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<th>Time</th>
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<tr>
<td>8:45 am – 12:45 pm</td>
<td>Oral Presentations</td>
<td>Student Union Building, Vallecito Room</td>
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<td>1:30 pm - 5:45 pm</td>
<td>Performances and Oral Presentations</td>
<td>Jones Hall, Roshong Recital Hall</td>
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<td>6:00-7:30 pm</td>
<td>Poster Presentations</td>
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<td>6:00-7:30 pm</td>
<td>Reception</td>
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2015 Undergraduate Research and Creative Activities Symposium Presenters:
You can PUBLISH your student work!

The *Metamorphosis* Review Committee at FLC will select 2 outstanding student papers to submit for online publication each semester in *Metamorphosis*, the COPLAC journal of undergraduate research. You can submit *excellent student work from this symposium* for consideration in the next edition of *Metamorphosis* to be published next Fall 2015. We already have many fine FLC students represented in *Metamorphosis*. You can see our website at [http://www.fortlewis.edu/metamorphosis](http://www.fortlewis.edu/metamorphosis) for details.

Student proposals (shorter versions of your final research papers) or your entire paper (if available) will be due via our online submissions portal by **September 30, 2015**. Our review committee will select the 2 most outstanding proposals, with the winning authors then having about 3 weeks to produce and submit a final 10-15 page (single-spaced) paper before the journal submission deadline. Your final paper will then appear in the online journal *Metamorphosis*. If you are interested in this publication opportunity, please email martin_m@fortlewis.edu for submission guidelines.
Oral Presentations – Morning
Thursday, April 23, 2015
Fort Lewis College, Vallecito Room

8:45  Jacob Feirson. Letting Down Her Hair: Learning Gender through Fairy Tales. Anthropology


9:15  Jaimee Souder. Elizabeth Gaskell’s North and South: Breaking from Althusser’s System. English

9:30  Bryanna Kinlicheene and Kaylyn LeClaire. Effects of Self-Perceived Stereotypes and Self-Efficacy on Academic Success Specific to Native American Students at Fort Lewis College. Psychology

9:45  Break

10:00 Carla Weston. You Are What You Play: Video Games, Gender and Socialization. Gender and Women’s Studies


10:30 Matthew A. Boyd and Opie Wilson. Exploring Social Media Use in NCAA Division II Athletic Departments. Exercise Science

10:45 Kyle Lewis. Age and Origin of the Mount Sneffels Stock, Western San Juan Mountains, Colorado. Geosciences

11:00 Break

11:15 Giancarlo Vigil. Revisiting the Pueblo Revolt of 1680: The Historiographical Debate. Modern Languages


11:45 Evan Meacham. Anonymous: Re-imaging Deep Play in the Internet Age. Anthropology

12:00 Hollie Wall. Characterization of Aldolase and Transaldolase Activities in Acidobacterium capsulatum. Chemistry

12:15 Eldora Thompson. The Price of Yellowcake: The ecological and human health impact of uranium mining in Church Rock, New Mexico. Environmental Studies

12:30 Theresa O’Hare. The Case for Parental Rights as Property Rights. Philosophy
Oral Presentations - Afternoon  
Thursday, April 23, 2015  
Fort Lewis College, Roshong Recital Hall

Art & Design

1:45  **Jason Harris.** Art of Another Kind: Understanding the Process and Relevance of Informalism.  
Art & Design

2:00  **Kenneth Breece and James Rollins.** Staging Chekhov's Short Stories.  
Theatre

2:15  **Eva R. Altermatt and Lionel D. Di Giacomo.** Aesthetic Experiences in Outdoor Experiential Education: Possible Impacts on Leadership Development and Attitudes About Inclusivity.  
Exercise Science

2:30  **Catherine Vogel.** Insight into the Origin of Gold at the Bessie G Mine, La Plata Mountains, Southwest Colorado.  
Geosciences

2:45  Break

3:00  **Katherine Elliott.** Octavia Butler's Dialogue On Race and Gender in Speculative Fiction.  
English

3:15  **Dan Abshire, Dillon Hughes, Gavin Martinez, Cody Montoya, and Michael Revak.** Development of an Off-Road Vehicle for the SAE Baja Competition.  
Physics and Engineering

3:30  **Alexander Thompson.** Uncovering Political Psychology: An Application of Political and Social Psychological Theory as tied to Partisan Decision Making.  
Psychology

3:45  **Luke Knudsen.** Transgender Young Adult Experiences: Shifting Normative Expectations and Experiences.  
Gender and Women’s Studies

4:00  **Cassandra Seaney.** Digraphs of Rings.  
Mathematics

4:15  Break

4:30  **David Fountain.** Alternative Splicing of the PCLO Gene is Conserved Between Mice and Zebrafish.  
Biology

Chemistry

5:00  **Marshall Holloway.** Effects of Off-Highway Vehicle usage in the San Juan National Forest.  
Environmental Studies

5:15  **Evan West.** Dilemma or Delight? The Role of Dioramas in Colorado History Interpretation, 1930-Present.  
History

5:30  **Shelby George.** Effects of Sudden Aspen Decline on Large Mammalian Activity in Southwestern Colorado, USA.  
Biology
Poster Presentations
Thursday, April 23, 2014
6:00-7:30 pm
Fort Lewis College, Student Union Ballroom

B-1 Eans, Kelsey; McKenna, Kailey; Frazer, R. Lee. Gender, Racial, and Ability Homogeneity and Disparity in Popular Outdoor Magazines: A Content Analysis of Image. Adventure Education

B-2 Liaw, Francis; Houghton, Emily; Frazer, Lee. The Correlation between Physical Training for Adventure Experiences and Self-efficacy. Adventure Education

B-3 Kehoe, Fiona. Human Sacrifice Among the Celts. Anthropology

B-4 Miller, Alaina. Patterns in Methods of Body Disposal: An Analysis of Choice Rationale and Urbanization. Anthropology

B-5 Smith, Cooper G. How Men and Women Became Leopards: Comparing the Textiles and Artwork of Çatalhöyük, Turkey. Anthropology

B-6 Vaught, Rose. Holy Gender Stereotypes Batman! A Linguistic and Visual Study of Gender Stereotyping in Graphic Novels. Anthropology

B-7 Davis, Tynan; Stuart, Mariah E.; Huntoon, Jessica; Meyer, Carrie Dr. Concussion Reporting in NCAA Division I-III Collegiate Athletes. Athletic Training

B-8 Parsons, Nina; Harmelink, Ashley; Meyer, Dr. Carrie. Differences in Concussion Symptoms in Males and Females. Athletic Training

B-9 Betancur, Alec; Reese, Caitlyn; Lehmer, Erin. Mexican Free-Tailed Bats: A Possible Transmission Vector for White-Nose Syndrome? Biology

B-10 Espinoza, Veronica; Harman, Stephen; Blake, David. In vivo Combination Therapy Against 4T1 Mouse Breast Cancer Cells Using Doxorubicin and CTLA-4 Blockade. Biology

B-11 McDowell, Aaron; Steltzer, Heidi. Earth and Water: Landcover and River Health on the Missouri River. Biology

B-12 McLain, Katherine; Byrd, Sherell. Validating the Use of English Lavender Extract as an Herbal Remedy to Combat Inflammation. Biology

B-13 Caldera, Hector; Lindquist-Kleissler, Brent; Ozvat, Tyler; Miller, Dr. Kenneth A. Synthesis of Conformationally Constrained Diarylether Cyclophanes. Chemistry
Chadeayne, Devon; Davis, Summer; GreyEyes, Shawn; Knewitz, Allison; Stelmaszek, Jordan; Mouzakis, Kathryn. Structure and Function of the HTLV-1 pro-pol Frameshift Site. Chemistry

Durnford, Kathryn M; Chapman, Erich G; Atene, Antonia L; Broad, Amanda J; Mackenzie, Jason T; Yeager, Dan L; Kieft, Jeffrey S; Mouzakis, Kathryn D. Determination of the HTLV-1 pro-pol Frameshift Site Secondary Structure. Biology and Chemistry

Hemerda, Carsyn; Askeland, Gracie; Wilbanks, Joseph; McKenzie, Jason; Sommerville, Les. Genomic Analysis of Excreted Enzymes in Acidobacterium capsulatum. Chemistry

Smith, Tehya; Gaffri, Codie; Primmer, Austin; Williams, Stephanie. Proteomic Characterization and Cloning of Glucokinase and Phosphoenolpyruvate (PEP) carboxykinase in Acidobacterium capsulatum. Chemistry

Spring, Atma. Self-Assembly of Size Tagged Triblock Copolymer Brushes via DNA Hybridization. Chemistry

Boren, Justin; Chambellan, Megan; Somogyi, Aaron; Taziwa, Benson. Sediment Exclusion in Small Water Systems using a Coanda Effect Device. Engineering

McCarty, Jordann; Stuntz, Andrew; Liebel, David; Johnson, Geoffrey. The Hopkopter: A Solution to Maneuvering in Cluttered Environments for Extended Periods of Time. Engineering

Owen, Gayle; Klema, Nate; Higashi, Ty; Christofanelli, Kyle. Thermal Electric Generators - a Versatile Power Source. Engineering

Graves, Kevin. Formation and Characterization of Porous Silicon. Physics

Casasanto-Zimmermann, Kale. The Effects of Mountain Pine Beetles on Lodgepole Pine Stands in Colorado. Environmental Studies

Fields, M.J.F. A New Generation of Resilience: Analysis of the Challenges Facing Young Farmers in the West. Environmental Studies

Francis, Brandon. The Reintroduction of Cultural Concepts into Diné Gardening Workshops: The Effect it May Have on Levels of Interest and Participation on the Navajo Reservation. Environmental Studies

Jenkins, Candice. Refashion: Extending the Life Cycle of Clothing and Revaluing Waste. Environmental Studies

McDonald, Ryan. Rooftop Greenhouses and the Restaurant Industry. Environmental Studies

Rafferty, Madison. E. Coli in the Animas River. Environmental Studies
B-29 DeSouchet, Nicole; Chavarria, Manuel; Dasugo, Dusty; Thompson, Melissa. The Role of Cutaneous Sensory Feedback During Running. Exercise Science

B-30 Schulke, Forest; McWhorter, Alex; Dillon, Noah; Savage, Kevin; Knight-Maloney, Melissa. Investigation of Stroke Volume Response to Incremental Exercise in Cyclists of Varying Fitness Levels. Exercise Science

B-31 Adams, Cale; Gianniny, Dr. Gary L. Chasing Fossils: the Timing and Extent of an Upright Calamites/Lycopod Forest, Pennsylvanian Hermosa Group, SW Colorado. Geosciences


B-33 Canova, D; Kenny, R; Liu, T. Preliminary Rock Varnish Exposure Ages on Pediment Boulders from the Henry Mountains, Utah: Implications for Pediment Formation Processes. Geosciences

B-34 Dwyer, Nora J. New Insight into the History of the Chicago Basin Stock from U/Pb Zircon Age Constraints, Needle Mountains, Southwestern Colorado. Geosciences

B-35 Salter, Nicholas. Investigation of Silver Concentrations in Galena and Tetrahedrite at the Highland Mary Mine, San Juan County, Colorado. Geosciences


B-37 Govreau, Jason. Directed Graphs of Commutative Rings with Identity: Expanding Graphs to Understand the Structure of Larger Rings. Mathematics

B-38 Jessett, CJ. Equations Describing Betweenness Values in Tree Graphs. Mathematics

B-39 Thomas, Elizabeth; Lienert, Carl. Linearly Inclined Zealots. Mathematics

B-40 Brittain, Benjamin. Intergenerational Fairness through Taxation. Philosophy

B-41 Myers, Justin. How To "Do" Philosophy: A Practical Guide to Understanding How to “Do” Philosophy… Philosophy

B-42 Benally, Leayah. The Relationship Between Personality Tendencies and Level of Physical Aggression. Psychology
B-43 Corcorran, Brandon. *Psychopaths Among Us: What Predisposes People to become Psychopaths.* Psychology

B-44 Garrett, Crystal; Dumm, Mary; Templeton, Janice. *Levels of Acceptance, Compassion and Stereotype Towards Mental Illness.* Psychology

B-45 Horn, Hannah; Miller, Gwendolyn; Gwilliam, Jessica; DiCecco, Marissa; Shields, Maia; Templeton, Janice. *The Effect of Quotes from Authority on Victim Blaming Attitudes in Cases of Sexual Assault.* Psychology

B-46 John, Ericka. *Gender Sensitivity to Disgust.* Psychology


B-49 Yazzie, Jennifer; Yazzie, Shaquilla. *The Effect of Skin Tone on Level of Attractiveness.* Psychology


B-51 Cannon, Courtney. *Exploring the Effect of Domestic Violence on Children Growing up in the Home.* Sociology

B-52 Foran, Tomlyn; Seis, Mark. *Ferocious Hatred or Reverent Coexistence: Disparate Human Ontologies of the Wolf.* Sociology

B-53 Ketelsleger, Travis. *Public Perception of the Police.* Sociology

B-54 Young, Emily. *Eco-Education: Nature as a Window into the World for K- 12.* Sociology
**DEVELOPMENT OF AN OFF-ROAD VEHICLE FOR THE SAE BAJA COMPETITION**

Abshire, Dan; Montoya, Cody; Revak, Michael; Martinez, Gavin; Hughes, Dillon

Engineering

Baja SAE is an intercollegiate engineering design competition for undergraduate and graduate engineering students. The object of the competition is to simulate real-world engineering design projects and their related challenges. Each team is competing to have its design accepted for manufacture by a fictitious firm. The students must function as a team to design, engineer, build, test, promote and compete with a vehicle within the limits of the rules. They must also generate financial support for their project and manage their educational priorities.

Each team's goal is to design and build a single-seat, all-terrain, sporting vehicle whose structure contains the driver. The vehicle is to be a prototype for a reliable, maintainable, ergonomic, and economic production vehicle which serves a recreational user market, sized at approximately 4000 units per year. The vehicle should aspire to market-leading performance in terms of speed, handling, ride, and ruggedness over rough terrain and off-road conditions. Performance will be measured by success in the dynamic events which include; rock crawl, acceleration, hill climb and endurance events. Along with the dynamic events, the success of the vehicle will be determined by static events including the design report and presentation.

