and analyzed using qPCR. This technique provides a reliable detection protocol and suggest potting mix is a potential source of *SSS*.

Eutrophication Risk Assessment

Desmond Evans
Major: Ecosystem Science and Sustainability

Abstract A warming climate and a growing city poses the issue of eutrophication to Fort Collin's water features. Eutrophication occurs when uncontrolled algae growth drains a lake of its dissolved oxygen as it decomposes. This creates an inhabitable ecosystem for aquatic life. The purpose of this study is to assess the risk of eutrophication towards Fort Collin's water features based on the proximity of anthropogenic nutrient inputs. Sources of pollution can come from housing developments, roads, and industrial sources. Using data from foco.gov, I will design a map to illustrate which lakes are most prone to anthropogenic nutrient input within 300 meters of Fort Collin's watersheds. From there I would like to collect data from those watersheds to assess their phosphorus (P) and nitrogen (N) content. The results of this project will produce a model that would help take the next steps toward a prevention/rehabilitation plan that could help the city protect its water resources from the effects of eutrophication. The resulting rehabilitation plan will be designed for man-made water features, but with a consideration for diverse ecosystems, the city of fort Collins could adapt this plan to help preserve the health of its natural areas.

An Introduction to the Algebraic and Analytic Qualities of the p-adic Numbers

Garrett Neal Figueroa

Major: Mathematics

Many people are familiar with the real numbers, the domain of numbers such as π and e and $\sqrt{2}$ and $\ln 2$ and the square root of 2 and almost all familiar numbers. These arise as a completion of the rationals, as the set of equivalence classes of Cauchy sequences within the field of rational numbers, which themselves arise from the choice of the Euclidean metric on \mathbb{Q} . I will here demonstrate another class of metrics upon \mathbb{Q} - the p-adic metrics, which give a new sense of “closeness” of rational numbers. I will demonstrate a few Cauchy sequences within this new metric space, some counterintuitive, and then show that \mathbb{Q} may be completed under this metric. I will demonstrate the topology of this completed space, and then give a proof of Ostrowski’s theorem. I will prove some notable algebraic and analytic properties of p-adic fields, including the existence of subfields of \mathbb{Q}_p isomorphic to cyclotomic fields and the non-constant property of functions with derivative 0. Finally, I will give a motive for understanding p-adic fields by discussing the local-global principle with regards to Diophantine equations over said fields and giving a brief discussion of the emergent study of p-adic quantum mechanics.

Toxoplasma's Parasite Paradise

Hana Belay Gebru, Courtney Hardy, and Corissa Norwood

Major: Biology; Biomedical Sciences; Health and Exercise Science

Toxoplasma gondii is a serologically prevalent single-cell Eukaryote found globally. *T. gondii* shares an asexual parasitic relationship with various mammals inside the epithelial cells of the small intestine and is only able to complete a sexual cycle in felines. The parasite is from the family of sarcocystidae, thus able to form protective, sporulating oocysts in fecal matter. Oocysts are resilient; they are able to withstand nature’s elements, disinfectants and are prosperous in warm, humid climates. As felines are the only species in which *T. gondii* sexually reproduces, they are the primary carriers and spreaders of toxoplasmosis. In Mérida, Mexico, there is a large number of stray and infected cats. When they defecate they use sandpits at city parks to bury their waste, delivering the parasite to the playgrounds. The contaminated sand can then infect susceptible individuals such as immunocompromised, juveniles, and elders. When *T. gondii* surpasses the innate defenses of the immunity system, most mammals, including humans and felines, do not show clinical signs, however, infection can be devastating in felines and humans, causing spontaneous abortions and opportunistic infections. Our goal is to better understand the life cycle of *T. gondii* to pursue novel mitigation of its transmission. We have reviewed literature and compiled current knowledge to identify potential gaps and areas of research need. Ultimately, we would like to present our findings to our collaborators in Mérida where toxoplasmosis is prevalent. The scientific community needs to push to understand the parasite in order to provide sufficient medical advancements.

Impacts of Forest Restoration Treatments on Pollinator Communities along the Colorado Front Range

Ryleigh Gelles

Major: Nature Resources Management

Insect pollinators are an essential component of both agricultural and wild ecosystems through the provision of pollination to the various forms of flowering vegetation, bees being the primary group responsible. However, recent research suggests a large-scale decline in bee populations, compelling the need for further research of the drivers and mechanisms influencing this decline. Within ponderosa pine forest communities, past management in the late 19th and early 20th century has led to unnaturally dense stands with closed canopies and suppressed understory production. Forest restoration goals along the Colorado Front Range align with conservationists' goals of creating desirable habitat for bees by combating the lack of resource patch connectivity, herbaceous production, and landscape heterogeneity created by these dense stands. In this study, we examined insect pollinator community response to prescribed fire forest treatments within lower-montane ponderosa pine dominated forest communities in Red Feather Lakes, Colorado. Metrics of *Bombus* and other taxonomical groups of wild bees collected between May and September within treated plots were compared to that of specimen collected within control plots. It was found that treated plots had higher bee abundance, species richness, and species diversity than samples collected within control plots, although this trend diminishes as the growing season continues.

Isomorphism and Counting problems related to Graphs and Trees

Marlena Giannone

Major: Mathematics

The question I started off the project with was what are groups and group actions? This then led me to the question of what are graphs and isomorphisms? Specifically relating to tree graphs. Finally, I got to the main question of is there a formula for the number of rooted trees on n vertices, and if so how was it created? This question combined all the answers to the previous ones in that it had to do with groups, graphs, and isomorphisms. These were all concepts I was familiar with in one form or another, but without a good understanding of them. All of these questions stem from the field of combinatorics, the formula which I found research on is useful in computational biology. I enjoy both combinatorics and computer science, so counting problems that combine the two are of high interest to me. I found a formula and worked it out for the first five n vertices and compared it with the known answer to the question of how many rooted trees on n vertices. The answers matched. From that point I worked backwards to try and find how that formula came about. I started with what I learned in my combinatorics class with Cayley's theorem regarding the number of labeled trees on n vertices. I'm still working on tracing the logic back and finding the applications of this formula (besides with computational biology). Overall, I wanted to gain a deeper understanding on a topic I was interested in from a previous class. I wanted to see how the formulas worked and their practical applications.

Breaking Wind: Measures of Bioacoustic Activity Artificially Inflated by Wind

Elena Gratton

Major: Fish, Wildlife, and Conservation Biology

Non-invasive acoustical monitoring of vocalizing wildlife using automated recorders is a relatively inexpensive alternative to human observation that bypasses some of the limitations of traditional methods. Bioacoustical data gathered using automated recorders has led to the development of analytical methods that summarizes the variation in acoustic energy, such as the Acoustic Complexity Index (ACI). Previous studies have demonstrated that ACI predicts daily and seasonal patterns of species presence, aiding conservation efforts. However, ACI, as well as other acoustic indices may be prone to inflated values due to abiotic acoustic events like wind, thus misrepresenting bioacoustical activity. To test this hypothesis, we explored how wind affects ACI using recordings gathered at six sites within Yellowstone National Park. We quantified wind by converting recordings to images called spectrograms and then manually counting the number of wind events in the hours preceding and following sunrise. Using linear regression models, we found that the number of wind peaks significantly increased ACI by approximately 0.1 units for every wind peak, suggesting our characterization of bioacoustical activity using ACI at these sites was overestimated. To remedy this issue, our next step is to automate the quantification of wind within recordings to test our hypothesis on a larger scale by examining bioacoustical data throughout an entire day, as well across seasons and at other sites within and outside the park. This will allow us to predict the influence of wind in long-term recordings and remove influence on the calculation of acoustic indices.

Mechanical Boots

Miguel Guerrero

Major: Computer Science

In the event of a natural disaster saving human lives is the first priority and robots could be used to assist these efforts. We can use the capabilities and the hardware of robots to better navigate the environment when it's too dangerous for living beings. The robots can receive commands, operate autonomously, or be connected to another peripheral to enhance its functions. If we train a robot to detect potential dangers and harmful substances and report it back in real time, then it could be used to relay assessments without risking human or animal lives. Robots can serve as scouts, or boots on the ground, for pre and post environmental disasters denoting hazards and safety concerns. My goal is to establish a real-time connection and communication between the Microsoft hololens, an augmented reality headset worn by a user, and the robot "Cozmo" for use in uninhabitable areas. I will use software, including Python and TensorFlow, to train Cozmo to perform autonomous tasks. Throughout training, I will document the process as a current protocol is not readily available. I want to be able to determine the practicality of reporting a communication from Cozmo to the headset. Successful results would be the worn hololens receiving live time and visual feedback from Cozmo for the user to be able to make decisions. If effective training and communication are established between the robot and the headset, this model could be applied to another robot or technologies, for example, a drone for aerial feedback.