Using the academic disciplines provided by the Fort Lewis Engineering department, the 2015 Baja SAE team was able to design the entire vehicle from scratch. The design has been inspired by universities which have competed in the event for many years, yet the originality of the vehicle has been the overriding motivation behind the design. The team's focus was directed towards ensuring that the vehicle would do well in each dynamic event rather than designing around a specific event. It was essential that each member of the team worked closely with one another in order to overcome the difficulty of an integrated project.
This study investigates a unique Calamites-bearing layer exposed in the Pennsylvanian Hermosa Group, north of Durango, Colorado. In these strata, three previously undocumented localities containing over 65 Calamites and one 4m x 50cm lycopod fossil were identified. These plant fossils are found encased by braided river deposits, composed of trough crossbedded, felspathic-arenites. At the locality providing the best exposure of the three new locations, a 72 meter thick stratigraphic section was measured. Using a combination of biostratigraphic marker-beds and measured sections, the strata were correlated to Sequence Two of the Hermosa Cliffs (Gianniny and Miskell-Gerhardt, 2009). This correlation helps delineate the lateral extent, and the early Desmoinesian age of the Calamites-bearing layer (Eastep and Gianniny, 2013) along a 4.5 kilometer section of the Hermosa Group. These new data update the depositional model for Sequence Two, of Gianniny and Miskell-Gerhardt (2009). In addition to this, these fossils provide evidence for repeated pulses of fluvial deposition and rapid subsidence on this tectonically active eastern margin of the Paradox Basin.
AESTHETIC EXPERIENCES IN OUTDOOR EXPERIENTIAL EDUCATION: POSSIBLE IMPACTS ON LEADERSHIP DEVELOPMENT AND ATTITUDES ABOUT INCLUSIVITY.

Altermatt, Eva; Di Giacomo, Lionel

Adventure Education

Part of the draw of expedition-based experiential education program are the absorbing, powerful moments participants may have in wilderness and non-human nature. These moments in nature are often called ‘aesthetic experiences’, characterized by total engagement in the present, awe on the part of the experiencer, and conditions of beauty or sensory novelty. Widely described in the literature as experiences which emphasize unity and connectedness, aesthetic experiences may promote inclusive and socially just leadership attitudes in outdoor program participants. These experiences may be of value to educators, but are currently poorly understood within the field of experiential outdoor education.

Studying eleven participants in a college level Adventure Education semester emphasizing field expeditions, we tracked leadership beliefs and collected aesthetic experiences from participants over a two month period. Both shifts in leadership beliefs and aesthetic experiences were found, revealing increased belief in socially just concepts of leadership. While a conclusive connection between leadership beliefs and aesthetic experiences was not found, data collected provides insight into program outcomes and has produced a groundwork for further research into aesthetic experience and outdoor education, along with recommendations for outdoor experiential educators interested in promoting aesthetic experiences in their programs.
New optically stimulated luminescence (OSL) ages were obtained from fine-grained fluvial sediment exposed in a well-preserved outcrop at the southern end of the San Juan Mountains, Durango, Colorado (Z13, 249144mE, 4132617mN; 2098 m). The sedimentary sequence exposed in the ~4 meter high outcrop consists of multiple and repetitive sets of mm-size rhythmite couplets, climbing ripples, planar laminae, and minor, small-scale water escape structures, overlain by a diamicton; the outcrop was previously interpreted as a remnant of the glacial landscape formed during a Bull Lake glacial advance (MIS 5d - 6). Three samples collected along a vertical transect (~0.8 meters apart) yielded preliminary ages of ~50±10ka, 51.61 ± 8.07 ka, and ~65 ± 13ka (MIS 4, early Wisconsin Glaciation, ~55ka). The OSL ages are asynchronous with northern hemisphere glacial maximums. No previous studies have reported significant asynchronous glacial advances as far south as the study area (~37° N latitude). Alternative explanations were sought to explain the seemingly anomalous ages, including: (1) OSL bleaching; (2) abandoned meander sequences in the adjacent glacial valley (Animas River); and, (3) deposition from a stream that presently occupies an incised channel and flows ~parallel to the outcrop (Spring Creek).

Sediment deposited in glacial environments is often inadequately bleached, but OSL has been successfully used on glaciofluvial deposits. Insufficient bleaching would yield older ages, which suggests that the sedimentary sequence in this study is not correlative with older Bull Lake glacial deposits. Similarly, a lack of trough cross-bedded sands, mud drapes, lateral accretion surfaces, and fining upward sequences argue against a meander sequence. It is also difficult to explain the process linkage that would yield the change of stream flow direction required for sediment to have been deposited by an entrenched stream that, at present, drains away from the outcrop.

Field evidence from the isolated outcrop was insufficient to definitely determine sediment provenance and glacial origin. Consequently, we remain open to the prospect that this outcrop may represent the first quantitative ages of a significant asynchronous glacial advance in the southern San Juan Mountains.
RETURNING TO AZTLAN: IMMIGRANTS FORGING NEW LIVES IN FAMILIAR PLACES

Barbour, Brandon

Sociology

The socio-economic conditions in Latin America are a driving force of emigration from Latin America to the US for those in search of wage earning opportunities. I explored this recent demographic pattern by working with Compañeros: Four Corners Immigrant Resource Center in Durango, CO. After making inferences from data in the form of W-2 income statements, I have found numerous instances of working age males, of Latin American origin, sojourning in the United States. I suggest that the word ‘sojourn’ more accurately portrays their lived experience because it implies a temporary stay, and a majority of clients have expressed desires to return to their country of origin after sending remittances (money) to their dependents. The principle reason, as I have found, as to why workers embark on this path and sojourn is because there are no economic opportunities to provide for their families in their countries of origin. I propose this is due to years of neoliberal trade policies that have adversely affected Latin American economies. Through review of the current literature, I explain how the formation of the North American Free Trade Agreement (NAFTA), a cornerstone neoliberal trade policy, resulted in 2.3 million newly unemployed working class Mexicans from the agricultural sector alone. This case study provides examples of how trade policies imposed by the US and other international bodies onto Latin American countries have not yielded their promised fruits. Instead, the implemented agreements have caused economies in Latin America to contract and lose purchasing power and at the same time exaggerate disparities in wealth.
THE RELATIONSHIP BETWEEN PERSONALITY TENDENCIES AND LEVEL OF PHYSICAL AGGRESSION

Benally, Leayah
Psychology

This original empirical study examined the relationship between personality characteristics and the level of physical aggression. Participants from introductory level college courses completed a survey with a modified physical aggression scale and extraversion and introversion measurement scales. However, in this particular study we discovered that our predictions were reversed. There was no statistical significance, p=0.213. The extroverted individuals had lower physical aggression scores, opposite of the hypothesis. Overall, this study has opened another door in the realm of sport psychology, can you predict an athlete’s performance based off of their personality?
MEXICAN FREE-TAILED BATS: A POSSIBLE TRANSMISSION VECTOR FOR WHITE-NOSE SYNDROME?

Betancur, Alec; Reese, Caitlyn; Lehmer, Erin

Biology

*Pseudogymnoascus destructans* (Pd) is the fungus responsible for causing white-nose syndrome (WNS), a newly emerging disease that has killed more than six million hibernating bats since 2006. Despite its dramatic impact on global bat populations, little is known about the mechanism of transport or transmission of this fungal pathogen. The Mexican free-tailed bat, *Tadarida brasiliensis*, is a non-hibernating, long-distance migrant that congregates in roosting sites shared by hibernating bats susceptible to Pd. Given their large migratory range and frequent contact with other bat species, Tadarida may serve as an important vector in the transmission of Pd. However, because fungal spore dispersal via Tadarida has not been studied, this possibility is difficult to evaluate. The purpose of our study was to determine whether Tadarida is a transmission vector for cold-tolerant fungi including Pd. We sampled Tadarida from the Orient Mine in south-central Colorado in June and August of 2014. In this process, body surfaces of Tadarida were swabbed for fungal spores, and spores were cultured at 20 °C and 6 °C to determine whether Tadarida are capable of transmitting viable spores, including cold-tolerant spores including Pd. Our preliminary results indicate that at least 10 unique fungal genera are transported on Tadarida capable of growing at 20 °C. We have also identified 7 fungal species cultured at 6 °C, which is considered to be the optimal temperature for Pd growth. These results demonstrate that Tadarida are capable of harboring viable psychrophilic fungal spores and provide a basis for potential transmission of WNS.
SEDIMENT EXCLUSION IN SMALL WATER SYSTEMS USING A COANDA EFFECT DEVICE

Boren, Justin; Chambellan, Megan; Somogyi, Aaron; Taziwa, Benson

Engineering

The purpose of this project is to develop a sediment exclusion device for use with village-scale water systems in developing countries. Reducing sediment mitigates abrasion and deposition in system components, leading to increased system life. Using the engineering down select process, a device that uses a Coanda effect screen was determined to best meet the project objectives and constraints. The device was tested in a laboratory set-up and in a field prototype. Laboratory tests were used to determine the hydraulic performance for five Coanda effect screens, each with unique geometry; the field prototype was completed to confirm the constructability and sustainability of the design. The design parameters include sediment concentration, sediment size distribution, flow rate, dimensions of the Coanda effect screen (slot width, wire tilt angle, and wire width), and geometry of the spillway structure. Performance was assessed by measuring the fraction of sediment removed by the screen and the change in flowrate through the screen during a 10 minute batch trial with a sediment concentration of 20,000 mg/l. Analysis of sediment size distributions showed that of the screens tested, a 1.0 mm slot width screen with a 3/16” wire width and a 10º wire tilt angle was the most effective at removing sediment, with 48.5% of the material in the 0.5-0.85 mm range being removed and 65% of material from the 0.85 - 1 mm range being removed, compared with the 0.5 mm screen (tilt angle and wire width identical to 1.0 mm slot width) which removed 87% of material in the 0.5mm - 0.85mm range and removed 100% of material from 0.85 - 1.0 mm. Flow testing indicated that screen blockage by sediment particles reduced the flow through the screen by 3% during the trial run for a screen with a 1.0 mm slot width, whereas a screen with a 0.5 mm slot width resulted in a decrease in through flow capacity of 46% from initial flow rate of 13gpm. Based on the target flow rate and the laboratory test results, a Coanda effect screen of 1.0 mm slot width (geometry listed previously) can be used to efficiently remove sediment down to 0.5 mm, while also maintaining an adequate flow rate, throughout system use, because 49% of material between 0.5 - 0.85 mm was removed while only losing 3% of the Coanda effect screen’s initial through flow capacity. Field testing showed that the spillway section can be built using locally available materials and tools, except the Coanda Effect screen itself, while meeting the 4 work days for 4 workers constraint. The design team concludes that the Coanda Effect screen can be used to reliably remove sediment from sediment laden flows.
Lack of research exists in exploring social media use at the NCAA Division II level. The purpose of this study was to examine the ways in which National Collegiate Athletic Association (NCAA) Division II athletic departments utilize social media and how athletic departments measure the effectiveness of a social media campaign. Participants in the study (n=108) were NCAA Division II Sport Information Directors (SID), Sport Communication Directors, and Athletic Directors. They completed an online survey relative to social media utilization and social media metrics. Based on the literature, social media utilization was categorized into five groups: marketing, overseeing, fundraising, recruiting, and communication (Grainger, 2010; Jensen, Ervin, & Dittmore, 2014), consisting of Likert scale questions. Cronbach’s alpha was applied to determine the internal consistency of the items within each of the five categories in the survey (Gay & Airasian, 2011). The marketing subscale consisted of four items ($\alpha = .70$), the overseeing subscale consisted of four items ($\alpha = .82$), the fundraising subscale consisted of four items ($\alpha = .75$), the recruiting subscale consisted of four items ($\alpha = .81$), and the communication subscale consisted of four items ($\alpha = .36$). In addition, when asked to identify the ways in which the athletic department utilized social media, 106 athletic departments utilized social media for communication purposes and 100 athletic departments utilized social media for marketing. In terms of how athletic departments measure effectiveness, 80% employed site views and 64% employed social network friends as quantitative social media metrics. Additionally, 60% employed audience participation and 41% employed audience relationship as qualitative metrics. Future research is recommended to explore social media utilization throughout the various NCAA divisions and to examine the effectiveness of social media metrics exercised by athletic departments.
How does one interpret an enigmatic writer of early Realism and all he symbolized through acting in his plays? This question launched a two-semester project researching the writer, Anton Chekhov, and his work. Chekhov was a physician, naturalist, and playwright in Russia at the end of the 19th century.

This research was essential as the preliminary step towards the final performance; A Chekhovian Sonata: Love in 3 Movements ("The Bear," "The Bride," and "The Marriage Proposal") presented in February 2015. Although two of the one-acts were originally written as plays, the third piece, "The Bride," was a 1903 short story and needed to be adapted into a script. The cast, using devised and improvisational rehearsal methods, created a modern retelling of Chekhov’s story.