Does Technology Help or Hinder Primary Schools

Crispin Haro

Major: Mathematics

Has the implementation of technology helped or hindered the quality of primary school education and if so to what extent? The answer to this question would help determine the amount of resources spent and class time to be allocated towards technology. It would also highlight the difficulties of teachers' adaptation to change. The results of this research will be aimed to give educators, myself included, insight into the use of technology in primary school classrooms to better align our efforts and expectations. My goal is to determine how technology use affects academic performance. The methods that I plan to utilize in order to gather information will be the use of publicly available data, self-obtained feedback and interviews, and personal observations of classrooms that utilize a lot of technology and those that do not incorporate any. My surveys will target the perspectives of students, teachers, and administrators alike. I hypothesize that results will indicate an increase in student performance due to technology, and that it will be higher in schools that embraced technology earlier and are able to keep their technology up to date. If my research indicates large barriers to implementing technology in classrooms, such as cost, I will use this work to also help advocate for funding. I will work with the Statistics Consulting group and the Computer Science Education group here at Colorado State University to help create a well structured testing methodology. Technology has embedded itself into the lives of U.S students and it can be a useful tool if utilized correctly. Technology also doesn't come at a cheap price and it is important to find a medium between cost and effectiveness.

PrPAC: A Physiologic Prion & Master B-Cell Regulator in Lipid Rafts

Mercedes Hennessey

Major: Microbiology, Immunology, & Pathology

Prions are unique among infectious agents because there is the normal host protein form, PrPC, that misfolds into a protease-resistant, infectious conformation, PrPSC, that cause a group of neurodegenerative diseases known as transmissible spongiform encephalopathies. While PrPC is necessary to develop prion disease, understanding the normal role of PrPC has been a significant challenge. Our lab has demonstrated that PrPC plays an important role in B cell activation. We have shown that PrPC has high affinity for CD21, which has a significant role in activating B cells during extracellular bacterial infections. B cells activation occurs in lipid rafts. The goals of this study were to examine the conformation of PrP after bacterial challenge and determine if PrP localizes to lipid rafts during B-cell activation. To answer these questions, we vaccinated wild type and PrP KO mice with heat-killed E. coli. We later challenged the mice with live E. coli and collected spleens to assess the PrP conformation and determine if PrP localizes to lipid rafts. Our data demonstrates that PrP folds into an intermediate conformation that is different from PrPC and PrPSC. We found that PrP localized to lipid rafts in mice challenged with E. coli. From these results, we hypothesize that during B-cell activation PrP folds into a unique shape, which we call PrPAC, that potentiates B cell activation signals emanating from lipid rafts. These results of important implications for our understanding of B-cell activation and the role of PrPC in the immune system.

HIV-1 Vpr Increases the Level of Fatty Acid Synthase in T-Cells

Alexandria Hopkins

Major: Statistics

Human immunodeficiency virus type 1 (HIV-1) is a virus that weakens the immune system by killing cells that protect the body from infection and disease. This virus is a sexually transmitted infection that spreads through bodily fluids. According to the National Institutes of Health, male-to-male sexual contact made up 77% of HIV diagnoses among adults and adolescents within males and 86% of cases for diagnosed females were through heterosexual contact, but in general, Blacks/African Americans are at far greater risk compared to Hispanics and Whites. HIV-1 relies on the host cell to replicate and can reproduce slowly resulting in an asymptomatic inactive state, or dormancy, for over a decade delaying treatment. HIV targets T-helper (CD4) cells, innate immune cells that destroy infected cells. Once the immune system becomes very weakened and the CD4 cell count is severely reduced, HIV transitions to Acquired ImmunoDeficiency Syndrome (AIDS). In HIV's replication cycle, the virus relies on Viral Protein R (Vpr) to multiply. Moreover, previous research by Neeti Agarwal et al. demonstrated that Vpr upregulated murine Fatty Acid Synthase (FASN) in hepatocytes, or liver cells, therefore, we hypothesized that Vpr causes upregulation of FASN in T-cells, the natural target for HIV-1 infection. Tissue culture, transfection, SDS-PAGE, and Western Blotting were used as testing methods. Based on our observations, it appears that Vpr is sufficient to cause FASN upregulation in CD4 cells. Going forward, we are verifying our results through additional assays. Ultimately, inhibiting the replication of HIV-1 could lead to new treatments.

Comparison of Two Commercially Available Qiagen DNA Isolation Kits

Carlos Juarez

Major: Microbiology

The characterization and analysis of microbiomes is first dependent on isolation of DNA from an environmental sample. The quality, quantity, and diversity of DNA isolated greatly impacts downstream processes, e.g., DNA library construction, sequencing of DNA on high-throughput platforms, and bioinformatics analysis. The present study compares the DNeasy PowerSoil Pro Kit and the QIAamp PowerFecal DNA Kit on the basis of total DNA isolated, bacterial DNA isolated, and the degree of microbial diversity captured. DNA was isolated from 16 cattle feces samples by each kit for a total of 32 isolations. The manufacture instructions were followed for each kit. Fluorometric quantification was used to estimate total yield of DNA and qPCR was used to determine yield of bacterial DNA. The V4 region of the 16S rRNA gene was amplified and sequenced on an Illumina platform to characterize the microbiome of each sample.

Increasing the Accessibility of Satellites for Tribal Nations

Casey Key

Major: Computer Science

Increasing the accessibility of satellites for tribal nations is an important for protecting their sovereignty. Satellites are an improvement over aerial or ground truthing as they are relatively cheap and can "see" everything. There are many hurdles for developing a payload that is prepared for flight. For example, ensuring the satellite will perform as it is designed, and be confident each payload can survive the conditions of space. These conditions, among others, will constitute our payloads reaching NASA technological readiness (TRL) level 8 or 9. In addition to reaching an appropriate TRL, the cost of materials, technology, and deployment is prohibitive for tribal nations. To help overcome these challenges, I am researching the feasibility of constructing a flight-ready cube satellite using a modified Android phone for the on-board computer (OBC). Current research has demonstrated the concept, but did not pursue the idea of becoming certified flight ready. The potential benefit of using an Android phone for the OBC is the great reduction in cost. Traditional OBC can cost \$7000. An Android OBC will be considered feasible once reaching TRL 8 or 9, support in-flight reconfigurability, and be able to interface with an Edinburgh scope. I predict that an Android phone, paired with key peripherals, can be used as a flight-ready OBC. However, the phone will not be capable of interfacing with as many payloads as traditional hardware.

Dust Tolerant Valve for the International Space Station

Danelle Lazcano-Concelman

Major: Mechanical Engineering

In order to explore space, our astronauts depend on life support systems every day to continue doing research on the orbiting space laboratory also known as the International Space Station (ISS). Breathable air is provided by the Carbon Dioxide Removal Assembly (CDRA) which uses desiccant beds filled with porous clay pellets to absorb the unwanted carbon dioxide. Failure of the CDRA would put the astronaut's life at risk and also hinders the capability of going to Mars with the same system. When the CDRA started malfunctioning, NASA tasked me with the redesign of the air-save valves to ensure a long-life cycle for current and future missions. The air-save valves, which divert flow through the system, have failed numerous times due to dust that is generated from the clay pellets. Although the astronauts have managed to keep the CDRA operational, my redesign allows the valves to operate efficiently in a contaminated environment. Testing of a 3D printed prototype in micro-gravity with exposure to contaminate provided groundbreaking results compared to the existing flight valves on board the ISS. A trade study conducted by NASA ranked my design first due to the low power requirements, minimal maintenance and robust features. The design was manufactured for flight and completed almost 20,000 cycles (equivalent to 3 years) in recent tests which proves a longer life cycle for future missions. Now, mass fabrication of the flight valves is complete and an entire new CDRA system is undergoing final tests before heading to the ISS.

Can Arachidonic Acid, a Pro-Inflammatory Molecule, Act as a Pro-Viral Mediator During Flavivirus Infection?

Elena Lian, Kirsten Krieger, and Caroline Montgomery
Major: Microbiology; Microbiology; Biomedical Sciences

Since their re-emergence, dengue viruses have imparted an economic and societal burden upon the regions where they are endemic. While a sub-optimal vaccine exists, there are no antiviral drugs available to treat dengue; however, studying the interactions between these viruses and humans may elucidate a novel therapeutic target against dengue viruses. In order to replicate, virus-mediated membrane biogenesis must occur through the alteration of the host's lipid biosynthetic pathways, and arachidonic acid (AA), a long polyunsaturated fatty acid, has emerged as a key effector of viral replication. Fatty acid desaturase 2 (FADS2) catalyzes the linoleic acid metabolic pathway to synthesize arachidonic acid (AA) as a metabolic intermediate, which can be incorporated into cellular membranes to increase membrane fluidity and functionality. However, 5-lipoxygenase (5-LOX) mediates the transformation of AA into various eicosanoids that act as pro-inflammatory, antiviral signaling molecules, one of which has been shown to upregulate fatty acid synthase (FAS) activity. These viruses hijack FAS for de novo synthesis of fatty acids which can be integrated into virus-induced membranes. We hypothesize AA plays an unconventional role in facilitating the membrane architecture requisite for infection instead of fulfilling its role as an antiviral molecule. FADS2 and 5-LOX were targeted with chemical inhibition and siRNA analyses to investigate the role of AA in human hepatoma cells infected with dengue virus-serotype 2. Preliminary results indicate a decreased viral release when either enzyme is inhibited during infection; therefore, FADS2 and 5-LOX present as two enzymatic control points to limit viral replication and dissemination.

The Evolution of the Roar in the Panthera Genus

Connor McHugh
Major: Zoology/Botany

Although there are 36 species in the family Felidae, only 4 of them have evolved with the ability to roar. *Panthera leo*, *Panthera tigris*, *Panthera onca*, and *Panthera pardus* are these four species. The ability to roar is dependent on the shape and structure of the animal's larynx. These four species are the only members of the Felidae family have certain physiological adaptations that allow the cat to both roar and the ability to control the pitch of the roar. There are only a limited number of external influences that could have initiated this evolutionary pathway, most of which are closely linked to the size of the cat. Larger cats have more competition with both their own species and their prey, and also tend to generally be more social than their smaller relatives. The roar is an essential tool for both communicate with one's own species, either for hunting or to mitigate a threat from a potential rival and as a way to intimidate potential prey. Another possible initiation for this trait is the environment and size of the habitat of the cat. *Panthera leo* and *Panthera pardus* both inhabit relatively flat, open environments, making a roar a quick way to communicate across large distances. *Panthera tigris* and *Panthera onca* both generally inhabit forested areas. Competition to communicate over all the other species in these areas necessitates the use of a roar in order to reach others of the species.

Examining the Ethics of Genome Editing

Brissa Chavez Mendoza and Obioma Nwankwo

Major: Biology; Biochemistry

Gene editing is the process of manipulating the DNA of a living organism and despite its contributions to revolutionary research, i.e. gene therapy, it is controversial. This report will explore the depths of ethical issues, including economic limitations, that arise from gene editing, specifically CRISPR and artificial wombs. I will investigate the research surrounding genetic editing through an analysis of peer-reviewed published articles and surveying local science faculty and researchers. Available data paired with the expertise of career scientists will help me start to analyze the moral standings of gene editing. Does controversy stem from biases or lack of knowledge, or are there widespread ethical and humane dilemmas across all boundaries? If the results demonstrate a polarized concern for the ethics around gene editing, it's possible that our society is not ready for these types of technologies or they are not presented to the public well. If there is compelling support, I will examine the factors that led individuals to embrace gene editing. Either way, research should be expanded to more communities outside of the science fields to get a better sense of societal views. Through this, we can envision the future of gene editing, its accessibility, and what research will be crossing the line.

SMYD3 Gene Inhibitor as a Cancer Therapeutic

Jaelyn Neal Elizabeth Montgomery

Major: Biomedical Science

We have characterized a lysine methyltransferase, SMYD3, that is required for proliferation of most breast, colorectal, and hepatocellular carcinomas. When aberrantly expressed, SMYD3 upregulates over 80 genes including oncogenes involved in cell cycle regulation and cell proliferation. SMYD3 interacts with the RNA Polymerase II complex and it contains a SET domain that methylates a range of protein targets, including histone H3, lysine 4. Its H3K4 methylation activity targets specific regions of chromatin associated with genes which are necessary for cell proliferation. We have shown that elimination of SMYD3 restores normal expression patterns of these genes and halts aberrant cell proliferation. In our present study, we have developed and begun testing inhibitors that target the substrate site of the SET domain of SMYD3. Our early findings have confirmed the ability of these inhibitors to reduce or eliminate the methyltransferase activity of SMYD3. Using cell lines, we have confirmed the ability of one of these inhibitors to eliminate the cellular activity of overexpressed SMYD3 and to restore normal rates of cell proliferation. Our future studies include testing SMYD3 inhibitors in cell lines and cells from primary tumors in which SMYD3 overexpression is known to drive proliferation. We further plan to characterize the downstream impacts of SMYD3 catalytic inhibition to better understand its role in tumorigenesis and to characterize potential adverse effects associated with the elimination of SMYD3 activity. Ultimately, we hope to optimize SMYD3 inhibitors as potential therapeutics in the clinical management of cancer.

Evaluation of the Sexes: Morphometrics and aggression of Costa Rican freshwater crab *Allacanthos pittieri*

Gabriella Moreno

Major: Fish, Wildlife, and Conservation Biology

Pseudothelphusidae includes 264 described species of Neotropical, freshwater crabs found primarily in mountainous stream systems. These crabs play important roles in the freshwater ecosystems, such as leaf shredding, and can serve as second intermediate hosts of trematode worm parasites that can cause paragonimiasis in humans; however, species ranges and within-stream distributions are poorly understood. Animal behavior impacts distributions, but little is known about the behavior of pseudothelphusid crabs. Therefore, we aimed to characterize the agonistic behaviors of *Allacanthos pittieri*, one of two pseudothelphusids found in the premontane wet forest streams at Las Cruces Biological Station in San Vito, Costa Rica. Agonistic behaviors were evaluated between and within the sexes by pairing crabs in an arena (16.5 x 11 cm) and recording agonistic behavior for five minutes. Sex, carapace length (CL), carapace width, claw length, and claw area were determined for each crab. The maximum intensity of agonistic behavior was highest in male within sex trials; however, in female within sex trials and male-female trials, maximum intensity was lower. Mean female CL was greater than males (14.61 and 11.94 mm, respectively), and handedness was present in both males and females (69% of individuals had right chelae larger than left chelae for each sex). These results represent the first description of behavior in *A. pittieri*. Agonistic behavior could impact territoriality and within stream distributions of these crabs.

Engineering in Full Color

Paula Mendoza Moreno

Major: Chemical and Biological Engineering

As the engineering community in developed countries addresses global sustainable development issues, the lack of representation of communities being affected the most has become a problem, hindering the effectiveness and accuracy of such efforts. This session attempts to study the disadvantages of the absence of people of color and lack of diversity in developed spaces where most engineering project dynamics take place. After the case for diversity in engineering, the audience will understand and advocate for the value of diverse backgrounds in group dynamics and decision making, as they acknowledge the power of diversity in engineering.

Inhibition of SMYD2 for the Clinical Management of Acute Lymphoblastic and Multiple Lineage Leukemias

Alyssa Padilla

Major: Biomedical Science

We have identified a lysine methyltransferase (SMYD2) that plays pivotal roles in human embryonic development and cell proliferation. Although we initially characterized its role in cardiovascular development, we have, more recently identified a role for SMYD2 in the regulation of hematopoiesis. We have, further identified a pathway through which aberrant expression of SMYD2 drives malignant proliferation in a range of human leukemias, where aberrantly high levels of SMYD2 correlate with poor survival. In the United States, mortalities associated with human leukemias are inordinately high among Hispanic and African American populations. SMYD2 acts as a proto-oncogene in many such leukemias and we have shown that SMYD2 knockdown results in apoptotic death and loss of anchorage-independent transformation of hematopoietic leukemias. The role of SMYD2 as a proto-oncogene depends on its catalytic activity as a lysine methyltransferase. We have developed a library of competitive inhibitors that target the catalytic domain of SMYD2. In our current study, we are testing the use of SMYD2 inhibitors as potential therapeutics in the clinical management of acute lymphoblastic and multiple lineage leukemias.

Associational Susceptibility: Having the Wrong Neighbors Increases Plants Vulnerability to Insect Pests and Diseases

Billy Poon

Major: Zoology

The proximity between plants can influence the likelihood of detection by, and/or susceptibility of a given plant to insect herbivores. This has been called “associational susceptibility” or “shared doom”. There are several examples of plants being subjected to greater herbivory when spatially associated with heterospecific neighbors. Our research discovered an example of associational susceptibility of pepper plants to pea aphids and pea aphid-vectored alfalfa mosaic virus infection (AMV) from nearby alfalfa fields. Alfalfa mosaic virus (causes disease in over 50 plant families including potatoes, soybeans and other economically important crops. The virus can be transmitted mechanically, through seed and is vectored by at least 15 species of aphids. In a test plot of peppers located at the Arkansas Valley Research Station in Rocky Ford, Colorado, we observed virus symptoms including leaf deformation and mosaic on several pepper varieties. Alfalfa, fields to the east and west border the test plots where we found a large population of pea aphids. Two independent methods (ELISA and PCR) were carried out to detect AMV in leaf tissues from the pepper varieties, alfalfa and aphids. Positive results were obtained from the samples of each plant host and pea aphids for both methods. To our knowledge this is first report of associational susceptibility of a plant host to a pest and pathogen and should be a consideration in management practices for pepper producers in the southwestern US, as well as for producers growing any crops around alfalfa fields.

Pole Hill Canal Cover Design

Adam Prentice

Major: Civil Engineering

Water for irrigation, municipal, and industrial uses along the plains east of the Rocky Mountains is supplied by the Colorado-Big Thompson Project (CB-T). Within this Project, there are six hydroelectric power plants that supply power to the cities of Northern Colorado, Eastern Wyoming, and Western Nebraska. Specifically, the Pole Hill Hydroelectric Plant, is supplied by the Pole Hill Canal, which delivers water from the Pole Hill Tunnel to the Pole Hill Penstock. Currently, the Pole Hill Canal is covered with the exception of a 500-foot section. This uncovered section poses a threat as it is in a high wildfire risk zone, meaning debris from a potential fire could infiltrate the water supply and shut down the hydroelectric plant, cutting off its production of power. Therefore, a cover needs to be designed to protect the uncovered section and eliminate the threat of a shutdown of the hydroelectric plant. In order to achieve this goal, I will investigate common types of covers used for canals and waterways and decide upon a cover that I believe will be most viable for the covering of the Pole Hill Canal. My results will be presented to Northern Water and the Bureau of Reclamation, the governing bodies of the canal and hydroelectric plant, to provide them with a potential solution for covering the Pole Hill Canal.