The research and the performances provided audiences with the proof of how poignant and vital the plays (and themes) of Chekhov can be for a contemporary audience.
INTERGENERATIONAL FAIRNESS THROUGH TAXATION

Brittain, Benjamin

Philosophy

How and to what extent future generations should be considered is an important issue in political philosophy. This presentation offers an argument for the proper method of consideration to ensure intergenerational fairness. The goal of the presentation is to make explicit what is meant by 'intergenerational fairness,' then to elaborate on how such a definition is both important and obtainable. The conclusion reached is that a progressive tax on the unilateral transfer of property (e.g. bequeathal, gift, etc.) may adequately provide for intergenerational fairness.
We report progress toward the synthesis of a series of chiral conformationally constrained diarylether cyclophanes with variation in the length of the bridging carbon chain. These cyclophanes are chiral by virtue of restricted bond rotation, not by the presence of stereocenters. Cyclophanes are a class of compounds that occur naturally and are conformationally constrained due to the presence of a carbon chain bridging the para positions of an aromatic ring. Many naturally occurring diarylether cyclophanes have a seven-carbon bridge linking the diarylether component of the molecule. We report a method for the synthesis of diarylether cyclophanes with variation in the tether length. Experiments to determine the relationship between tether length and the barrier to racemization will be disclosed. Because of structural similarities to biologically active diarylether heptanoids, the synthesis of diarylether cyclophanes could lead to compounds with significant biological activity.
EXPLORING THE EFFECT OF DOMESTIC VIOLENCE ON CHILDREN GROWING UP IN THE HOME

Cannon, Courtney
Sociology

Domestic violence has been a cultural taboo. My research began with exploring the historic reality of domestic violence. I looked at the social context of domestic violence and how social movements led to legislation of domestic violence laws. While domestic violence is defined in the state of Colorado as being between two intimate partners, there are often children living in the home where the violence occurs. Recognizing this, I explored the effect that domestic violence has on children who witness it while their brains are developing and family socialization is occurring. My research included both the cognitive development of children as well as research done on adults who had grown up in homes where domestic violence was present. In the second part of my research, I looked at solutions to domestic violence by immersing myself in the field of advocacy work. Finally, my research explored several different resources available in Durango for survivors of domestic violence.
Here we report the first rock varnish exposure ages on boulders from two pediment surfaces adjacent to the Henry Mountains (~38.1° N latitude). Rock varnish is a slowly accreting, Mn- and Fe-rich surface coating precipitated in microstratigraphic layers on subaerially exposed surfaces. Varnish microlamination compositional differences are principally influenced by regional climate conditions. Pediments are gravel-covered, gently-sloping, low-relief planation surfaces incised into bedrock; their processes and formation have been a source of debate for more than a century. In the Henry Mountains region, ten discrete, dissected pediment levels (L0-L9; oldest to youngest) have been previously mapped. Varnish microlamination (VML) dating was conducted on pediment level L6 (northeast of Mt. Hillers; UTM: Z17, -2124969mE, 4640124mN) and pediment level L8 (west of Mt. Ellsworth; UTM: Z17, -2137380mE, 4618798mN). VML exposure ages were derived using the varnish microlamination record for the western USA. An age of ~157 ka was obtained for pediment L6. This date correlates to wet period (WP) 11 in layering unit (LU)-6, which is correlative with MIS-6 (Late Illinoian Stage or Bull Lake Glaciation). An age of ~105 ka was obtained for pediment L8, which corresponds to LU-5 (WP8) and is coeval with MIS-5d (a cooler, wetter MIS-5 interval). Microlamination layers precipitated during periods of wet climate are black on ultra-thin sections under transmitted light microscope and Mn and Ba achieve their highest concentrations in these dark layers. Microlamination stratigraphy and mineralogy indicate that gravel emplacement/pediment formation occurred during periods of cold and wet climate wherein enhanced moisture levels may have promoted gravel transport. The Henry Mountains were not glaciated, but patterned ground and other periglacial features in the highest elevations correspondingly indicate that the region was impacted by episodes of cold and wet climate. Our aim is to contribute a better understanding of pediment formation and determine whether pediments are shaped by brief, high-energy, fluvial flow regimes during wet climatic events. Additional VML ages (forthcoming) are needed to determine whether all pediments in the Henry Mountains region formed in a similar fashion.
**THE EFFECTS OF MOUNTAIN PINE BEETLES ON LODGEPOLE PINE STANDS IN COLORADO**

Casasanto-Zimmermann, Kale

Environmental Studies

Lodgepole pine stands (*Pinus contorta*) throughout Colorado have recently experienced an increase in mountain pine beetle (MPB) attacks, which has led to heightened tree mortality in affected regions that are directly tied to these attacks. Decreased frequency of cold days and warmer winter temperatures is what has allowed for MPB’s to overtake entire pine forests. The mountain pine beetle has instigated billions of tree deaths from Mexico to Alaska since 2000 and it continues to harm pine stands to this day. Although there are still many unknown aspects of the mountain pine beetles’ (*Dendroctonus ponderosae*) existence it has been proven that the increased reproduction rate that is occurring in mountain pine beetles can be broadly attributed to climate change. It is known that there are three main factors that contribute to the success of mountain pine beetles: density of large trees, drought, and warmer temperatures, which are all factors presented by the effects of climate change. According to a study done on the effects of the mountain pine beetle; these infestations have changed surface fuel and wildfire hazards, vegetative compositions, converted live carbon sinks to dead and slowly decaying carbon sources, impacted nutrient cycling and water quality, shifted evapotranspiration and albedo, modified local surface energy balance, and changed regional climate. Many researchers have been exploring ways to successfully enact strategies that mitigate, suppress, and regenerate lodgepole pine forests that have been overcome by mountain pine beetles. This research aims to discover the effects the mountain pine beetle has on lodgepole pine species in Colorado and how those issues relate to changes in climate and ecosystem services of the affected areas.
STRUCTURE AND FUNCTION OF THE HTLV-1 PRO-POL FRAMESHIFT SITE

Chadeayne, Devon; Davis, Summer; GreyEyes, Shawn; Knewitz, Allison; Stelmaszek, Jordan; Mouzakis, Kathryn

Chemistry

Human T-cell leukemia Virus Type I (HTLV-1) was the first identified human retrovirus, identified in 1980 (1). Infection with HTLV-1 results in adult T-cell leukemia with 5-10% incidence. An estimated 15-20 million individuals worldwide are infected with HTLV. Replication of retroviruses, such as HTLV, is dependent upon synthesis of viral structural and enzymatic proteins. Synthesis of HTLV’s enzymatic proteins (Protease (PR), Reverse Transcriptase (RT), and Integrase (IN)) is dependent upon programmed ribosomal frameshifting (PRF). PRF is defined by a programmed change in the ribosome’s reading frame during translation.

In this work, HTLV-1 pro-pol -1 PRF is investigated. The pro-pol frameshift site consists of a heptanucleotide slippery sequence (UUUAAAC) followed by a downstream structure. The frameshift efficiency at this site is ~10% (2). A pseudoknot structure is predicted downstream of the slippery sequence (3). We hypothesize that the pseudoknot structure contributes significantly to the frameshift efficiency. To test this hypothesis, we designed four variant frameshift sites to test the importance of the pseudoknot structure to frameshifting. An in vitro dual-luciferase frameshift assay will be utilized to determine the frameshift efficiencies for the wild-type and variant frameshift sites. We report successful cloning of all of the plasmid DNAs, which code for the experimental and control RNAs used in the dual-luciferase frameshift assay. Eight of the ten plasmid DNAs has been successfully linearized and used for RNA synthesis and subsequently purified. Future work will include the synthesis and purification of the remaining RNAs, and final determination of the in vitro frameshift efficiency for each site.
Psychopathy is one of the most difficult disorders to diagnose and treat. Psychopaths can appear normal and charming, but they lack a moral conscience and empathy. This lack of remorse and deviance makes them manipulative, and volatile which can lead to criminal behavior. What predisposes a person to become a psychopath? Do childhood environmental factors predispose people to become psychopaths? Or is it the way the brain is wired and functioning that helps explain why people turn to psychopathy? Biological and genetic factors can contribute to how a person acts, as well as show what they are capable of doing. A psychopath’s brain functions differently than a non-psychopathic person’s brain. Along with biological factors, environmental factors, such as low SES, and childhood tragedies, play a role in whether or not a person becomes a psychopath later on in life. With that said, this project takes a case analysis approach to understand potential factors contributing to the development of 2 serial killers, Ted Bundy and Jeffrey Dahmer. Both of these men are prominent figures that display psychopathy to its very core. What is found is that biological and genetic influences play a tremendous role in turning people to displaying psychopathic tendencies. Environmental factors can play a role with that, that finally pushes people over the edge.
The purpose of this study was to determine the frequency of misreporting of concussion symptoms of NCAA division I-III student-athletes and to learn why and how they were able to falsify information on baseline or follow-up concussion testing. We gathered contact information from all NCAA Division I-III schools targeting those with contact sports. We split the United States into 7 regions and randomly selected 15 schools from each NCAA level within each region. Coaches from each school was then contacted and asked to forward the survey to the student-athletes on his/her team. Data was received from 817 athletes.

The first hypothesis of this study stated that athletes have figured out ways to falsify and misreport results on a baseline and/or follow-up concussion testing. Several questions in our survey asked about different ways to falsify information on concussion testing. Results included 76 out of 317 (24%) hid their concussion from medical staff, 47 out of 286 (16%) said they would hide their symptoms from staff, 47 out of 187 (25%) admitted hiding symptoms when returning to play, 34 out of 258 (13%) confessed they would alter results to return to play quicker and 37 out of 314 (12%) admitted that if they sustained another concussion they would hide their symptoms from sports medicine staff. Chi² results did not support this hypothesis.

Our second hypothesis was Division I athletes are more likely not to report concussion symptoms than Division II or III. In the survey, two questions were linked to this hypothesis: “Have you been diagnosed with a concussion?” and “Have you sustained a concussion but did not report it to anyone?” The results showed no significant differences; 83 out of 189 (44%) Division I athletes, 104 out of 305 (34%) Division II athletes and 139 out of 312 (44%) Division III athletes reported having had a diagnosed concussion. 78 out of 189 (41%) Division I athletes, 105 out of 305 (34%) Division II athletes, and 132 out of 312 (42%) Division III athletes stated they had sustained non-reported concussion during their collegiate career.

Although both hypotheses were rejected, data collected from the survey showed that non-reporting and lying about concussion symptoms is occurring in the NCAA. Further studies of a larger population of NCAA athletes would help medical providers better understand ways in which concussion testing and diagnoses can be improved to protect patients.
THE ROLE OF CUTANEOUS SENSORY FEEDBACK DURING RUNNING

DeSouchet, Nicole; Chavarria, Manuel; Dasugo, Dusty; Thompson, Melissa

Exercise Science

Gait and locomotion patterns are shaped by sensory feedback and input from the outside environment. Many different sensory systems including visual, vestibular and somatosensory, contribute to the overall control of gait [1]. The plantar surface of the foot is the only part of the body to constantly be in contact with the ground during bipedal locomotion, as a result sensory information from cutaneous receptors to thought to influence human gait patterns [1,2]. The lack of information from cutaneous receptors has been shown to affect kinematic variables during human walking [3]. However, the role of cutaneous feedback during running is not well understood. The aim of our research was to specifically minimize cutaneous feedback by anesthetizing the soles of the feet in order to further understand the role of cutaneous sensory feedback during running. We hypothesized that with loss of cutaneous feedback from the plantar surface of the foot individuals would run with similar mechanics in the barefoot and shod conditions.

Nine healthy active subjects (6 male, 3 female); mass: 62.6+12.2 kg; age: 25+1.71 years participated in this study. 10 trials were completed in each of the following conditions: barefoot run (BF), shod run (SHOD), barefoot run with anesthesia (BF ANEST), shod run with anesthesia (SHOD ANEST). For the aestheticized conditions intra-dermal injections consisting of a total of 6mL 1% lidocaine per foot were administered to the plantar metatarsal heads, plantar lateral column and plantar heel following standard alcohol skin prep. 3D joint angles, stride length and velocity were measured via a 6-camera Vicon motion analysis system. Ground reaction forces were measured in synchrony with motion capture data. Repeated measures ANOVA tests were performed to analyze kinematic and kinetic changes associated with the four conditions.

The results show statistically significant differences between the BF and SHOD conditions in terms of velocity, ankle angle at ground contact, peak vGRF and peak apGRF. Significant differences were also found between the BF ANEST and SHOD ANEST conditions in terms of peak vGRF. For a respective shoe condition (BF or SHOD) there were no significant differences between the aestheticized and non-aestheticized conditions.

These results support previous findings of reduced GRFs and adopting a plantarflexed position at ground contact when running barefoot. The lack of significant changes in the aestheticized conditions suggests that plantar cutaneous sensory feedback does not play a major role in influencing running mechanics. It is possible that, given the high forces involved in running, other sources of feedback including information from muscle and joint receptors provide dominant sources of sensory information when running.


I have developed equations for calculating betweenness values of particular vertices in different types of tree graphs. Starting with particular vertices in simple tree graphs I was able to expand to more complex tree graphs and generalize. These methods I used to develop betweenness equations in tree graphs can be extended and applied to other types of graphs with minor modifications.
DETERMINATION OF THE HTLV-1 PRO-POL FRAMESHIFT SITE SECONDARY STRUCTURE

Durnford, Kathryn M; Chapman, Erich G; Atene, Antonia L; Broad, Amanda J; Mackenzie, Jason T; Yeager, Dan L; Kieft, Jeffrey S; Mouzakis, Kathryn D

Biology and Chemistry

Human t-cell leukemia virus type 1 (HTLV-1) is a retrovirus that targets CD4+ T-cells in humans. Expression of human t-cell leukemia virus type I (HTLV-I) enzymes requires two -1 programmed ribosomal frameshifts (PRFs). These events occur between the gag-pro and pro-pol open reading frames. Each frameshift site includes a heptanucleotide slippery sequence followed by a downstream structure, which act in cis to produce specific frameshift efficiencies. While the -1 PRF and slippery sequences of these frameshift sites have been established in HTLV-I, the secondary structures have not been determined. In the pro-pol frameshift site, an RNA pseudoknot is predicted to fold downstream of the UUUAAAC slippery sequence. However, no structural data exists for this RNA. Here, we report a preliminary structure of the HTLV-1 pro-pol frameshift site RNA. Nucleotide reactivity data acquired from selective 2'-hydroxyl acylation experiments analyzed by primer extension (SHAPE) is consistent with a pseudoknot secondary structure. These results suggest the existence of a pseudoknot structure in the HTLV-1 pro-pol frameshift site.
NEW INSIGHT INTO THE HISTORY OF THE CHICAGO BASIN STOCK FROM U/PB ZIRCON AGE CONSTRAINTS, NEEDLE MOUNTAINS, SOUTHWESTERN COLORADO

Dwyer, Nora J.
Geosciences

The Chicago Basin stock (CBS) is a porphyritic granite hosted by Mesoproterozoic granite in the Needle Mountains of southwestern Colorado. Previous studies have interpreted the timing of emplacement as Oligocene or Miocene, and have documented extensive molybdenite mineralization of this stock.