Pharmacokinetic Model of Naloxone

Natalie Rios

Major: Chemical and Biological Engineering

In recent years, death rates from prescription and illicit opioids have increased dramatically to over 40,000 a year in the US. Relatedly, drug overdose is now the leading cause of accidental death in the United States. Naloxone is a promising medication used to block the effects of opioids and reverse the effects of overdose. More recently alternative administrations such as intranasal and sublingual are being studied. These methods of drug delivery do not require emergency responders to administer making this life saving drug more accessible to the public. Unfortunately, little work has been done to optimize dosing for this drug, especially in light of the different proposed routes of dosing, such as intranasal, intravenous, and sublingual. The aim of this study is to develop a predictive model that can be used to determine the disposition of naloxone under different dosing regimens (amounts, frequency, route) that can be used to predict levels of the drug in relevant tissues over time to ultimately develop regimens that optimize pharmacological effect while minimizing toxicity. To address this gap, a physiologically-based pharmacokinetic (PBPK) model to predict the tissue-specific pharmacokinetics of naloxone is used. The model was created based on detailed rodent data and has been extrapolated to humans. Here we present preliminary results from the human PBPK model and compare these results to available experimental data. Future work includes connecting predictions to measures of pharmacological effect to develop optimal dosing strategies useful for emergency responders in cases of opioid overdose.

Pictographs and Narratives to Improve Health Communication and Reduce Health Disparities

Dominique Rosendo

Major: Neuroscience, Interdisciplinary Liberal Arts

The challenge associated with the already complicated task of health care decision making is exaggerated when considering health disparities that affect minoritized populations. In America, Blacks tend to overall have lower levels of numeracy and literacy which impacts their overall health literacy. As such, interpreting medical information, especially as it pertains to risk perception and disease prevention is challenging. The goal of this research was to combine the use of pictographs and narratives in order to make health information easier to comprehend. This study used an online survey to examine the relationship between pictographs and narratives. Results of the study indicate that pictographs allowed participants to be sensitive to risk information, but did not make participants perfect. Information presented in the narrative had a stronger influence on risk perception than the information in the pictograph. Pictographs and narratives have a particular value for communicating information, but understanding of how to integrate them in health communication is still unknown.

Stressing Out: Young Seedling Recovery Patterns for Popular Restoration Species, *Elymus trachycaulus*

KaMele Eileen Sanchez

Major: Ecosystem Science and Sustainability

This study assesses the recovery of root and coleoptile tissues in slender wheatgrass, *Elymus trachycaulus*, after young seedling exposure to stressors during a susceptible stage in plant development. Our research question is: How do root and shoot growth vary among four popular cultivars of *E. trachycaulus* after exposure to drought, cold, and heat stressors at the post-germination but pre-emergence stage of a seedlings lifecycle? *E. trachycaulus* is a native short-lived perennial that is very popular in ecological restoration throughout Western North America. Germination requirements and stress physiology of mature *E. trachycaulus* plants have been studied, but little is known about the growth patterns of seedlings that have germinated but not yet emerged. This renders seeds defenseless, and mortality in this stage may be a key contributor to poor plant establishment in vegetation projects. For this study, seeds of four cultivars will be germinated and their root and shoot tissues measured. These young seedlings will be exposed to one of four treatments, no stress, drought, heat stress, or cold stress then given a three day recovery period. Measurements of roots and shoots before treatment and after recovery, using WinRhizo software, will be compared among treatments to assess differences among cultivars. Our study will improve our understanding performance and survival of each of the cultivars and will aid land managers in selecting appropriate seed for restoration projects.

Treating *Pseudomonas aeruginosa* Infections Using Innovative Lytic Enzymes Applied on a Nanofiber Composite Wound Dressing

Vanessa Sanchez
Major: Microbiology

Pseudomonas aeruginosa is a bacterium that commonly infects wounds in equine patients, resulting in lameness. Treatment options are limited since the bacterium is highly antibiotic resistant and produces a biofilm that in turn prolongs the healing process. This problem was approached by constructing novel lytic enzymes that have antimicrobial and antibiofilm properties and incorporating these into a nanofiber composite (NFC) wound dressing. The enzymes were created by cloning the endolysin gene from *P. aeruginosa* phageKZ144 combining it with the gene for SMAP-29, an antimicrobial peptide. These two pieces of DNA, when fused together, create Art-175. Through widely used procedures of cloning, transformation and expression, and enzyme purification, the lytic enzymes produced were tested for functionality. The purified enzyme will then be applied onto the NFC wound dressing and be tested against fluorescent bacterial strain *P. aeruginosa* PAO1 and the biofilm it produces. The expected results of research are the successful reduction of *Pseudomonas aeruginosa* and the biofilm it produces where the NFC wound dressing is applied. This research is significant in the application of innovative antimicrobial and antibiofilm nanoparticles coated on a nanofiber composite (NFC) wound dressing. This creates an environment that reduces the healing time for horses and reduces complications, thus reducing the necessity for euthanasia or lameness that places horses in early retirement.

Characterization of a Novel Phage, T790

Tyler Thomas-Fenderson
Major: Microbiology

Staphylococcus pseudintermedius is the leading cause of skin, ear, and post-operative bacterial infections in dogs and cats. Methicillin-resistant strains of *S. pseudintermedius* (MRSP) are a major challenge for veterinary dermatologists due to their extensive multidrug resistance and their behavior as nosocomial pathogens. The only method available for identification of *S. pseudintermedius* is a multiplex PCR that is complex, difficult to perform and unreliable. Our research has led to the discovery of a new bacterial virus (i.e. phage T790) that can lyse *S. pseudintermedius*. This phage appears to only infect MRSP. We hypothesize that phage T790 is specific for MRSP because it carries genes that affect attachment or replication in these bacteria. To test this hypothesis, phage T790/bacterial growth conditions were optimized in order to isolate and analyze the phage genome. Methods used to reach this goal included identification of specific nutrients/minerals for bacterial infection and phage plate propagation, phage DNA isolation, and genome sequence analysis. We discovered that MRSP must be in early log phase (OD₆₀₀ .228) for the phage to attach and infect the bacteria. Observation of bacterial growth within phage plaques suggested that the phage could incorporate its DNA into the MRSP genome. Induction of phage replication by mitomycin C confirmed that the phage was indeed a temperate phage. Induction trials were performed to identify the conditions required to attain a phage titer of 10⁸/ml or higher. The trials showed that there are multiple phage genomes in our host. Further analysis of the genes will provide essential information regarding the phages virulence.

Reconfigurable Robots in The Emerging Field Of Soft-Robotics

Brandon Tighe

Major: Mechanical and Biomedical Engineering

As a fairly developed technology, robotics are well integrated into the modern world. They can be found in operating rooms performing surgery, in the airspace delivering goods, on the roads transporting people. Robots are commonly used to work in extreme, uninhabitable, or dangerous environments and have saved countless lives in recent decades. Although useful for many applications, traditional robotics are limited in their own regard, which is why soft-robotic research is so important. Soft-robotics differ from their traditional counterparts in that they are made from compliant materials (opposed to rigid materials such as metals) and often times mimic the organic mechanical behaviors of living organisms. Because soft-robotic technology is in its infancy, there are countless uncharted avenues for exploration, innovation, and formation. The goal of our research is to develop a robot that can alter the mechanical properties of its individual elements in such a way that it can adjust and reconfigure its structure in order to adapt to a variety of environmental scenarios. Through the engineering design process, we have taken theory to ideation, gone from design to prototype, and are currently testing and refining the principles required of this robot. So far, we have verified the possibility of a reconfigurable robot, but how powerful this technology will grow is a question that only future research will answer. We hope to be able to define and utilize more limb trajectories, explore remote joint activation, self-healing, and eventually obstacle recognition and full automation.

Energy Suitcase: A Product that Provides a Reliable and Portable Source of Electricity through Renewable Sources.

Hunter Valdo

Major: Electrical Engineering

The Standard of living is measured by Health, Education, and Per Capita Income. Native American reservations are considered the poorest areas which receive no federal funding, limited electrical access, and poor grid system infrastructure. Areas like the Pine Ridge Reservation have the highest rates of dropouts, unemployment, and health conditions. The need for a robust energy solution is a necessity in many areas, especially impoverished ones. Families in these areas don't have proper access to heat, clean water, or lighting: all of which could be resolved with access to electricity. We believe that the energy suitcase would be a more cost-effective option to tailor to the needs of the people on the reservation than to construct large scale renewable energy installations. Our team seeks to utilize the smaller "We Share Solar" suitcase as a reference guide used by the non-profit organization Trees, Water, People, to configure and design our own renewable household energy reservoir. To store enough energy to supply enough electricity to power a standard household room. The energy suitcase will possess a small solar array and wind turbine as well as long lasting battery, and charge controllers within the design. Simple construction, affordability, and portability are our focus to ensure longevity. As further iterations would focus on compacting the design, battery efficacy, and renewable source suitable for specific regions.

Stream Restoration in Colorado

Zhiyun (Mariah) Wang

Major: Environmental Engineering

In 2004, a team of scientists compiled basic information on more than 37,000 stream restoration projects across the U.S. and built the National River Restoration Science Synthesis (NRRSS) database. However, not many updates were made since then. Up till this date, there is not a single comprehensive database that tracks the different stream restoration projects that have ever been completed in Colorado, and thus, the study conducted was modeled after the effort in 2004 (but on a smaller scale) in an attempt to track the spatial distribution of funded stream restoration projects in the state of Colorado; and the types of restoration design were evaluated against the geographic location and/or date of project completion.

Land Surface Temperature Maps Retrieved from Google Earth Engine

Zhiyun (Mariah) Wang

Major: Environmental Engineering

Satellites like Landsat 8 orbit around the earth and send back observations about the planet, which provides invaluable feedback about land surface temperature, vegetation vitality and many more. As part of the ColoradoView project, Land Surface Temperature maps were retrieved from Google Earth Engine using JavaScript, and the data was then analyzed to give some fun insights about the land surface temperature in Weld County, Colorado.

CSU: Caffeinated State University

Matthew Tekle Yohannes, Thomas Marshall, Servando Calderon, and Daniella Ornelas

Major: Neuroscience; Mechanical Engineering; Biomedical Engineering with EE; Sociology

The aim of our research is to understand the impact of caffeine fascination at CSU, its underlying causes, and how it can be used as an effective drug. Moreover, we want to think about its setting and understand who the most affected individuals are. It is hypothesized that higher academic standards and other contributing factors such as mental health and socioeconomic status drive students to consume caffeine in an unhealthy and hindering way. Empirical research methods and data collection will be utilized in order to determine the scope of caffeine use at CSU and its role in the lives of people from various demographic backgrounds. This investigation entails anonymous surveying of CSU students and collecting sales records from on-campus coffee and energy drink product vendors. With this information, we would seek to raise awareness of caffeine use and its implications through the CSU Health Network and other student body associations. If our hypotheses are confirmed, steps can be taken to reduce dangerous and unhealthy consumption through promoting stress reduction, and education of the impacts that caffeine carries with it as a drug. Lastly, we hope to explore some of the positive impacts and uses of caffeine in addition to alternative and healthy sources of energy for students.

Bias in A.I.

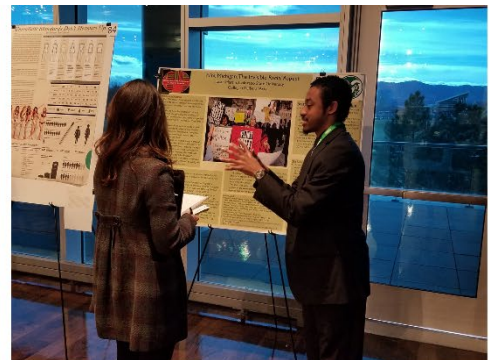
Anteneh Zeleke

Major: Computer Science

My MURALS project approaches social justice issues in one of the most dominant sectors of technology, and that is bias in artificial intelligence. Bias in artificial intelligence (A.I.) is when an algorithm that causes results to be systematically prejudice because of wrong assumptions made in the machine learning process. Today, for example, large corporations have implemented machine learning systems to do the hiring process for them. A major issue with this form of hiring people is that if the original data has bias, such as hiring disproportionately more men than women, then this bias is kept in the system and reinforced. This means that every time the hiring process begins, there is bias that allows more men to get hired more than women. This is a serious issue that companies should look at to prevent their data from making biases, but it is not that easy because a machine cannot tell the difference between an underlying pattern or a bias. Artificial Intelligence (AI) is a powerful innovative tool that has flaws which can hurt its own progress. From altering careers to simply google searching “grandma” and getting a result of an old white lady that does not look like my grandma. AI is encrusted with bias, and when this is combined with human interaction it will potentially impact public opinion. There is a root cause here, and that is diversity. As an African American, I have concern regarding how this will affect my life as well as other minority communities.

MURALS

SOCIAL SCIENCES & HUMANITIES ABSTRACTS



2018 Winners: Victor Aguirre, Val Hiraki, Isaiah Martin

Student Diversity Programs and Services Retention Project

Sonia Adame and Fernanda Alarcon-Avila
Major: Biological Science; Undeclared Exploring

Students with minoritized identities face unique challenges while navigating higher education institutions. Colorado State University's Student Diversity Programs and Services (SDPS) aims to support students in a variety of ways as they progress through their post-secondary journey. The SDPS offices include the Asian Pacific American Cultural Center, the Black/African American Cultural Center, El Centro, the Native American Cultural Center, the Pride Resource Center, the Student Disability Center, and the Women and Gender Advocacy Center. Each office serves students who identify with any of the identities they represent and offer programming for the campus wide community. Although each cultural/resource center offers individualized programs and services, it is essential to be continuously critical of the services they provide our students and be able to delineate gaps and trends in participation. Although offices have similar programming aimed at specific student populations, each office may be seeing different trends because of particular issues relating to access of services in each particular center. The purpose of this study is to help SDPS offices determine solutions to particular issues they have previously determined or have discovered with the assistance of the research team. We plan to utilize a survey instrument to conduct our research surrounding student's perceptions of the SDPS offices. Based on the data we gather, we will offer recommendations to the offices on the improvement of best practices. Our goal is to strengthen student's sense of belonging through the SDPS offices and in turn increase the retention rate of marginalized students.

Bringing Iku to Life

Aderonke Adebayo
Major: Human Development and Family Studies

The topic of death or iku is not an easy one for discussion and experiences with death differ for everyone. One influence is culture. For me, discussing death is a lot harder because of my Nigerian culture, but living in America means that death can be up for discussion. In America, students can take classes such as "Death, dying, and grief" like the one I am currently taking. I have struggled mentally with this class because in the Nigerian cultural upbringing, death is not something you casually talk about or do activities for if there is not a death happening. The class made me think about some of the death customs in the Nigerian culture. My goal is to compare the rituals of death within the American culture versus the Nigerian culture and what makes death an acceptable topic with the American culture but not the Nigerian culture. To address this, I will be conducting a survey about death, giving it to people who have grown up only in the American culture and people who have only grown up in the Nigerian culture. My hopes is to better understand the stigmas behind death culture within the Nigerian culture, and to understand why American culture is more accepting of the topic. With this I am hoping to find ways of educating people of Nigerian culture on why death is an important topic to discuss; it should not be dismissed or seen as bad luck.

Stop Pressuring Me!: The Pressure of Racialized Spaces: Cognitive Dissonance Vs. Racial Cognizance

Ebonné Alexander

Major: Biological Sciences

Our world today is plagued by the myth of being post-racial, exasperated by meaningless examples such as our recent first African-American president. But the mere subject of race and inequality is often a societal taboo. Conversations centered around race are localized and not prevalent in mainstream dialogues. What if the default was a racial cognizance instead? Dissonance allows white racialized spaces to remain ignorant of the encumbrance put on the people of color cohabitating alongside them. It's oppressive in classroom settings; even altering minoritized individuals' body language, speech, and overall presence. I believe that by understanding the depth of history centered around race in the US, the strain that racialized spaces cause will be alleviated. Therefore, I propose mandatory Ethnic Studies courses for all students in college as part of their core curriculum to increase the cognizance of race throughout campuses. To meet this goal, first, a basis of how deep a chasm of racial understanding exists on this campus must be established via a survey. Those results will be used to compare racial understanding of our campuses with and without Ethnic Studies as a core curriculum. Ultimately, I hope to highlight the need for these courses to be required by everyone, especially on a predominantly white campus which creates intensified racialized spaces. While cognitive dissonance surrounding race cannot be fixed immediately, we can begin constant reaffirmations of education on race to instill the changes needed for generations to come. Daily education on race needs to start today, for everyone.

Lizards: The Popcorn of Primate Evolution

Aiesha Augustin

Major: Anthropology

A significant source of dietary proteins for modern primates is animal matter (invertebrate and vertebrate). Among modern primates, lizards are consumed by tarsiers, lorises, galagos, and some lemurs. My research concerns the earliest-confirmed true primates (Omomyoidea, Adapoidea) and the probability that they consumed lizards (Glyptosauridae) in the earliest Eocene (56-53 Ma) in the Willwood Formation in the Bighorn Basin in Wyoming. In this project I test the probability that lizards have been a primary component of primate diet, and thus survival, since the origins of our order.

An Investigation into the Bullying Epidemic: Exploring the Impact of Bullying Experiences on Colorado State University's Honors Community

Venus Cariaso
Major: Mathematics

Currently, I am in the process of working on my undergraduate honors thesis. From my Literature Review, I have determined that bullying behaviors have direct impact on the health and wellbeing of youth. For my project, I am investigating the prevalence of bullying within the CSU honors program as well as determining the different types of bullying experiences happening and identifying where the majority of bullying events take place. I will be using a survey for data collection and will be exploring ways to maximize participation. Depending on the analysis results, I would like to use the findings to advocate for bullying prevention programming within the CSU Honors Program and other educational environments such as Elementary, Middle, and High School as well as College settings. My undergraduate honors thesis will also inform the direction I take for my master's degree thesis.

The Impact of Gentrification and Racial Tension in Five Points, Denver

Chiekezie Chukwuka
Major: Political Science

The crisis of gentrification is a premeditated action born from America's past of current practices with racial tensions. Scholars still argue about the true definition of gentrification, but this paper it is the at its most elemental, is a form of disaster capitalism, and its widely bemoaned cultural flourishes mostly just add insult to debilitating injury dealing with racism, economic, social reasons. In recent years, there has been much discussion in media, academic, and popular culture about the word "gentrification". While their people's position on gentrification within everyday class warfare of gentrification may be conflicted. It is important to not forget the ways the personal attitude and actions daily action aggravate crisis of gentrification has, mostly toward people of color. This paper will discuss what gentrification is, the effects of it and how it disproportionately affects Blacks and other minorities. Secondly, explain the history of Five Points and its significance to gentrification. Finally, it will explore possible ways to combat gentrification and the steps to need to enact that.