New U/Pb analyses on zircons from a sample at the core of the CBS reveal three zircon populations. Some of the crystals analyzed are ~1.4 Ga xenocrystic zircons contributed by melting and incorporation of the adjacent Eolus Granite. The most abundant fraction of zircons yielded an age 28.09 ± 0.36 Ma while a smaller population defined an age of 9.1 ± 0.5 Ma. No distinct core to rim variations were determined in any of the zircons. The ~28 Ma emplacement corresponds to widespread regional magmatism and volcanism from 29-27 Ma related to caldera eruption. The ~9 Ma population of zircons is similar in age to fission-track zircon age previously recorded in the CBS. The Miocene zircons correspond to emplacement of small volume granitic stocks across the western San Juan Mountains some of which are also related to molybdenite mineralization. These data imply that the Chicago Basin stock was a site of at least two different events that either involved multiple generations magma emplacement or an Oligocene pluton overprinted by Miocene veins and hydrothermal alteration.
Evidence suggests advertising may reinforce stereotypes about the demographics of outdoor recreation participation in the United States (Martin, 2004). Addressing this concern, we conducted a content analysis of images containing people in three popular outdoor magazines – Backpacker, Climbing, and Rock and Ice, for the period between 2011-2014 – by quantifying who was represented, in terms of gender, race, and ability. In addition, in images depicting outdoor activities, we also analyzed images by risk level. Of the 2192 images we analyzed (published in the 48 issues that made up our sample), most represented white males or females. For instance, 95.7%, 98%, and 99% of the images depicting people in Backpacker, Climbing, and Rock and Ice, respectively, depicted white individuals. By contrast, a small percentage of images, ranging from 1-4.3%, portrayed people of color. Similar disparities were found for ability, as images overwhelmingly displayed able-bodied individuals. At the same time, disparities in gender representation were also high for the period, particularly in the case of Climbing and Rock and Ice, of which 29% and 24.5% of images, respectively, represented females. Similarly, in images showing outdoor activities, high-risk activities (e.g., ice climbing) overwhelmingly depicted white males doing these activities. In short, for the three magazines we examined, white, able-bodied males were disproportionately represented. By comparison, a 2013 study on the demographics of outdoor recreation participation nationally (Outdoor Foundation, 2014), revealed a much more diverse population. For instance, of the 143 million individuals who participated in outdoor recreation in 2013, 46% were females and 30% were non-white. While our study did not examine some of the most-widely circulated outdoor magazines, our findings may help explain assumptions some individuals hold about who does and does not participate in outdoor recreation activities, including the ways in which commercial media might influence these assumptions.
Octavia Butler was a prominent speculative fiction author and also one of the first female African American writers to be successful in the genera. Butler unflinchingly critiques racial and gender issues that affect specifically African American women. A textual analysis of the novels Wild Seed, Kindred, and Parable of the Sower as well as the short story “Bloodchild,” reveals Butler’s unique expression of empathy and how the abuses of women in the past effect the present and future. Butler’s works also allow for an uncommon interpretation of patriarchal ties that challenge women’s ability to create a history of their own. Through a constant process of transformation, Butler provokes her readers to face complex, patriarchal hierarchies found in society that are often riddled with unescapable power inequalities. Cooperation is preferred to subjugation as her protagonists bravely assume their roles.

Butler challenges society to acknowledge the heightened trauma inflicted on women, particularly on women of color such as rape and violence, and whose abuses allowed the concept of the nation’s identity to flourish. Her message embodies a need for both masculine and feminine characteristics in the construction of personal identity. The author’s extensive dialogue on slavery and power disparity in gender roles finds itself naturally embedded within her narratives and not forced upon her audience. In doing so, she “makes black normal” thus allowing the divine feminine spirit of African American women to be emphasized instead of condemned. An analysis of scholarly research reveals that Butler’s speculative fiction expresses fluctuating ideas of economic status, race, and sexuality. In her fictions, Octavia Butler demands that these historically significant and ever-evolving ideas include diversity that can be applied to the societal needs of today.
Breast cancer is one of the leading causes of death for women worldwide. However, with current treatments there is a 20% chance of local recurrence within ten years, even when cancer is diagnosed in the early stages (Stage I and II). Treatments with a higher efficacy rate are needed to further decrease the likelihood of cancer recurrence. Our specific study used a combination of chemotherapy and immunotherapy: this combination boosts the effectiveness of both treatments. Combination therapy can also help minimize the unwanted side effects from chemotherapy by boosting the immune system, while the immune system is being suppressed by the effects of the chemotherapeutic drugs. We hypothesized this combination treatment would show the greatest reduction in tumor mass and in the number of metastatic cancer cells found in the liver. The chemotherapeutic drug used was doxorubicin, and the immunotherapeutic drug used was anti-CTLA-4. The BALB/c mice were inoculated with 4T1 cancer cells; 4T1 is a mouse-model for human breast cancer. There were 15 total mice separated into 5 different treatment groups. One group had only cancer, one group was not given cancer or any treatment, one group was given immunotherapy and cancer, one group was given cancer and chemotherapy, and the final group was given a combination of cancer, immunotherapy, and chemotherapy. Overall, it was found the combination of immunotherapy with chemotherapy was the most effective at reducing tumor size and the number of metastatic cancer cells.
LETTING DOWN HER HAIR: LEARNING GENDER THROUGH FAIRY TALES

Feirson, Jake
Anthropology

Fairy tales are often dismissed as entertainment for children, however, they also serve as educational tools that illustrate both appropriate and inappropriate ways of behaving within a given society. The cultural values expressed in these stories, and the transformation of these values and stories over time, can be examined using the example of the fairy tale Rapunzel. This study compares the gender ideals expressed in three different versions of this tale: the original story published by the Grimm brothers, a version published in 1966, and its most recent adaptation in Disney’s animated movie Tangled. Changes over time are explained by examining the historical and cultural context in which each version was produced.
A NEW GENERATION OF RESILIENCE: ANALYSIS OF THE CHALLENGES FACING YOUNG FARMERS IN THE WEST

Fields, M.J.F.
Environmental Studies

Beginning farmers in the western United States are faced with multifaceted challenges that inhibit their access to management systems intended to subsist with the available resources. Water in this arid environment is at the root of most of these obstacles experienced by farmers, whether that is psychological or soil related. Therefore this research is intended to give a voice to those farmers involved in the dialogue of resiliency. Using a focus group and interviews conducted in the Southwest area of Colorado, I identified the concerns of beginning farmers and also sought out responses to potential solutions. I concluded that there is an urgency for policy makers to create more engagement, and easier access to sustainability grant programs for small, beginning farmers. Additionally the necessity to prepare a cooperative grant opportunity for beginning farmers is key to creating accessibility to proper funding due to their small size. Although beginning farmers are utilizing some of these support programs the results are often short lived and don’t suffice for sustainable continuity of farm and resource management. With this in mind, policy makers, agency staff and other farm organizations must consider the requests of the beginning farmers who are facing these challenges and act upon it promptly. In order to generate future food security in the West, the issues of beginning farmers must be addressed so their resiliency can be developed.
FEROCIOUS HATRED OR REVERENT COEXISTENCE: DISPARATE HUMAN ONTOLOGIES OF THE WOLF

Foran, Tomlyn; Seis, Mark

Sociology

Throughout millennia humans have coexisted with wolves, often hunting the same prey, and inhabiting shared territories. Myriad distinct cultures have unique ontologies of the wolf, and many of them share a reverence and respect for the wolf as a sacred animal or totem. In sharp contrast, the Euro-American colonists and settlers generally displayed a pernicious hatred of the wolf leading to the mass extermination of wolves and ultimately their near-extinction from the United States by the early twentieth century. My research examines the roots of why the Euro-American’s espoused such a pathological hatred of the wolf, juxtaposing it to the many cultures who revere the wolf. While much of the hatred and misconceptions towards wolves continues to persist in this country, there are many people now shifting to more of an appreciation and respect for the wolf. To trace this shift, I document how some scientists, government agencies, organizations, groups and individuals are beginning to recognize the fundamental significance and values of the wolf and are making steps to protect and rewild wolves to US wilderness areas. I review the current research that explains how reestablishing wolf populations can cause significant positive effects throughout the food chain of an ecosystem, through a process known as trophic cascades. I also provide an overview of recent legislative changes in regards to the protection/reintroduction of wolves and look at the grassroots work being done to protection of the wolves. My research is informed by a 3 month internship at Wolfwood Refuge, working with wolves and wolf/dog mixes that have been illegally bred and/or mistreated resulting in them being brought to the refuge for a better life and to educate the public about wolves. The goal of my research is to reflect on ways we can continue to transform our perspectives of wolves and relearn to coexist with them for the benefit of the ecology of the earth.
Rapid and efficient communication between neurons of the brain occurs at specialized cellular structures called synapses. An important molecular component of synapses is the protein piccolo. Piccolo is a large (>550 kDa) multi-domain protein and a member of the family of proteins involved in the organization and assembly of a critical structure of the synapse. Alternative splicing is the process of gene rearrangement in which exons are rearranged to form different variations of the parent gene in order to conserve genomic space and increase protein diversity. Following mRNA transcription, the piccolo is post-transcriptionally modified by alternative splicing to generate multiple splice variants. The post-transcriptional modifications that are found in both mammalian and teleost piccolo (PCLO) produces two primary splice variants through a cryptic splice junction. Here, we investigate the conservation of alternative splicing events between orthologous genes of evolutionarily distant species, mouse and zebrafish. Using RT-PCR, we provide evidence for the existence and quantification two primary splice variants that are generated from zebrafish and mice. In addition, we also identified a minor 27-nucleotide (NT) splice variant of zebrafish PCLO that is also present in mouse and has been shown to be functionally significant by altering calcium affinity of the C2A domain. These results demonstrate that these alternative splicing events have been conserved over evolutionary time dating some 350 million years between teleost PCLO paralogs and mammalian PCLO. Furthermore, the similarities in genomic structure and splicing isoforms between zebrafish and mouse PCLO support the use of zebrafish as a relevant model for studying the neuronal function of piccolo.
The Navajo Reservation was established on July 25, 1868 when the United States Congress ratified a treaty with the Navajo people. This ended the cycles of violence that had plagued the Diné for centuries. Now the Diné would have a chance to prosper in this new era of peace but it would be short-lived and bittersweet. This paper will explore how the Navajo acquired agriculture, how it changed their culture, and many of the possible reasons the Navajos lost connection with it through archival research. As well as post-modern efforts to revitalize interest in agriculture on the Navajo Nation (NN), such as the Yéego Gardening! Program (YGP). Issues of food security, food sovereignty and access to healthy food on the Navajo Nation will also be addressed. The Navajo people have gone through a unique transition in the American Southwest when they entered the region around 1300 A.D. in hunter-gather nomadic bands. The Diné adopted the agricultural practices of the Puebloan people who already resided in the region but retained their transhumance way of life. When the Spanish introduced livestock into the area, sheep in particular, this new living capital fit right into the Navajos semi-nomadic way of life. The Diné had adapted to the precarious environment that constantly threatens the people trying to make a way of life here. Without a written language much of the traditional knowledge that made survival for the Navajos possible has been preserved through oral history and recently the language has been translated and formed into a written language. This has made possible through the preservation of traditional knowledge and culture, which would have otherwise been lost. Equipped with this knowledge and expertise in modern agriculture methods researchers can access ways of reintroducing agriculture, through sustainable methods, back to the Navajo people. The Navajo tribe is in need of healthy food alternatives and sustainable economic practices, sustainable organic agriculture could be that vessel. The Diné people suffer from higher than the national average rates of type II diabetes and obesity. This is due to living in an isolated part of the United States and the average Navajo living below the poverty line as well as living in a food desert. Most of these problems could be combated with a return to simple gardening practices.
LEVELS OF ACCEPTANCE, COMPASSION AND STEREOTYPE TOWARDS MENTAL ILLNESS

Garrett, Crystal; Dumm, Mary; Templeton, Janice

Psychology

The goal of this research was to investigate attitudes toward specific mental illnesses: Schizophrenia, Post-Traumatic Stress Syndrome (PTSD), and Bipolar Disorder. Participants (N=92) viewed one of three cinematic video clips portraying each mental illness and then answered questions designed to measure stereotyping, acceptance and compassion. Results did not reveal differences in acceptance, compassion or stereotyping between the three mental illnesses. However, ratings of acceptance and compassion were high for all three disorders suggesting a possible ceiling effect. There was no difference in levels of acceptance or stereotyping between genders. However, males responded with higher levels of compassion towards all three mental illnesses than did females.
Sudden aspen decline (SAD) is when aspen experience branch dieback, crown loss, and rapid mortality due to increased temperatures and reduced moisture availability. Aspen forests provide key habitat for a variety of plant and animal species. We conducted a study to quantify species richness and abundance of large mammals among different SAD levels based on recent crown loss (RCL): low SAD (0-25% RCL), moderate SAD (25.1-50% RCL) and high SAD (50.1-100% RCL) and in coppice harvest treatments on the San Juan National Forest, southwestern Colorado (N=7/SAD level/coppice harvest). We used motion-sensor cameras and scat counts to quantify large mammalian richness and abundance throughout the summer. Native large mammalian communities were significantly different between low SAD and harvest stands and between moderate and high SAD and harvest stands. Deer abundance was significantly greater in high SAD stands. Deer utilized high SAD stands at night more often than during the morning or afternoon. Elk abundance was significantly greater in moderate SAD stands than other SAD levels or harvest stands with the highest abundance in June when snowberry (*Symphoricarpos oreophilus*) provides food resources early in the growing season. There were no differences in bear abundance amongst SAD levels; however, no bears were recorded in harvest stands. Cows were significantly greater in high SAD and harvest stands than other SAD levels. Our results provide land managers information on how changes in aspen forest structure due to SAD or coppice harvest treatments alter both native and non-native large mammalian activity.
A commutative rings’ additive and multiplicative structure can be represented with a directed graph in which $a, b \in \mathbb{Z}_n$ (the finite ring being examined) and $(a, b) \rightarrow (a + b, ab)$. We researched results pertaining to commutative rings of the form $\mathbb{Z}_p$ and introduce an expansion concept to understand the behavior of the directed graph of $\mathbb{Z}_{p^2}$ to better prepare us to find results about the directed graph for any $\mathbb{Z}_n$. 

FORMATION AND CHARACTERIZATION OF POROUS SILICON

Graves, Kevin

Physics

In this paper, the anodization of porous silicon is explained. Porous silicon is formed through electrochemical etching. Several parameters capable to be varied are explained to garner different results. In addition to this, a relay timer and a four point probe were fabricated, to aid in the anodization process and the characterization process, respectively. Electrical characterization was done with this four point probe, which was constructed at Fort Lewis College with a cost effective setup. The fabrication process is examined in addition to the results achieved through the use of the four point probe. A relationship of resistivity and anodization is found, as well as the uniformity of the anodization in a temporal perspective.