Advocating for Psychedelic Drugs as a Last Resort Treatment for Depression

Briana Daniels

Major: Health and Exercise Science

In 2018, the National Institute of Mental Health reported that 6.7% of U.S. adults had experienced at least one major depressive episode. Depression is expected to affect at least 15% of the adult population at some point in their lifetime and between 15-20% of veterans suffer from PTSD, including those in my family. Depression is a debilitating disease often with limited treatment options. Preliminary research has been linked to using a Schedule 1 Drug, such as psychedelics, to improve a person's depressive state. Psychedelic drugs alter a person's perception and thoughts through hallucinogenic experiences causing heightened auditory and visual consciousness. The chemical make-up allows for the brain to access new neuronal pathways and connections. My goal is to advocate for psychedelics, or hallucinogens, specifically Psilocybin, MDMA and Dimethyltryptamine (DMT), to be allowed for clinical administration in treating severely depressed patients as a last resort. This would be an alternative therapeutic treatment. The patient will be observed by medical professionals while a specific dosage of a psychedelic is administered. I will be an active voice presenting the compelling research regarding the use of these drugs to medical professions and support upcoming legislation for the use of psychedelics. The hopeful result is for patients to be cured of their depression and perhaps find new meaning through this 'spiritual' trip. Ultimately, through advocating in favor of the use of these drugs, a treatment option is available for those who have run out of the currently available resources.

Federal Parliamentary Republic: Exploring Tribalism within the Ethiopian Government

Merry Gebretsadik

Major: Political Science

When it comes to Africa, many people view it as a continent that has been colonized not fully knowing there has been many countries who have fought against colonization; without fully being aided and supported by different countries. Ethiopia is one of the countries that had fought for their freedom and successfully won. Though Ethiopia is a country rich in culture and heritage, it has a few of its downfalls. One of them being the discrimination and segregation that has been committed within different ethnic groups that practice various religions. The one thing that is interesting about this is the fact that the Ethiopian government has allowed this to happen when they themselves fought for their freedom to not suffer the same circumstances they're condoning within these ethnic groups. Three points that will be discussed are tribalism, government construction in Ethiopia versus the United States, and the lack of representation that different ethnic groups have within the government. People need to know what's happening within Ethiopia and how in a sense has a correlation with what's happening in America. Thinking freely, using their voices to uplift as well as to be heard when acts of genocide, segregation is occurring. In order to carry out this problem, I will be doing research on local government websites and getting firsthand information from former United Nation delegates. By obtaining information from my sources, I hope to unite and bridge gaps between tribes to have a more effective government and nation.

Replacing Combat Related Thinking for Cognitive Related Thinking

William Gonzalez

Major: Social Work

Since September 11, 2001, the United States (US) has deployed thousands of military personnel to Iraq, Afghanistan and other regions to protect the US against foreign threats. Military members who have deployed to combat areas are frequently exposed to traumatic events, which increases the risk of developing posttraumatic stress disorder (PTSD) either during their deployment or at some point after returning home from deployment. PTSD is a mental health condition that can develop in individuals who have experienced or witnessed a traumatic event like war, assault, or disaster. Despite the growing treatments regarding PTSD; research using cognitive behavioral therapy (CBT), where new and more positive associations are made to triggers, falls short. To explore the effects of CBT on ex-service members living with PTSD two participants with the same background were observed using the convenience sampling procedure. Both participants are combat veterans; are in the same age range; are immigrants and live in Fort Collins. A replicated single-subject design (A-B) will be used with a 5-week baseline intervention period. The primary analysis will be a visual comparison of the scores during baseline and treatment. During the 5-week intervention for patient 1, CBT PCL-M average score decreased from 69 to 40. The average PCL-M was 52.2 (SD 10.94). The results of the study suggest that for veterans, CBT can reduce PTSD symptoms. The present study is limited to a single case study; results are pending for patient 2. Further research will incorporate more patients.

Breaking News: Beauty Standards is a Socially Constructed Ideology

Emily Herburger

Major: Psychology and human development and family studies

Many, especially women, hold themselves to these standards to the point where it comes unhealthy, but how were these socially constructed ideas created. The reasoning behind these socially constructed ideas need to be understood so that way they could be changed to a reasonable and healthy image for people to look up to. The objectives for this research are to explore four different reasons that beauty standards are created: the media and its influence, cultural beliefs, how people are taught to find certain people attractive, who people are constantly around that influence what beauty should be. After all of those aspects are explored, there will be some exploration around what women can do about these beauty standards. The methods used in this research is the use of finding both experts and credible resources to support the ideas that I will be expressing. The results would be that women can go against this narrative is that they advocate for types of media that support a healthy image of a woman and also not allow media to portray women in a certain way. Cultures can also change their view of women and convey a healthy and realistic portrayal of women as well If people learned about that and learned about the power that they have when consuming media that they themselves can control it instead the other way around. The people have the power to change the media's beauty standards.

Say My Name:

Jayla Hodge and Zahra Al-Saloom
Major: Journalism; Political Science

Evaluating how names are tied to one's identity and how on PWI like CSU, the changing of names and pronunciation serves as cultural erasure. Will be using art, poems, photos, and interviews to share student's experiences and serving as tools to empower and educate on the significance names have in shaping identity.

The Three-Pronged Beast: Reshaping the Language of Mass Shootings

Jayla Hodge
Major: Journalism

My study, B.E.A.S.T: Bipartisan Existential Accessibility Theory, will explain my developing theory around the three leading factors that are leading to mass shootings in America. The three correlating "prongs" are societal influences, mental health, and accessibility. This specific combination is the causation of study behind mass shootings. It will also explore why this issue is so uniquely specific to America. My presentation will encompass the beginning research and ground work of the B.E.A.S.T and also how I established the three leading components as well as what they generally embody. My presentation will help change the discourse around mass shootings from being addressed as "gun" or "mental health" issues, to a less polarizing term like an "American" issue. This language incorporates all facets of the issue and will help move the public's focus away from just one specific apparatuses. Hopefully this study will help identify solutions in the future, in terms of which political policies to address and specific changes to be made that will combat the rising mass shooting trend.

Is Your City Next?: Predicting Gentrification using Statistical Modeling

Augusta Irechukwu

Major: Applied Computing Technology

Gentrification, broadly, is the transition of an area to a conformed, affluent atmosphere via the displacement and removal of residents that do not fit the vision. Any diverse and colorful city around the US could be next; but what if we could predict areas that could possibly face gentrification? In theory gentrification is not inherently bad but in practice, gentrification negatively impacts people of color who are currently in the community, and predominantly, positively impacts Caucasian people. My goal is to compare recent and past data of currently gentrified cities, to see if there are common factors to help indicate cities on the verge of experiencing gentrification. First, I will gather data regarding education and income levels as well as racial demographics and like stats for select cities. Using statistical software, I will create a computer model to assist in accounting for the change of each variable over time. Lastly, I will analyze data from the cities using the model to generate gentrification predictions. With the results I hope to identify any correlating variables that lead to gentrification and perhaps pinpoint susceptible cities. If I am able to detect gentrification-risk cities, I would like to help inform the current residents of the community. Ideally that would result in the implementation of better public policy, the slowing down or prevention of gentrification or if inevitable, having gentrification benefit the current residents.

Black Spirituality in Nature

Zion Jones

Major: Ecosystem Science and Sustainability

Earth Strong Energy aims to conduct research in order to discover and learn about the intrinsic relationship that Black people have to the natural world. Spirituality is a universal state of being that connects all humans and even non-humans to the biotic, abiotic, and ethereal aspects of our existence. Because humans mainly operate in relation to the physical world around us, it is important to consider our spiritual relationship to nature. This research project will center Pan-African identity in understanding our intrinsic relationship to the natural world. In depth, I will be examining how our spiritual connections incorporate nature, sustain nature and ourselves, and how our lives are uplifted by maintaining spiritual and physical connections to the natural world. My focused research will examine various spiritual connections to nature including Indigenous African Beliefs about nature, the practice of voodoo within the African Diaspora and Farming and Food Solidarity. The research is essentially social ecological at its core and implements aspects of Traditional Ecological Knowledge. Research materials include peer reviewed papers, published books, and documentaries to gain sufficient information about Pan-African identity in relation to nature.

Meditation

Cinque Mason

Major: Undeclared

Meditation and the benefit to mental health Abstract Cinque Mason As we live in a society of degrading mental health we are constantly looking for cures in a pill form or therapy. Perhaps the cure is found within and not found without. Meditation is the cure for mental health issues it does not just heal one but it also strengthens them setting them on the path of liberation. Meditation can solve many health effects that are physical as well as mental health issues. In example depression, anxiety, self doubt, suicidal thoughts, poor actions towards other. It also strengthens love for yourself, for others, and a sense of connectivity to those around you. By focusing on your breath what humankind has in common we can slowly be more in touch with those around us. That is what I would present on, the health effects and the common sense of the issue. The common sense is if you have an internal problem the only thing that can help you is an internal cure. I would present videos, art pieces, and scientific research all composed of and from meditation. As well as the history and why its taken this long to reach the status it has today. Leaving the old taboo of witchcraft and coming into the daily life of all people. I will also represent the negatives found by other people who are against self reflection and self being. Simply by being yourself you can shed away all your insecurities. At the end I would invite all the people to speak about their opinions about it.