Anodized wafers depicted higher resistivities than unanodized wafers. Furthermore, longer anodized wafers had more uniform anodizations. It was found that longer four point probe measurements read increased resistivities, a result that should not have been the case. This was likely caused by fluid within the pores, and as such allowed a potential application for these wafers to be used as a humidity sensor. With an applied electrical current, the fluid can evaporate, and increase the resistivity. This can be analyzed in such a way that the precipitation in the air can be monitored. These wafers can be recreated for use in electrical devices, physical filters, sensors, or other applications.
As a visual artist, the primary function of my work is to explore sensuality and how human beings experience existence through our senses. Inspiration for my work comes from many sources and I am constantly struck by the connections in thought between other artists of varying disciplines. This is what led me to Informalism. The purpose of this research project was to discover the relevance and accessibility of Informalist art in a contemporary cultural context, namely that of an Indigenous individual with formal art training. By examining the relevance of such, I hoped to find a valid connection between my work, the cultural context it is created in, and that of Informalist painters of the 1950’s-60’s. Informalism is relevant to my art because all art created under the title eludes to a greater understanding of human suffering and the nature of existence. Being Native American, I can attest to the feelings of despair prevalent in my people. I see the deep connections between other cultures seeking to find a universal aesthetic to express this sentiment. My research found that Informalism is relevant today because it is based on aesthetic principles deeply rooted in cultural identity and social reform. However, Informalism’s accessibility is limited when attempted by individuals with formal training as it requires spontaneity and honesty derived from automatism.
Acidobacterium capsulatum (A. capsulatum) is a gram-negative, acidophilic, heterotrophic, rod-shaped, bacterium belonging to the phylum Acidobacteria, originally isolated out of acid drainage from the Yanahara pyrite mine in Japan. A. capsulatum is thought to play an important role in carbon and nutrient cycling in soil and aquatic environments. A. capsulatum has a genome size of approximately 4.1 Mbp, 88.3% of the genome codes for RNA or proteins, but only 68% of the protein genes encode for proteins of known function. Two genes encoding excreted cellulase enzymes, endo-1,4-D-glucanase and β-glucosidase, were selected for further characterization, cloning and expression. These genes are located at nucleotide positions 109,786-110,952 and 22,187-24,517. BLAST searches were done on the nucleic and amino acid sequences to determine the organism with the highest homology to the gene and protein sequences. Structural homologs in the Protein Data Bank were used to identify conserved catalytic residues in the active sites of these enzymes. Primary sources were identified describing the enzyme assays that will be used to test for enzyme activity in cell-free lysates and to test the activity of the proteins after cloning and expression. Forward and reverse primers of these genes were designed such that the gene can be amplified and inserted directionally into a TOPO TA cloning and expression plasmid. Polymerase chain reaction (PCR) was optimized and utilized to amplify the genes and characterize the inserts in the plasmid. Agarose gel electrophoresis was used to determine the size and purity of the amplicons produced by PCR. The amplicons were quantified by absorbance at 260 nm and cleaned up using a PCR cleanup kit prior to cloning. Directionality of the inserts was confirmed by sequencing the insert using manufacturer’s provided primers. These results suggest that these genes do encode the putative enzymes, but that they might have unique characteristics. Future work will include optimizing A. capsulatum growth conditions that can result in expression of these active enzymes.
THE POTENTIAL EFFECTS OF OFF-HIGHWAY VEHICLE USAGE IN THE SAN JUAN NATIONAL FOREST, COLORADO

Holloway, Marshall
Environmental Studies

In recent decades Off-Highway Vehicle (OHV) usage has seen a significant increase on public lands. Management agencies are experiencing difficulty finding strategies to properly manage this recreation. This study is an analysis of literature based on OHV usage within the San Juan National Forest (SJNF), Colorado and its potential impacts on three main factors: environmental, social, and economic. Current land management policies were also studied, in addition to a look at the Hermosa Creek land policy, within the SJNF. Many significant themes were found throughout the review. Due to lack of data on environmental effects of OHV’s within the SJNF specifically, data was reviewed on effects in forests nationwide. Environmental effects included: soil compaction, increased erosion, vegetation damage, wildlife mortality and displacement, and air/noise pollution. Results for social impacts indicate issues between motorized and non-motorized users, with the latter reporting the most conflict. Economic studies were difficult to find, but based on a study for the state of Colorado it was estimated that OHV’s contributed over $700 million in related expenditures during one season. It was also estimated that for the fiscal year of 2001 the SJNF had an economic output of $5.1 million in regards to OHV. When current management policies were reviewed, it was found that the Forest Service (USFS) is aware of the many factors of OHV recreation and has policies attempting to address them. The issue, though, is creating policy that affects the greatest number for the greatest good, which is where much of the user conflict comes from. In addition to this the USFS does not have the funding to fully address the issues at hand. However, the recent policy change in the Hermosa Creek area is a great example of the direction land management could go, since many users came together to suggest designation for the area. It was concluded that completely disallowing motorized recreation is not very feasible; therefore, small steps should be taken in addressing these issues. Land management agencies should also use the Hermosa Creek example as a positive direction for land policy. Finally, one of the best things the USFS can do is educate the public through personal interactions and increased signage, to help users have an understanding and respect for others, usage policies, and especially the surrounding environment.
THE EFFECT OF QUOTES FROM AUTHORITY ON VICTIM BLAMING ATTITUDES IN CASES OF SEXUAL ASSAULT

Horn, Hannah; Miller, Gwendolyn; Gwilliam, Jessica; DiCecco, Marissa; Shields, Maia; Templeton, Janice

Psychology

This study investigated how quotes from authority sources impacted college students’ attribution of responsibility in sexual assault scenarios. Undergraduate students (N = 97) from a small liberal arts college in the Southwest read one of three quotes related to victim blaming: one that blames the victim for the situation, is against blaming the victim, and a neutral-unrelated quote. Next they read a scenario leading up to a sexual assault. Levels of victim blaming were measured using a modified version of the Attitudes toward Rape Victims Scale (Ward, 1988). The results indicated that authority quotes did not significantly affect participants’ victim blaming attitudes. However, males reported higher victim blaming perceptions than females, which supported a secondary hypothesis about gender differences in victim blaming. The data shows that while some results were significant, authority sources may not be the best avenue to elicit differences in victim blaming attitudes. Future research should explore how rape myth education affects victim blaming attitudes and examine how to best reduce male perceptions of victim blaming.
REFASHION: EXTENDING THE LIFE CYCLE OF CLOTHING AND REVALUING WASTE

Jenkins, Candice
Environmental Studies

The global apparel industry’s energy intensive manufacturing and distribution of clothing uses vast amounts of water, toxic chemicals and fossil fuels through socially unjust practices while creating dangerous emissions and enormous amounts of textile waste. These negative impacts are intensified by the accelerated consumptive and disposal rates of countries in the Global North. Various solutions under the umbrella of eco-fashion are growing in an effort to address the problems created by conventional clothing, such as ecological sourcing of raw materials and creating clothing out of post-consumer textile waste. Growing consumer awareness is positively influencing textile recycling as well as collaborative efforts to set and enforce industry standards through accurate and informative labeling. Positive changes need to be practiced on a large scale in order to reduce the environmental impact of the global clothing industry.
A NEW OCTAHEDRAL COBALT(III) COMPLEX AS A POSSIBLE ANTI-CANCER PRODRUG: SYNTHESIS AND CHARACTERIZATION STUDIES IN SOLID-STATE AND SOLUTION

Joe, Natalie; Morris, Aimee M.

Chemistry

Coordination complexes with redox active metal centers are gaining interest for their potential uses in anti-cancer research. KP1019 and NAMI-A are two ruthenium(III) coordination complexes with indazole and dimethylsulfoxide ligands, respectively, that are currently in phase II clinical trials for their anti-tumor or antimetastatic properties. Utilizing a more abundant, less expensive cobalt metal center in place of ruthenium(III), we hypothesize that similar cobalt(III) complexes can be synthesized. A new solid, isolable complex was achieved using a ligand substitution reaction. The new product is an octahedral Co(III) coordination complex that contains indazole and labile dimethylsulfoxide ligands. The proposed structure of the Co(III) complex is supported by a variety of solid-state and solution characterization studies. This complex displays promise in utilizing a new metal center for expanding metal-containing pro-drugs. Further studies are in progress to determine the exact speciation in the solid-state and in solution, as well as investigating the efficacy of this new compound on cancer cell lines.
Many studies suggest the emotion of disgust is an adaptation that serves as a defense against microbial disease (e.g. protecting oneself) and it is universal. The potential contact with people who have poor hygiene and appear diseased or have body issues such as open wounds often evokes disgust. The disgust should be evoked most strongly by disease-carrying situations and especially among women who need to protect themselves from disease that could potentially affect their fetus and/or children. This study examined gender difference sensitivity to disgust. It was hypothesized that the female participants would be more sensitive to disgust than male participants. The ninety undergraduates (45 females and 45 males) participated in a survey study which used a modified version of the Disgust Scale and disgusting pictures. The results showed a significant gender difference regarding bed bugs, vomit, maggots, fish hooks, etc. There were gender differences in sensitivity to disgust.
Most people today are familiar with the idea that the ancient Celts practiced human sacrifice. In reality though, we know relatively little about how and why they engaged in this practice. The Celts did not have a written language to record their practices, so our understanding of how they performed human sacrifice comes from historical accounts provided by Greek and Roman contemporaries and from archaeological evidence of these ritual practices. A cross-cultural comparison of ritual human sacrifice in other societies is conducted in order to provide a framework for understanding the purpose of this practice in Celtic society.
PUBLIC PERCEPTION OF THE POLICE

Ketelsleger, Travis
Sociology

The public perception of police is a common issue that law enforcement agencies across the nation are concurrently dealing with. The purpose of this research was to analyze reasons for the poor public perception of police, methods of improving perception and examining local attempts made by the Durango Police Department in this area. Through a review of the literature, historical and contemporary factors have been discovered for the current perception of police, as well as attempts at mitigating this poor perception. Additionally, through an internship with the Durango Police Department, observations and ethnographic data have been collected on several local efforts to address this issue.
In this study, we measure the effect of perceived stereotypes on self-efficacy and academic performance specific to the Native American/Alaska Native population at Fort Lewis College. Stereotype threat is common within minorities and we seek the origin of stereotype threat in an academic setting. A survey was used to see how Native American student participants rated the following population’s perception of themselves: Non-Native American professors, Native American professors, Non-Native American students, and Native American students, along the measures of intelligence, motivation, and by preparedness (perceived stereotypes). We also measured self-efficacy on common academic success scales (e.g., how well do you concentrate on school subjects, how well do you complete homework by deadlines). Results suggested that stereotype threat does not exist from an out-group at Fort Lewis College, but from an in-group. Native American participants were not concerned with how Non-Native American professors and Non-Native American students perceived them on the perceived stereotype axis, but were more concerned with how Native American professors and Native American students perceived them on the perceived stereotype axis. Motivation was one of the key perceived stereotypes seen from Native American/Alaska Native participants that correlated with the participants’ self-efficacy. Despite the lack of perception from Native American participants’ perceived stereotypes and its effect on self-efficacy and academic performance, they still thought that Non-Native American professors and students thought of them as less intelligent, motivated, and prepared.
Previous research regarding the transgender experience has indicated there are normative sets of gendered behavior and presentation expectations experienced by transgender individuals in America. While these expectations have been studied in the context of older transgender individuals, little research has been done in reference to the current generation of transgender young adults. Eighty-six transgender young adults participated in an online survey discussing how they understand and experience themselves as transgender individuals and describing their experiences within the transgender community as a whole. Additional interviews were conducted with nine participants to explore their responses in more detail and to investigate issues not adequately addressed in the survey. Analysis of survey and interview data demonstrates the emergence of a wider range of transgender identities and experiences understood by transgender young adults, likely due in part to a shift in societal views about sex and gender.
Intermediate to mafic intrusive rocks are exposed in the Mount Sneffels stock in the western San Juan Mountains, Colorado. Debate over the timing of pluton emplacement in previous studies impeded an understanding of how this pluton fit into the regional magmatic history. Detailed field studies revealed that the pluton intruded adjacent Oligocene volcanic rocks of the Southern Rocky Mountain volcanic field. However, a previous K/Ar and fission track age of ~32 Ma suggested that the stock was older than the ~28 Ma volcanic rocks. A new U/Pb zircon age determination constrains the emplacement of this stock to ~27 Ma, resolving the previous age contradiction. This U/Pb zircon age indicates that the Mount Sneffels stock is the oldest Oligocene mafic intrusion in the western San Juan Mountains and was emplaced shortly after the formation of multiple calderas from ~28-27 Ma. This temporal and spatial association with major calderas supports the thesis that mantle-derived basaltic magmas were temporally and genetically related to caldera formation.

Isotopic concentrations of $^{87}\text{Sr}/^{86}\text{Sr}$ (0.7059) and epsilon Nd (-6.2) are consistent with existing data which suggest that the Mount Sneffels stock was derived from lithospheric mantle melts that interacted with the lower crust. This also supports previously proposed tectonic-magmatic models for magma production of the Southern Rocky Mountain volcanic field during the Oligocene. Continued isotopic and geochronological study of intrusive and extrusive rocks of the region will further constrain the origins of voluminous volcanism in this intracontinental setting, a topic of current petrologic debate.
The Correlation between Physical Training for Adventure Experiences and Self-Efficacy

Liaw, Francis; Houghton, Emily; Frazer, Lee

Adventure Education

Previous research has suggested that physical training or exercise improves the development of self-efficacy. Additionally, separate research has suggested that engaging in adventure experiences such as a whitewater rafting, rock-climbing, and mountaineering may also improve the development of self-efficacy. However, there is no existing research that measured the effectiveness of both physical training in conjunction with an adventure experience in respects to self-efficacy. The aim of the research was to measure the cumulative development of self-efficacy in participants who physically trained for an adventure experience then participated in that adventure experience versus those who did not physically train for that adventure experience. Twenty-one adventure education students (n=21) who volunteered for the study (ages 18-37) were surveyed prior to and after their adventure experience. The adventure experience consisted of either a weekend long winter expedition or one day of backcountry telemark skiing. The survey questions were based on the General Self-Efficacy Scale (Bandura, A., 2006) and responses were measured on a Likert scale (1-5). Participants were also asked about their physical training regime leading up to the adventure experience. Slightly over half of all the participants (n=11 of 21) self-reported some form of physical training such as general exercise for 1-3 months prior to the experience. A t-test was used to analyze the gains of both groups after each adventure experience. Results of the study showed modest gains in self-efficacy in both groups after the adventure experience with the physically trained group demonstrating higher gains than the non-physically trained. However, the statistical analysis proved that gains in both groups were statistically insignificant, the physically trained group (p=0.088), the non-physically trained group (p=0.139). Though the data proved to be statistically insignificant, restructuring the sample demographic may yield more definitive results in future studies.
THE HOPKOPTER: A SOLUTION TO MANEUVERING IN CLUTTERED ENVIRONMENTS FOR EXTENDED PERIODS OF TIME

McCarty, Jordann; Stuntz, Andrew; Liebel, David; Johnson, Geoffrey

Engineering

The goal of this project is to design an autonomous robot to operate and avoid objects in the air as well as navigate and avoid obstacles along the ground. Currently robots only move in one of three domains: air, land, or water. Flying robots are very agile, but use a great deal of energy and cannot be deployed for very long. Robots that move along the ground have longer deployment time, but have difficulty maneuvering around obstacles. By combining these qualities we can improve navigation by allowing the robot to move over or around obstacles. This allows the robot to better survey its environment, and conserve energy while deployed. This blend of features will enable long-term autonomy in cluttered and hazardous environments. The robot should have a one day deployment time, and must be built for a wide range of applications, as it will serve for a platform for further research. Interested parties could include: academia, military, government, industrial, agricultural, and search and rescue units.
ROOFTOP GREENHOUSES AND THE RESTAURANT INDUSTRY

McDonald, Ryan

Environmental Studies

There is no denying the fact that human population has grown quite substantially over the past few centuries. Food has steadily become less available, less nutritious, and has indirectly become the point source of a lot of environmental degradation. Fertilizers, pesticides, food packaging, and CO₂ emissions from food transportation vehicles have polluted our air and water, continue to contribute to greenhouse gas accumulation, cause public health problems, and are costing business owners millions. This analysis shows the feasibility of restaurants using rooftop greenhouses in order to grow fresh produce on site, as well as many other countless benefits. The concept of an eco-friendly rooftop greenhouse is much more than just a food producing gold mine in the middle of an urban metropolis. It is a paradigm movement in which communities are drawn together, societies are educated, nutrition is plentiful and affordable, jobs are created, food miles and food waste are reduced, money is saved, excess heat and CO₂ is captured, storm water is retained, as well as leaving the ecosystems we have left to thrive. Urban agriculture, specifically rooftop greenhouses, is designed to produce large yields of vegetables in a confined space. A roof the size of approximately 2000 square feet, equipped with a year-round rooftop greenhouse, and if managed efficiently, can potentially generate 20,000 pounds of fresh produce annually. A rooftop greenhouse will not only save money and energy by lowering the import of fresh foods, but also will reduce the expense of export on food once it has served its purpose. This food waste, produced from operating a restaurant, can be transformed into a nutrient rich compost which can be returned to the greenhouse. There are so many positive aspects that come with investing in a rooftop greenhouse ranging from CO₂ and heat capture, to creating jobs, and educating the public, that state governments have begun to offer incentives to support urban agriculture. This new agriculture movement that has started to unfold, can change the agriculture system, but will need help from policymakers and business owners in order to provide a stable food future for upcoming generations.
The Missouri River Research Endeavor (MRRE ‘mər i”) set out to conduct an empirical study of the Missouri River. Our team canoed from the official headwaters near Three Forks, MT to the confluence with the Mississippi River in Saint Louis, MO. The MRRE sought greater understanding of the river, its health, and how human practices on and near the river affect it. Dams, nutrients, and pollution can have dramatic impacts on rivers. The river was broken up into twelve reaches because of the effects of damming. Reaches were defined as a length of river from headwaters to the first dam, between dams, and from the final dam to confluence with the Mississippi River. At three sites per reach water was sampled at 1 m depth and analyzed in the field. From these samples seston was collected by filtration, while pH, total dissolved solids, conductivity, salinity, dissolved oxygen, nitrate (NO₃⁻), nitrite (NO₂⁻), phosphate (PO₄³⁻) were measure from the filtrate. The seston samples were combusted to determine organic mass. Land cover was determined within 50 km of the river and its reservoirs using the USGS National GAP Land Cover dataset. Most phosphate measurements were outside 2.75 mgL⁻¹ range of the colorimeter used, but the few low sites suggest a relationship between phosphate, conserved lands, and impoundment deltas. Nitrate levels showed no significant pattern, while nitrite levels were within natural back ground levels. River modification, in the form of damming and channelization, severely reduce sediment load in the river and is disruptive to native riparian areas. Within 50 km of the river, 35% of the land is cropland and is the largest contributor of excess nutrients to the river system.
VALIDATING THE USE OF ENGLISH LAVENDER EXTRACT AS AN HERBAL REMEDY TO COMBAT INFLAMMATION

McLain, Katherine; Byrd, Sherell

Biology

It has been shown that low grade chronic inflammation is a prerequisite for the development of cancer, arthritis, inflammatory bowel disease, cardiovascular disease and type II diabetes. A key orchestrator of the inflammation response is NF-κ, a cytosolic transcription factor that is found in all cell types. Once activated, NF-κ initiates cell proliferation and the production of pro-inflammatory cytokines. In an acute response to wounding or infection, the ability of immune cells to mitigate damage is crucial to the survival of the host. When these responses go unregulated, however, disease results. Lavender (Lavendula angustifolia) is an herbal remedy with a long history of use in Europe. Studies have demonstrated that administration of lavender essential oil to LPS stimulated monocytes reduced activation of NF-κ. The aqueous extract, however, has not been tested for its effect on this pathway. This combined with the fact that an aqueous extract of the herb is easy to prepare and requires little if any lifestyle adjustments, makes validating the anti-inflammatory efficacy of an aqueous extract worthy of study. In this study macrophages (RAW 264.7 cells) were treated with aqueous extract of Lavender flowers. Subsequent to treatment with whole herb extract, an immune response was instigated in the cells by exposing them to lipopolysaccharide (LPS). NF-κ activation was analyzed using an ELISA. We show that aqueous Lavender extract decreases NF-κ activation, therefore; we can recommend aqueous Lavender extract as part of anti-inflammatory protocols.
The proliferation of social interaction mediated through the Internet across the globe within the past two decades has altered the very way in which cultures form and interact. New cultures are evolving devoid of place and physical, face-to-face interaction, generating and flourishing through interaction limited to social media and online chat rooms. One such cultural group, Anonymous, a collective of computer hackers, has evolved out of the Internet to produce acts of defamation and resistance against those it opposes in an in-your-face manner, capturing international headlines and the attention of governments and revolutionaries alike. Through a literature review of Anonymous and computer hacker culture, as well as an ethnographic analysis of Anonymous’ Twitter and Facebook feeds, it is evident that the means by which Anonymous communicates and engages in direct, daily actions of resistance or sabotage against its targets can be understood through the application and adaptation of anthropologist Clifford Geertz’s concept of deep play. The hacks carried out by Anonymous pose high stakes for players in that the individual is on the line, much in the same way as Geertz’s Balinese cock-fighters risk their livelihood and social position by engaging in illegal cockfighting. Just as the cockfight enables the Balinese to symbolically engage in societal critique and competition, the hacking executed by Anonymous functions to provide the same type of engagement while simultaneously extending this critique to directly challenge status hierarchies and the inequalities embedded within both global and local social matrices.
In 1999, Hochrein and associates presented the findings of The Buried Body Cases Analysis Project (BBCAP), a nation-wide study that identified patterns in the methods by which murders were committed and the variable ways in which bodies were disposed of between the years of 1994 to 1997. The present study provides a partial update to the BBCAP by looking for similar patterns in murders committed in Arizona, Colorado, New Mexico, and Utah between the years of 2000 to 2014 and comparing these patterns to those described in the earlier study. A better awareness and understanding of these murder and body disposal patterns can aid forensic professionals in future criminal investigations.

Searches of NEXIS® Systems database provided a total of 119 newspaper articles describing relevant murder cases, and population data was collected from FBI Uniform Crime Reports and Bureau of Justice Statistics. Patterns observed in the current study were similar to those reported by the BBCAP; the most common method/cause of death between the two studies was by the use of a gun, followed by strangulation. The majority of the victims knew their killer, and bodies were seldom altered. Contrary to expectations, there is no significant relationship between the murder rate and population size of metropolitan areas in the Southwest. One significant difference between the BBCAP report and the current study is the average age of offenders, which is between 14-19 years of age in murders committed in the Southwest between 2000 and 2014.
It has come to my attention that there is a general misunderstanding on how one “does” or “commits” philosophy. What I intend to provide is a step by step process that generally represents what it is exactly that Philosophers do… I will use my paper “A left libertarian defense of wilderness” as an example of what we do. I will show how philosophers use different lenses to make sense of some very perplexing problems. At hand, what if anything does justice demand from the left libertarian when it comes to preserving natural resources? The purpose of this presentation is to inform on the process a philosopher uses to come to a clearer understanding of any theory. In so doing the reader will also be exposed to the left libertarian position and a general discussion on rights and duties.
THE CASE FOR PARENTAL RIGHTS AS PROPERTY RIGHTS

O’Hare, Theresa

Philosophy

In this presentation I will argue that parental rights are property rights by applying John Locke’s theory of property ownership. I will then explore what this theory implies about parental rights when children are abused by their parents, when children are born as a result of rape, and when children are the unintentional result of consensual sex between two persons who did not previously intend to have children together.
The goal of this study was to identify social loafing within this context and how it could be affected by the number of members in the group. We collected data from fourteen introductory psychology students. Groups were randomly assigned to either a dyad or a quad for a simple brainstorming task. Once the task was completed, the participants were asked to fill out a survey that measured perceived social loafing. Our results were insignificant, however they were trending in a way that suggests significant results could be observed with a larger sample size.
As small personal devices become more durable, compact, and accessible, cellular technology is quickly becoming the global standard for communication and information dispersion. Efficient production has made these devices affordable to people who have never had access to such technologies, bringing poor communities new opportunity for more efficient means of communication and education; thus increasing quality of life. The issue of charging these devices, however, renders them useless for many remote communities who remain without electric power and have little hope for electricity in the foreseeable future. The TEG senior design team’s goal was to provide a solution to this problem by creating a thermoelectric generator (TEG) capable of charging a cellular device using thermal energy sources available within these communities. A device was designed to implement the TEGs to convert solar and stovetop waste heat into energy that can charge a cell phone.
DIFFERENCES IN CONCUSSION SYMPTOMS IN MALES AND FEMALES

Parsons, Nina; Harmelink, Ashley; Meyer, Dr. Carrie

Athletic Training

Concussions have received significant attention in the past few years as research has brought to light the seriousness of mild traumatic brain injuries in sports. Differences in symptom presentation between males and females have been shown in other serious medical conditions such as heart attacks, PTSD, depression and migraines. The aim of this study was to examine whether or not females and males reported different symptomology after sustaining a concussion.

Data was collected from 87 (M = 43, F = 44) Fort Lewis College athlete medical files from the years 2006 - 2015. All subjects were NCAA division II athletes between the ages of 18 - 27. They all suffered from one or more concussions at Fort Lewis College and had proper medical documentation of these concussions. Data was only gathered from the first documented concussion at Fort Lewis College. Numbers were obtained from concussion symptom checklists within these medical files and recorded in Excel. The symptoms included in the study: headache, nausea or vomiting, dizziness, blurred vision, tinnitus, feeling like “in a fog,” difficulty concentrating, difficultly remembering, drowsiness, neck pain and other pain. All data was analyzed using an independent samples t-test for each symptom.

Overall significant difference found for dizziness (p = 0.028, M=1.16, F=1.93) and “Feeling in a fog” (p = 0.037, M=1.37, F=2.11) both mean scores were higher for females. No other symptoms presented with significant differences. Difficulty remembering and neck pain were the only two symptoms that males reported a higher mean score, but not at a significant level. All other symptoms observed: headache, nausea, tinnitus, difficulty concentrating, drowsiness, and other pain were higher for females but not at a statistically significant level.

Nine out of the 11 total symptoms reported had higher mean scores for females. These findings were not statistically significant, but may be clinically relevant for athletic trainers to be aware of. However, given the current results, the current, non-gender specific concussion checklist is adequate for both genders.
Water is a vital part of every living thing and needs to monitored and tested regularly, to ensure it stays in good health. One of the many pollutants and bacterium tested in nearly all water systems is *E. coli* 0157:H7. *E. coli* has many different forms, most of which are present in the intestines of many animals and humans, but *E. coli* 0157:H7 is a dangerous form of *E. coli* that can wreak havoc on the body. Consequences of becoming contaminated with *E. coli* can result in diarrhea, severe dehydration, and in worst cases death. This study focuses on the *E. coli* levels in the Animas River located in Durango, Colorado. Samples were collected at 12 different sites locate along the Animas River beginning at the 9th Street bridge and ending just below the newly constructed rapid area called Smelter. Each sample site consisted of 3 individual samples above, at, and below the site. This is done so in order to create a comparison when looking at the results. Once the samples are collected the are tested through a specific procedure that requires exact measurements and precision to minimize any potential errors. The results are then analyzed and documented for future use. When analyzing the results it is essential to note how many colony forming units (CFU) there are per sample. Any samples containing more than 240 CFU's is considered toxic according to the EPA. The results of this research will help determine what levels of *E. coli* are in the Animas River and if there is any need for concern.
PROCESS DOCUMENTATION: CONCEPTS OF BASIC WEB THEORY, DESIGN, AND DEVELOPMENT APPLIED TO DIGITAL PORTFOLIO DESIGN

Reynolds, Jace
Art and Design

In the realms of art and design, it is the finished and presented work that is often valued most by society and individuals. Consumers and viewers have become accustomed to focusing only on the finished piece they see in front of them with little regard to the labor that went into making it. In the fine arts it is sometimes possible to reveal an artistic process or technique within the finished piece, however in the world of digital design the artistic process is almost always completely lost to the viewer. We have all heard the age-old adage, “the journey is more important than the destination”. As cliché as this saying may be, it is very accurate when discussing art and design. An artist’s process is often more artistic and creative than the finished work and can reveal much about the finalized piece that would otherwise go unnoted.