Melaninated Females are the Catalyst: Black Women are the fastest growing population of incarcerated people in the United States

Debbie McGee

Majors: Social Work and Human Development and Family Studies, Intervention and Prevention Science Concentration

The United States prison system has seen a continuous increase in the number of black women who are incarcerated. “Since the War on Drugs in the 1980’s, black women have been disproportionately impacted by laws such as Three Strikes, Truth in Sentencing and Mandatory Minimums” (Fedock, 2018). Black women are also one in eighteen times more likely to be incarcerated in their lifetime compared to white women (The Sentencing Project, 2018). By criminalizing substance use the criminal justice system continues to ignore the high rates of these gendered and racial factors that perpetuate recidivism. In my research I will identify substance use, sexual assault, domestic violence, maintaining a parental responsibility, and systemic racism as factors driving incarceration rates up. To accomplish this, I will examine national statistics as well as published peer reviewed articles. I hope to bring awareness to the disparities black women face in regards to incarceration, an often neglected demographic. By acknowledging the factors that contribute to racial and gendered disparities within the American justice system, this research seeks to begin to include gender and race related solutions into state and federal policy as well as community education.

Does Not Compute: The Lack of Women in Computer Science

Ariana Mims

Major: Computer Science

Over the last 30 years STEM employments have grown over 79% and as of 2018 women make up 50% of the overall STEM work force. Within that same time frame computer science careers have seen a growth of over 336% yet the percentage of women pursuing CS as a career has dropped over 7%. This research focuses on why women who have the skill sets needed to excel in computer science choose to go into other careers instead. I will focus on the gender bias surrounding Computer Science and how that effects our general perception of Computer Science careers. I will interview at least 10 women from diverse backgrounds that are in the STEM fields (partly professionals, partly students) and information on diversity statistics and studies from web-based peer reviewed and popular resources. Half of my interviewees will be from a computer science background where as the others will be from other STEM fields (with a primary focus on Biology, Engineering and Psychology). I compared the reasons why the women chose not to go into computer science chose to avoid it and why women who are in CS chose to come into it. The findings show that even when they are talented problem solvers with a strong background in math and science women avoid computer science due to the stigmas surrounding it and the desire to be perfect. Universities that either renamed or restructured CS classes saw higher female engagement; this may be able to be implemented elsewhere.

No More Odile-ing With It: Orientalism in Classical Ballet

Brynn Moore

Major: English, Language Concentration

Orientalism represents the idea that the many diverse cultures and countries located in the Middle East and Asia (or what has been referred to as The Orient) all share ultimately harmful characteristics that specifically highlight their "otherness" from Western cultures; The idea that these places are mysterious, exotic, and barbaric has seeped into many aspects of Western culture including music, literature, movies, popular culture, and more. An artistic discipline that is not excluded from this is ballet. While other works in art and academia have been subject to criticism, ballet seems to have been largely left out of this mix, though as research will explore many ballets and many tropes in ballet are just as problematic. Research into classical ballets, particularly those choreographed by Russian ballet master Marius Petipa like La Bayadere and The Nutcracker, will reveal how the appeal of generalizing a large part of the globe as "The Orient" has made its way into ballet. The findings of this work will increase awareness of how easy it is to let stereotypes and prejudices dictate our ideas of places we've never been and people we've never met and will open up a larger conversation both within and outside of the ballet community that encourages progress and development in the world of dance and art as a whole. Ballet has already been evolving from influences of modern time and understanding and choreographers who envision it as having a significant impact; this project aims to take that a pas further.

Black Is, Black Ain't: Exploring Black Identity Development at CSU

Zelle Moore

Major: Social Work

Black students make up a small portion of the population on Colorado State's Campus, in fact Fall 2018 stats indicated that only 9.6% of enrolled students identify as black. In general, one might assume that "black" is used to signify persons who claim African-American heritage or that it includes all persons of African descent. However, most people outside of the diaspora, completely misconstrue and misunderstand the complexities of blackness in the US, let alone within Colorado. The term "black" while often applied as an all-encompassing predisposition of African-ness is often rejected by people of African descent who closely identify with their ethnicity as opposed to their race. On CSU's campus, the narrative reflects the national debate of Africans and African-Americans and what it means to be black in the United States. Misconceptions and mutual anti-sentiments from Africans and blacks have resulted in a rift between the two groups who are often categorized together by outsiders, further complicating our understandings of blackness across African ethnicities and African-American social locations. The purpose of my research is to analyze black identity development at Colorado State by comparing and reflecting on the African and African-American student experience on campus. Relationships with one another in terms of contact, building friendships, and understanding of each other's social location is hoped to be explored. Understanding black identity development across the diaspora at CSU may help our society to better address it within the United States.

Black Female Equestrians

Juri Y Moore

Major: Animal Science

As not many people know today, the presence of Black / African American equestrians, especially female, is almost nonexistent. Historically, riding horses and competing highly within the equestrian sport has been considered a "rich white man's sport", and this is continued today. As a female Black equestrian, myself, I have come across many forms of discrimination in and out of competitive show rings. To be a rarity today within the sport is oftentimes more than what some can handle dealing with, including fellow riders at home and judges at away-shows that are complete strangers to me. I have personally experienced direct and indirect discrimination within the sport, for being present. I have been the target of bullying by other equestrians and horse show judges, as well as more subdued discrimination elsewhere. This has affected me mentally more than a few times and has led me to both questions why there are so little Black equestrians today, and why this is the case historically. I will delve further into this topic via my research as to why Black females are in the extreme minority within the sport; I can confidently state already that Black people historically have not had access to the resources and "rich sports" necessary, which absolutely contributes to participation and presence in the sport. Black people were considered inappropriate if they were to participate in a "white man's sport", as if it were not their place to do so and were thought to be incapable of competitive horseback riding.

My Hero

Rodica Ninguin

Major: Political Science and Ethnic Studies

I would like to present on my dad's orphanage. For many years, my dad's favorite hobby has been spending time with the children in his orphanage and building a new home for them. He has traveled the world looking for opportunities that could help him with this. He took any help he could get from donations, to even flying some of the people he met to our country to see the orphanage. Many of the kids from his orphanage have not only found a home but found a family. Some of the kids even go off to college. My dad does not have much money but loves using what he has to help others. I am very interested to helping people in my future career because of what I seen my dad do with others.

Breaking Down Barriers to Community Change

Jasmine Ontiveros

Major: Social Work

The City of Fort Collins and the Center for Public Deliberation (CPD) collaborate to host community conversations to discuss different city issues with members of the community. These events provide input from the community that help The City make decisions on different issues. One goal is to have in attendance a variety of community members that accurately represent Fort Collins' population. However, community events often happen during the evening time creating obstacles for attendance to events. In efforts to combat these obstacles, the CPD offers different forms of compensation to increase our community participation. Food, childcare, and grocery cards can help mitigate common barriers participants can face. The tension lies with Fort Collins City Council recommendation to not use compensation for city events. The goal of this research observes how the use of compensation increases that likelihood of community participation at events. Two strategies were employed for this study: (1) quantitative data of participant demographics collected through surveys at the end of each major event and (2) academic research about providing compensation at city events. Data was collected from participant surveys and available institutional reports. The expected outcomes of this research are to increase City Council awareness on the importance of providing compensation and gauge the community need for the compensation. Mitigating barriers to community participation allows for a wider range of community members to attend these events. A larger and more diverse group of people at events provides better representation of the Fort Collins community as a whole.

Dearfield Dream Project

Alexandra Palma and Mecca Hamlett

Major: Mechanical Engineering; Human Development and Family Studies

The Dearfield Dream Project embodies CSU's land grant mission by engaging community partners in researching, preserving, and raising awareness of the culturally significant Colorado historic site of Dearfield, an early 20th Century African American colony. This project seeks to discover, preserve, and disseminate knowledge of the Dearfield colony's economic, social, political, and cultural history by: 1) preserving Dearfield as a Colorado historical and heritage resource; 2) growing knowledge and appreciation of Dearfield colony pioneers' contributions to early 20th Century African-American efforts for social and economic self-sufficiency; and 3) communicating the hopes, aspirations, and trials of Dearfield community members for social justice and equality in early 20th century America.

Ebonics: The Undeclared Language of Black America

Micaela Parker

Major: Communications and Ethnic Studies

Throughout the course of history white people have been the gatekeepers of language. America is no exception; because of this, languages that are not English are often dismissed. Since the first slave ship docked in Virginia in 1619, Ebonics has been a part of Black history and it has become the undeclared language of Black America. Some may call it slang, others may devalue Ebonics as a dialect, but it is the phonetic language of an oppressed people that has created cultures in America and transcends regional barriers in the Black community. My objectives are to explore the history as well as the evolution of Ebonics within Black people communities in the United States. I will research the origins of Ebonics, interview people who speak it, and examine the cultural impact it has on their identity. Lastly, I will explore the evolution of the vernacular with Black people of different generational groups. With the findings from my research I hope to destigmatize Ebonics as an "unprofessional" language, educate people on the beauty of the dialect, and empower the people who speak it. Ultimately, I would like to start a dialogue with educational institutions on Ebonics and see more research and respect given to the vernacular.