Because the process is so essential to understanding the finished work, it is important for artist’s to document their processes. In this presentation I will reveal and discuss the creative process I applied during an independent study in which I am developing a web-based design portfolio for my work. The presentation will provide insight into my research, methods, and outcomes, as well as the ongoing development of my website.
INVESTIGATION OF SILVER CONCENTRATIONS IN GALENA AND TETRAHEDRITE AT THE HIGHLAND MARY MINE, SAN JUAN COUNTY, COLORADO

Salter, Nicholas
Geosciences

The Highland Mary mine of the Eureka Mining district in the western San Juan Mountains produced silver rich ore since the Colorado mining boom of the early 1870’s. Galena and tetrahedrite were suspected to be the dominant silver-bearing minerals in the ore, but the concentrations of silver in the minerals was not constrained. Argentiferous galena was widely documented in the western San Juan Mountains, with minor silver occurring in tetrahedrite. Electron Microprobe geochemistry of galena and tetrahedrite demonstrates that tetrahedrite is the dominant silver-bearing species in ore at the Highland Mary mine. Galena has concentrations of silver of 0.01 to 0.03 wt. % while tetrahedrite contains from 0.02 to 13.4 wt. % silver. At the Highland Mary mine tetrahedrite is the more economic mineral, but many questions remain about the physical and chemical controls on the distribution of these argentiferous minerals in the region. This research reinforces the importance of establishing the metal concentrations in different mineral phases for both mineral exploration and development.
INVESTIGATION OF STROKE VOLUME RESPONSE TO INCREMENTAL EXERCISE IN CYCLISTS OF VARYING FITNESS LEVELS

Schulke, Forest; McWhorter, Alex; Dillon, Noah; Savage, Kevin; Knight-Maloney, Melissa

Exercise Science

Stroke Volume (SV) is the amount of blood pumped out the left ventricle of the heart after each contraction and is a measure of the efficiency of the heart. Knowing SV is important for both non-athletes and athletes, because as SV increases an individual's capacity for work increases as well. Several studies have shown little change in SV with incremental exercise. However, other research has shown that SV can change with increasing levels of exercise and produce five types of response: plateau, plateau with a drop, plateau with a large drop (>20%), plateau with a secondary increase, and progressive increase. It is possible that the difference in SV response observed in previous studies was due to participant fitness level, however it is still unclear what specifically accounts for changes in SV response amongst individuals. PURPOSE: The aim of the present study was to examine the SV response of cyclists with varying fitness levels during a bout of incremental exercise to maximal exertion. METHODS: 72 cyclists completed a graded VO2 max test (GXT) on a cycle ergometer. Subjects completed a 5-minute warm up at 100 watts for men and 80 watts for women. Following the warm-up, resistance was increased in 3-minute intervals by 25 watts for men and 20 watts for women, until subjects reached volitional exhaustion. Expired gas samples were collected in 10 second averages using a metabolic cart, and were used to determine relative VO2 peak. SV was measured using bioimpedance and was analyzed in between the warmup and cool down periods of the test. Relative VO2 Peak was used to categorize fitness levels. RESULTS: After review of the data, 11 tests were excluded from the results for failure to meet the criteria for a complete test. The results of 61 subjects were part of the final analysis. Using relative VO2 peak subjects were grouped into three levels of fitness: untrained (n=12), moderately trained (n=25), and highly trained (n=24). Results showed significant difference between the peak HR of untrained and highly trained groups. Significant differences were also found between the moderately trained and highly trained groups. There was no significant difference between untrained and moderately trained groups for peak HR. SV response showed no single dominant reoccurring patterns throughout fitness groups. Plateau with a drop occurred in the greatest frequency, occurring in nine subjects in both the moderately and highly trained group. Conclusion: There was not a clear overriding pattern of SV response between any fitness group. The SV response appears varied and independent of fitness level classification. The SV response that occurred with the greatest frequency was plateau with a drop and was seen equally between moderately and highly trained groups. We recommend future research to examine the modulation between HR and SV to optimize cardiac output and to examine if training or fitness level has an effect on this modulation. The current data analysis was limited due to time constraints. We plan to examine the relationship between fitness level, cardiac output, and SV breakpoints in greater detail in the future.
The digraph of a finite field, $\mathbb{Z}_p$, denoted $\psi(\mathbb{Z}_p)$, has $p^2$ vertices. Of these, $\frac{p^2-2}{2}$ are sources and $\frac{p^2+2}{2}$ are non-sources, where $p$ is the order of the finite field $\mathbb{Z}_p$. If we expand each vertex in $\psi(\mathbb{Z}_p)$ to a set of $q^2$ vertices in $\psi(\mathbb{Z}_{pq})$ we can generate all of the vertices in $\psi(\mathbb{Z}_{pq})$. We show that we can count the number of source vertices in any directed graph of $\mathbb{Z}_{pq}$ through the expansion of source and non-source vertices in $\mathbb{Z}_p$. 
The Neolithic village of Çatalhöyük has provided significant insight into the daily life of early Eurasia. While many different aspects of this society could be and are still being studied, for this paper I have decided to focus on just one aspect. Çatalhöyük has provided archaeologists with textile artifacts dated from 6000-7400 B.C.E. Textiles were used as an everyday item in households for clothing, matting for floors, and even to wrap the dead before being buried. Even though textiles have been excavated in the houses and burials it is not depicted as much in artwork at Çatalhöyük. The depictions of people at Çatalhöyük shows men and women wearing leopard skins as clothing in lieu of the textiles. Leopards lived in the same area as Çatalhöyük, but almost no leopard faunal remains are found in the excavations. Strange that an animal that is depicted so much in art would barely be found at a village as large as Çatalhöyük. None of the excavations at Çatalhöyük have even found a leopard skin. The disparity between the textiles that have been found and leopard skins that have not indicates a relationship with the leopard skins, or the idea of the skin, that was not seen in the textiles. The depiction of people using leopard skins as clothing, when compared to the physical evidence of leopards, shows a record of social relationships and familial identity. Furthermore, the depictions of leopards at the village compared to the physical evidence shows a special relationship with the leopard not seen with the other animals present in the area of Çatalhöyük during this same time period. I will show this through comparisons between textiles and the depictions of leopard skins, with additional references to artwork and burials at the village.
DESIGN OF A ROCKET PROPELLANT FEED SYSTEM FOR FLOW ANALYSIS AND VISUALIZATION

Smith, Tucker; Brooks, Ryan; Brenner, Joesph; Heermance, David; Benally, Jeff

Engineering

The goal of this project was to design a rocket propellant feed system to conduct water flow tests. This system will be used for flow analysis and visualization in order to assure that propellants will flow as expected. The system is required to be capable of performing two varieties of tests: Transient and Steady State tests. The Transient tests use regulated high pressure helium to pressurize a pressure rated cylinder filled with water. The system is capable of creating short duration bursts lasting from 10 milliseconds to 1 second while logging pressure data throughout the system. The Steady State tests include Resistance and Qualitative tests. The Resistance tests use the same regulated helium and cylinder that is used in the Transient tests, but is used for longer duration pulses. The system is capable of creating pulses lasting up to 10 seconds while logging pressure and flow rate data. The Qualitative tests use a pump to drive flow at a much lower pressure while maintaining a high flow rate. These tests can last for up to 30 minutes where pressure and flow rate data is logged. The system has undergone several test that include all three types of tests. The Transient and Resistance tests work as designed and record and save test data in real-time. This data has shown that the system can be used for flow analysis for a variety of different situations. The Qualitative test flows with minor system issues. Visualization and flow analysis can still be conducted using this system, but extensive troubleshooting of the system led to our recommendations for altering some aspects of the system. These alterations will lead to the Qualitative test system functioning as designed.
Acidobacterium capsulatum is an environmental bacterium that is relatively abundant in soil and aquatic environments, prefers a pH 3 for optimal growth and encapsulates itself in a polysaccharide. Little is known about the biochemistry and physiology of this organism, but its genome has been completed and growth conditions have been found that support growth on glucose as a single carbon source. We are focusing on the metabolism of glucose and the proteins that are involved with the first and last steps of glycolysis. These two proteins were hand chosen by the Gods because in similar organisms they are important in glucose metabolism. In these studies, PEP carboxykinase and glucokinase were characterized and cloned with the ultimate goal of expressing them and defining their activities. PEP carboxykinase catalyzes the conversion of oxaloacetate to phosphoenolpyruvate and carbon dioxide within glycolysis and gluconeogenesis. In the 3 assays we found on PEPCK, they all described conditions for the assay at pH 8. The pI of PEP carboxykinase was found to be 6.09. Glucokinase converts glucose to glucose-6-phosphate in the first step of glycolysis. After searching NCBI for the appropriate assay, it was determined that for glucokinase a glucose-6-phosphate dehydrogenase-coupled reaction would work best at pH 7.5. The pI of glucokinase was found to be 5.48. Because A. capsulatum has optimal growth at pH 3, our hypothesis is that the cytoplasm of these organisms is at a somewhat lower pH than the normal physiological pH of 7.5, which is supported by the calculated pIs for these proteins. The genes that encode for PEP carboxykinase and glucokinase were determined using KEGG. Primers were designed using the primer design function on NCBI. Once the desired primers were created, the genes were amplified using PCR followed by a PCR cleanup to isolate our amplicon. The purified gene was inserted into the TOPO-TA plasmid using a directional TOPO cloning kit. To continue this study we will characterize the gene insert by sequencing, and if glucokinase and PEP carboxykinase are inserted correctly then they will have lengths of 1,000, and 1,500 bp, respectively.
For centuries, humans have had a desire to classify everything, including themselves. Society is organized into a system of classes, rules, and conventions. But, how true or false is this system? Elizabeth Gaskell, a social novelist, seems to address this in her novel North and South. Reviewing the novel, looking at characters and class relations within it, and finding whether or not it fits into a Marxist system and theory like Louis Althusser’s reveals Gaskell’s statement. Where does the system hold true? Where does it become problematized? Arguably, the system holds true for characters who are dedicated to their class. Then, it becomes problematized with other characters, especially the protagonist, Margaret, who are not fully dedicated to their class. They move or are moving between classes and interacting, which affects their relationships. Althusser does not account for this moving. In fact, the system he creates is too ambiguous, not allowing for such complex relations. Therefore, this society that Gaskell presents propagandizes and undermines his system. In doing so, she highlights that society is more complicated and complex than thought.
TESTING MODELS ON THE RELATIONSHIP OF CLAY ALTERATION AND MINERALIZATION: BULLDOG MOUNTAIN VEIN SYSTEM, CREEDE, CO

Spencer, Nathan; Gonzales, David

Geosciences

The Bulldog Mountain vein system is one of the four major epithermal deposits in the Creede mining district. Exploration drill core from within the Bulldog Mountain system reveal alteration haloes that contain secondary micas formed during volcanic and hydrothermal events. In this research we tested the hypothesis that Short Wave Infrared (SWIR) spectroscopy could delineate the proportions of clay species and that these data could be used to predict silver concentrations within the Bulldog Mountain system.

The relative proportions and identities of clays species were determined in seven samples from four drill using electron microprobe and QEMSCAN analyses. The analyses demonstrated that the clay alteration is mostly illite + sericite in varying proportions along with minor kaolinite. Electron microprobe and QEMSCAN data served as a baseline to compare with SWIR absorption spectra collected using three different methods of sample preparation. The SWIR spectra gave no definitive control on the abundances or identification of the different clay species in the samples despite using several different methods of analysis. Our results also show no correlation between the SWIR spectra and silver concentrations. Further research is required to fully assess the viability of the TerraSpec® Mineral Spectrometer as a tool to use for exploration in the Bulldog Mountain vein system.
SELF-ASSEMBLY OF SIZE TAGGED TRIBLOCK COPOLYMER BRUSHES VIA DNA HYBRIDIZATION

Spring, Atma
Chemistry

Triblock copolymer brushes were created using ring opening metathesis polymerization, ROMP. Norbornenyl N-hydroxysuccinimidyl ester (N-NHS) was synthesized as the reactive monomer that will allow an amine modified DNA linker to be attached to the first and third block, while the central block will consist of polyethylene glycol, or PEG, of varying chain lengths and repeating units. These varying PEG chain lengths will allow us to have a size tag that is resolvable via transition electron microscopy, TEM. This will be important to verify that our DNA functionalized triblock polymers are in fact assembling in the pre-programmed fashion, namely an A-B alternating linear structure. Using a palindromic DNA sequence on macromonomer-A that will only hybridize to the sequence on either side of macromolecule-B we expect to form nanoworms or nanosausages.
LINEARLY INCLINED ZEALOTS

Thomas, Elizabeth; Lienert, Carl

Mathematics

We will model a slackline park with graphs. We are modeling the flow of the slackers through the park with Euler Paths. We will show that with certain graphs with $n$ vertices there exist $n - 1$ unique Euler Paths where no edge of a path coincides, in sequencing, with another edge of any of the remaining $n - 2$ paths.
Political psychology is the application of psychological theory towards better understanding voting patterns, political discourse, and partisan alignment. While current research in the field applies psychological frameworks to political behavior, research in political psychology seldom incorporates theory and data from the field of political science. Given the relevance of research in political science that illuminates social and cultural trends connected to politics, political psychology’s distance from political science is a chief issue that narrows its applied scope. Using an interdisciplinary framework utilizing political psychology and political science, this project seeks to offer a comprehensive investigation of the psychological and political motivations underlying partisan alignment, or specifically why individuals choose to orient themselves with a political party. This analytical approach offers valuable insight into the motivational, cultural, and societal underpinnings of political party alignment and partisan affiliation. Themes that emerge from this analysis highlight the salience of perceived individual inclusion in party outreach and the sense of moral righteousness tied to a partisan platform.
THE PRICE OF YELLOWCAKE: THE ECOLOGICAL AND HUMAN HEALTH IMPACT OF URANIUM MINING IN CHURCH ROCK, NEW MEXICO.