Mariposas Originales

Natalia Plascencia

Major: Ethnic Studies and Women & Gender Studies

This work will look at how undocumented Latinas are overlooked while simultaneously demonized in public discussions of undocumented people. The U.S. Latinx community has a special connection to immigration to the United States, yet much of the public conversation around undocumented immigrants centers the voices and experiences of men. Undocumented women often remain invisible except when they are demonized for being undocumented women. They face a double bind where they experience oppressive systems of within their native countries which prompts their migration and then enter a second oppressive system in the United States. This work will examine the different ways in which they are criticized and attacked politically, socially, and economically in public discussion. The central aim is to reframe the toxic narrative by providing personal stories of undocumented Latinas who are students, mothers, and professionals. I will utilize statistics of crimes, income, and education to examine the extent that propaganda affects these women. I will also collect testimonies of their lives and experiences in order to humanize their stories for the general U.S. public. This topic is of huge significance because it could mean the difference between life or death for these women. This work hopes to bring awareness to their treatment in multiple oppressive systems that can help explain why their stories are important, why their stories matter. It also hopes to change the narratives that surround undocumented Latinas, giving these women a fairer chance at a life.

Water Scarcity in the Colorado River Basin

Phillip Ponce

Major: Environmental Sociology

The Colorado River Basin (CRB) spans across seven U.S states and the Northernmost territory of Mexico. The CRB supplies water to an estimated population of 40 million, to agricultural and industrial uses, and to the unique environments and biodiversity within the Basins regions. However, the growing issue of water scarcity in the CRB threatens the stability of the Basin states inhabitants, environments and infrastructure. The CRB's scarcity is being driven by several factors including inefficient allocation and management, population growth in the basin states, wasteful water uses by the public and a drought that has persisted in the region for nearly 20 years. Now, we have reached the point where a declaration of shortage may occur by mid to late 2019 or early 2020. This issue affects us all as Coloradoans but beyond that, it's an issue that will have large impacts on the U.S. entirely, with the first effects to be seen in the Lower Basin states. In my research presentation, I aim to bring the issue of the CRB's water scarcity to light, provide background on what has caused the issue, the effects on the economy, societies, and environments in the CRB, and provide sustainable solutions I believe can help in solving the issue. I'm deeply passionate about water issues and as a native Coloradoan, it pains me to see the water that supplies our state and others who share the basin suffer from scarcity that is mainly human-induced and thus, can be solved by human solutions.

Colorized Commentary

Shirley Randolph

Major: Business/Psychology

Sports broadcasters/ commentators are common in the world of sports and can be found critiquing athletes in diverse sports in many sports arenas. My research focuses on the statements made by commentators and even their tone of voice when commentating games involving black females. This is significant because their words and portrayal of black female athletes may impact the audiences' perspectives of the athlete as a role model in addition to being potentially damaging to the athletes' image and self-esteem. The goal of my project is to examine the differences in sports commentary between black female athletes and their white female counterparts. I will primarily focus on the sports of tennis and basketball each which have prominent black and white athletes. Within those sports I will review videos that include announcers, read transcripts of commentary, and watch interviews of athletes describing the impacts of the sports commentary during their sporting events. As a result, I want the information provided through this project to portray the significance of commentary to black female athletes and those who look up to them. Through these interpretations, I hope that going forward sports fans, athletes, and budding announcers are more aware of biases towards athletes that are presented through commentary. Additionally, I hope that the current industry of predominantly white male sports commentators will be diversified to include necessary and lacking perspectives, ultimately making sports commentary more fair.

Diversity and Inclusion in Dentistry; Filling the Gaps

Kenyatta Richardson

Major: Health & Exercise Sciences

The racial and ethnic diversity in the healthcare field of dentistry in the United States is inadequate with the growing population and health disparities that are occurring in black communities. African Americans are disproportionately represented in dentistry when compared to the U.S. population. In 2015, the American Dental Association reported that 3.8% of dentists identified as African American while 12.4% of the U.S. population also have this identity. The reasons for this gap must be explored as black communities are already predisposed to various health problems, including poor oral hygiene, oral cancer, and gingivitis. Therefore, this project will study possible factors resulting in the lack of representation of African Americans in the oral health field by delving into historical reasons, cost, and access then examining the effects of this disparity. In addition, themes such as suboptimal oral health status in these communities, black dentists shouldering a disproportionate share of dental care for marginalized and underserved communities will be included before finally exploring possible solutions. Understanding these issues may aid in increasing the number of and access to black dentists. The ultimate goal is for the dental profession to at least be ethnically representative of the people it serves. Findings here might also give insight into adjusting the makeup of other non-representative health industries.

Jovan

Jovan Rumaldo Rivera-Lovato

Major: Women's and Gender Studies, and Ethnic Studies

It is most aspiring social workers' goal to do their best helping those whom are at the brunt of systems of racism, sexism, classism, ableism, and heterosexism. Students of color within Colorado State University's School of Social Work find themselves walking the border between what they know to be true about themselves, their families, and their communities and the way that the social work program sees them. This autoethnography is informed by Linda Smith's approach to research with Indigenous peoples, which revolves around seven Maori principals: Whanaungatanga; Mahaki; Manaakitanga; Aroha; Mana; Titiro, Whakarongo, Korero; and Kia Tupato. An observation in Professor Roe Bubar's "Indigenous Women, Children, and Tribes" class and a group interview with Zelle Moore, Jasmine Ontiveros, and Yulissa Munoz were conducted. Illuminated in these experiences was a deeply felt, shared understanding of the necessity to seek education outside of the School of Social Work. Anzaldúa's third space consciousness is an effective framework for understanding students of color experiences in the School of Social Work because, like la mestiza, they are caught in the borderlands between two conflicting worldviews. The focus of this study is on those students of color in the School of Social Work who seek to find a new consciousness through an Ethnic Studies and/or Women's and Gender Studies education. With an education in both fields, through both modes of consciousness, some students are producing a new consciousness in social work that is different than a "traditional social worker."

The Culture v America

E'Lias Sutton

Major: Political Science

The United States only has about 5% of the world's 7.53 billion person population, but its jails hold 21% of the world's prisoners. From 1980 to 2015 the number of people incarcerated in America went from 500,000 to an overwhelming 2.2 million. Blacks and Hispanics make up about 32% of the US population, yet they account for more than 56% of the incarcerated. These are just a few of the alarming statistics that display the injustice, known as the American prison system. Incarceration rates are just one of the many things that personify the harsh reality that racism and inequality are alive and well in America. This project is not only important to me, but to my people as a whole. Black people live in fear and die in prison. I believe if I can bring some awareness to this historically recurring atrocity, my people will be able to both relate and hopefully change for the better. My goal is to educate black people on the discrepancies of the prison system and what actions are in our power to avoid becoming just be another statistic. To accomplish this goal I will interact with my people, display current information, and advocate for equality within the justice system. Frederick Douglass once said "It is easier to build strong children than to repair broken men".The current system is not only breaking black men and women, but doing its very best to keep them broken.

Gendered approach to the Refugee Crisis in Middle East and North Africa

Joyce Xinyi

Major: Political Science

The instability in the Middle East during this modern age that caused many crises within the region. One of the crises that has gained much attention globally is the refugee crisis, the major displacement of people within the region towards neighboring countries and beyond. Consequently, this refugee crisis sparked many needs, not only for host and receiving countries but also for humanitarian groups, to identify and address the challenges brought by this phenomenon. However, it is essential to approach this refugee crisis through a gendered lens, as women are often more disproportionately impacted. During this humanitarian crisis, Women regularly faces concerns such as sexual and gender-based violence, sex-trafficking, female health care, trauma, etc. Hence, this study would primarily focus on women's experience of the refugee crisis amidst regional instability in the Middle East, with an aim to explore how this crisis causes unique differences to women's reality. Analysis of previous research, data, reports made by government or NGOs, mainstream news articles, interviews and other relevant information regarding the topic in Middle Eastern countries such as Syria and Iraq will be utilized to conduct this study. Through discerning the information available concerning this topic, it is found that women are more often vulnerable in the face of the threats at all stages of this mass scale displacement of people within the Middle East region. Therefore, it is crucial to examine the crisis through a gendered approach as it will allow a more profound understanding and management towards the crisis.

Isolation and Characterization of *Mycobacterium avium* and *Mycobacterium abscessus* Glycolipids and 6-O-methylglucose-containing Lipopolysaccharides (mGLPs).

Valentine Matongoh

Major: Microbiology

Our efforts were directed towards the efficient isolation, characterization and detection of antigenic GPLs and mGLPs isolated from *M. avium* 2285R and *M. abscessus* 19977 cells by an enzyme linked immunosorbent assay (ELISA). We used thin layer chromatography, gas chromatography and mass spectrometry to confirm the isolation of both mGLPs and glycolipids. The results illustrate that CS22 antibody is effective in detecting both *M. abscessus* 2285R mGLPs and *M. avium* deacylated lipids. In the future, detection of these antigens may be extended to the detection of the same as a biomarker of MAC disease and *M. abscessus* infection in patient's urine or serum samples.