Thompson, Eldora
Environmental Studies

In the Navajo creation story, it was stated that the people of the tribe had to decide between two yellow substances, uranium or corn pollen. The Navajo people chose corn pollen. They would use it for traditional purposes to heal the people. It was also used to protect them. Finally, they were instructed never to touch uranium. Uranium was described as a serpent, and if it ever was touched it would bring evil, death, and destruction. On July 16, 1979 in a small community on the Navajo Nation in Church Rock, New Mexico, an earthen dam built to hold waste from an underground uranium mine and mill broke and released 94 million gallons of radioactive waste. The spill contaminated the environment, which included soil, water, and livestock and also impacted human health. The contamination leaked into the main water source used for farming and livestock, the local residents were not only affected but as well as people living 80 miles downstream. The demand for uranium decreased in the 1980’s until now, the price of uranium increased and proposals to reopen Church Rock and other sites on the Navajo Nation are being considered again by major corporations. The purpose of this research is to inform the public and local residents living in the area about the effects of uranium mining and how it destroyed not only the environment but also the livelihood and health of the people. This is a big concern because the possibility of another mishap or spill is likely to occur once again if more mines and mills reopen. If one of the largest radioactive spills that occurred in U.S. history does not provide enough reasons to cease mining then what will? There are other sources that can be used to create clean energy, for example renewable energy, a much safer alternative in protecting the environment and the people.
THE EFFECTS OF EXERCISE ON MEMORY

Traversie, Paige

Public Health and Psychology

Research concludes that exercise helps prevent obesity, cardiovascular disease, and has shown to benefit mental health. Previous literature suggests that exercise positively effects memory. The present research investigates the effects of exercise on memory recall in college students. Participants (N=32) either exercised or drew a picture. Memory was then assessed in a reading recall test. Results showed no effect of exercise on memory. Gender differences were present. Male’s memory recall was higher than female recall. This research suggests further investigation regarding the relationship of exercise and memory.
HOLY GENDER STEREOTYPES BATMAN! A LINGUISTIC AND VISUAL STUDY OF GENDER STEREOTYPING IN GRAPHIC NOVELS

Vaught, Rose

Anthropology

Graphic novels and comic book are known to promote sexist stereotypes when it comes to the female bodies drawn in their pages, yet less attention has been paid to what female characters do and say in these novels. This study examines the roles and dialogue given to male and female characters in four popular graphic novels in order to understand which gendered behaviors are being promoted or vilified by the authors. Cynthia Wolff’s research on stereotypical gender roles in modern fiction provided a framework for analyzing male and female character roles within these graphic novels, while Robin Lakoff’s research on linguistic expressions of submission and dominance was employed in the analysis of the dialogue. These analyses of character roles and dialogue clearly indicate that the dominance of male characters over female characters is firmly established through the use of lexical keys and stereotyped gender roles.
When studying the Spanish occupation of New Mexico during the 17th century, the political and religious strife between the former and the Pueblo Indians who inhabited the area is not easy to delineate. Tensions that had began to build amongst the Puebloans since the Spaniards arrived in 1598 finally erupted in 1680, making the Pueblo Revolt one of the few large-scale insurrections ever seen in New Spain’s northern frontier. However, the utter destruction of crucial evidence concerning this event has challenged many borderland historians to accurately represent the Spanish occupation and their subsequent expulsion. As a result the various analyses of the revolt are forced to utilize documents that are sparse and partial, and historians thus have arrived at differing conclusions. Two historians that have published widely varying accounts of the Pueblo Revolt are Ramón A. Gutiérrez and Andrew Knaut. From reading When Jesus Came, the Corn Mothers Went Away by Gutiérrez and The Pueblo Revolt by Knaut, one is left to question what really evoked such a violent outbreak against the Spaniards. This essay aims to examine the syntheses of Gutiérrez and Knaut in order to highlight where their stories converge, where both rely on the same sources to expand on different arguments, and how dissecting their interpretations enhances our understanding of the revolt. We will specifically dedicate our analysis to the process of conversion utilized by Franciscan friars, the nature of Pueblo negotiation with Catholicism, and the ultimate reasons for the Revolt in 1680. What becomes clear at the end of this analysis is that the undeniable biased and scant nature of the source materials explains the polar differences between the conclusions of Gutiérrez and Knaut. Furthermore, this essay draws attention to the importance for history scholars to examine a variety of interpretations of a single event in order to avoid completely misinterpreting it. This becomes particularly crucial when the source material available on a subject resembles that of the Pueblo Revolt.
INSIGHT INTO THE ORIGIN OF GOLD AT THE BESSIE G MINE, LA PLATA MOUNTAINS, SOUTHWEST COLORADO

Vogel, Catherine; Gonzales, David
Geosciences

The La Plata Mountains are one of several laccolithic complexes in northwestern New Mexico and southwestern Colorado that formed ~70 Ma during the Laramide orogeny. Base metal and tellurium-rich Au-Ag-Hg-PGE deposits formed in hydrothermal systems during or after the emplacement and crystallization of potassic intrusive rocks. The La Plata mining district contains a complex history of mineralization defined by late-stage precious metal deposits. The district is well known for vein and replacement epithermal Au-Ag deposits in which native gold forms in association with telluride minerals. In previous studies, native gold was mostly considered hypogene and genetically related to the nearby intrusions. Although competing hypotheses note that younger post-Laramide igneous and tectonic events may have contributed to precious metals mineralization.

The Bessie G mine is one of several mines in the La Plata district that produced significant gold and silver. In this study, petrographic and microprobe analyses on ore samples were used to test competing ideas on the genesis of late-stage native gold which provided insight into the progression of telluride and gold mineralization in the district. Our research determined, in order of abundance, coloradotite (HgTe), petzite (Au$_3$AgTe$_2$), and hessite (Ag$_2$Te) to be the most common tellurides. Mineral paragenesis occurred as an early assemblage of sulfides, petzite, and hessite followed by a late stage of coloradoite and native gold. Other observation document native gold in isolated blebs, coating earlier minerals, infilling microfractures, and commonly occurring with coloradoite. This association suggests gold formed by late-stage replacement of Au-Ag tellurides or supergene enrichment rather than syngenetic crystallization with the sulfides and Au-Ag tellurides. Precious metals mineralization may be related to younger regional incipient rifting and mantle magmatism in the Oligocene to Miocene.
Acidobacterium capsulatum, a mildly acidophilic, chemotrophic, aerobe with the ability to grow on glucose, is found in diverse soil and aquatic conditions worldwide, suggesting a significant role in carbon and nutrient cycling in the environment. A. capsulatum has successfully been cultured and its genome has been completed, allowing for genome-directed studies of the organism’s glucose metabolizing capabilities. Based on the genomic information, this organism was thought to lack aldolase, but contained two putative transaldolase genes (TA), one of which contains an EF-hand domain (TAEF). However, recent results show there are aldolase and transaldolase activities in cell-free lysate. We are continuing to characterize the aldolase and transaldolase activities in cell-free lysates to better understand how these enzymes play a role in partitioning of carbon from glucose between energy production and biomass formation. The pH dependence of the aldolase and transaldolase activities found to have a narrow optimal activity around pH 7.4 in the crude cell lysate. The two putative transaldolase genes have been PCR amplified, cloned into a pET151 directional TOPO expression vector and transformed into E. coli. Sequencing of the TAEF and TA genes showed proper insertion into the expression vector. Current work is focusing on expression and purification of the TA and TAEF proteins. Genomic and structural features of the transaldolase genes and proteins are being characterized through bioinformatics tools such as Pymol, NCBI gene searches and Cn3D. Structural homologs are being used to identify structurally similar features in the A. capsulatum transaldolases. Conserved active site residues have been identified using these same homologs as model transaldolases. These bioinformatics studies support the hypothesis that the A. capsulatum transaldolases are capable of catalyzing the accepted transaldolase mechanism. Future work will focus on identifying an aldolase gene and characterizing key regulatory points of glucose metabolism. The identification of aldolase will be done through bioinformatics tools as described above, comparing it to hypothetical proteins in the A. capsulatum genome.

Warfield, Michael

History

My work centers on the Russo-Finnish Winter War that started on November 30, 1939 and ended with the Moscow Peace Treaty on March 13, 1940. Contextually this conflict fits into the early part of World War II. After the invasion of Poland by Nazi Germany and the Soviet Union in September 1939, the Soviets turned their territorial interests to the Baltic States and Finland.

The popular narrative asserts that the United States, under legal restrictions from the Neutrality Laws enacted by Congress in the 1930's, was obliged to watch the little Finnish Republic stand up to the substantially larger Red Army of Stalin and the Soviet Union. While neutrality was a huge factor in America's lack of involvement, my research suggests that the United States had an agenda.

Using memoranda of conversations and other correspondences from the U.S. State Department's publication of Foreign Relations of the United States: 1939 vol. 1 and 1940 vol. 1, I have found evidence that suggests the United States purposefully failed to provide aid to Finland in an attempt to stay on good relations with the Soviet Union in hopes of aligning them with the Allies against Nazi Germany. Using the Neutrality Law of 1939, which was signed twenty-six days before the outbreak of the Winter War, I argue that legal neutrality was not relevant during the Winter War. My research suggests, rather, the United States was using realpolitik to control power in Europe at the expense of Finland.
DILEMMA OR DELIGHT? THE ROLE OF DIORAMAS IN COLORADO HISTORY INTERPRETATION 1930 - PRESENT

West, Evan

History

In 1933 the Great Depression was raging in the United States. Unemployment in Colorado had soared to a staggering 50 percent, and businesses across the state were failing. Fortunately, relief for the desperate situation had come into view with the recent presidential election, in which Franklin D. Roosevelt defeated the incumbent Herbert Hoover. Roosevelt had promised to the American people that his administration would take decisive action to end the economic crisis. After taking office, programs that Roosevelt created to assist the unemployed including the Civilian Conservation Corps and later the Works Progress Administration, were implemented across the nation.

In Colorado the Civilian Conservation Corps (CCC) funded and conducted enhancements at Mesa Verde National Park, among other locations, and at the State Museum of Colorado the Works Progress Administration (WPA) funded similar improvements beginning in 1935. What both locations had in common was the construction by WPA and CCC employees of more than 50 total dioramas, miniature models that depict scenes and moments in Colorado History.

Dioramas were used at the Chapin Mesa Archeological Museum of Mesa Verde National Park, and the various iterations of the Colorado State Historical Society’s flagship museum for more than 75 years. Yet presently, both institutions have adopted significantly divergent approaches to their use and handling of the dioramas. There is debate as to whether or not the historic dioramas should be treated and handled as artifacts, or whether they are able to continue to effectively serve as tools of education and interpretation.

In my thesis, Dilemma or Delight? The Role of Dioramas in Colorado History Interpretation 1930 - Present I examine the use of dioramas based on the history of the models, the methods of their use adopted by museum professionals, and their continued popularity among museum visitors. I argue that a public history dilemma arises when institutions that house historic dioramas chose to handle them as artifacts and lock them away from the public view. Without the use of the historic dioramas at Mesa Verde National Park, and the present day History Colorado Center, it is impossible to tell the complete history of those institutions, and indeed the very history of the State of Colorado.
YOU ARE WHAT YOU PLAY: VIDEO GAMES, GENDER AND SOCIALIZATION

Weston, Carla

Gender and Women's Studies

Video games are a popular form of entertainment for young Americans, and like other media, they influence as well as entertain their consumers. Investigation into video game play by Fort Lewis College (FLC) students reveals gendered differences in both the hours of video games played per week and preferences for video game genres. Males spend more hours playing video games and tend to favor first person shooter games like Call of Duty. Females spend fewer hours playing video games and tend to favor trivia games like Trivia Crash or arcade-style games like Candy Crush. This suggests that both genders experience different kinds of socialization as a result of their interactions with video games.
THE EFFECT OF SKIN TONE ON LEVEL OF ATTRACTIVENESS

Yazzie, Jennifer; Yazzie, Shaquilla

Psychology

The majority of the studies conducted on skin tone involve the two dominate racial groups, white and black, rather than other racial minorities. The objective of this study was to investigate how skin tone affects perceptions of attractiveness. Participants (N = 90) rated the attractiveness of computer generated “ethnic” looking females with light skin, medium skin, or dark skin. Based on previous research, we hypothesized that the light skin tone female would be rated as more attractive than the medium or dark skin toned females. However, dark skin tone females were rated as more attractive than either light or medium skinned females. The findings suggest perceptions of attractiveness does not correspond with Western society’s beauty standards, thus other factors influence attractiveness.
This research explores the causes and effects of a generation of children who are not able to and do not want to experience the wonders of nature. I propose that the roots of this problem lay in 1) the education system (specifically the origins of the education model, the approach to education, and the competitive character school instills), 2) the cultural view of the outside world as impartial and disenchanted, and 3) the loss of direct interaction with one another and nature. To understand strategies of introducing an eco-pedagogy, I worked for four months at Durango Nature Studies, a non-profit with a focus on hands-on learning, nature and environmental education. I investigated Environmental-based programs, the advantages of outdoor education, the benefits of unstructured time and play, and school models that build on communal efforts rather than a competitive environment. Based on my findings, I designed a hypothetical curriculum based on a theoretical environmental-experiential education program. The curriculum encourages students to marvel over mystery, accept that not everything has a quantifiable answer, find beauty in the smallest of places and have time to do what is missing from so many of their lives, play.
APPENDIX
Undergraduate Research and Creative Activities
Academic Year 2014 – 2015

Adventure Education

Canaparo, Nick. The Wisdom of Climbers. (Advisor: Houghton, Emily)


Miller, Kellen: The Relationship between Adventure Activity and Academic Performance. (Advisors: Houghton, Emily and Thompson, Missy)

Department of Anthropology


Bean, Ashley. Biomedicine and the Sociocultural Control over Women’s Bodies. (Advisor: Kozak, David)

Collins, Jacob Collins. Methods of Manufacturing Welk Disk Shell Beads at Mississippian Sites. (Advisor: Riggs, Charles)

Feeney, Patrick: Medical Conversion Narratives. (Advisor: Kozak, David)

Feirson, Jacob. Rapunzel from Grimms to Disney: 200 Years of Constructing Masculinity and Femininity through Fairy Tales. (Advisors: Jenks, Kelly and Fine-Dare, Kathleen)

Goodson, Melinda. Farming Techniques Used at the Prehistoric Communities of Chaco, Salmon and Aztec. (Advisor: Riggs, Charles)

Herckner, Marley. The Change in Scarabs through Time in Egypt. (Advisor: Riggs, Charles)

Jones, Sarah. The Irish: A Culture of Suffering and Resilience. (Advisor: Fine-Dare, Kathy)

Kehoe, Fiona. Human Sacrifice among the Celts. (Advisors: Jenks, Kelly and Fine-Dare, Kathleen)

King, Jordy. The Future of Indigenous Communities of Rwenzori National Park, Uganda: A Case Study of the Relationship between Indigenous People and National Parks. (Advisor: Fine-Dare, Kathy)

Lacy, Kevin. Death’s Triangle: An Indentured, Thematic Legacy of the Terminally Ill. (Advisor: Riggs, Charles)

Looper, Kellie. Philmont, the Staffing Experience. (Advisor: Austin, Rebecca)

McClain, Whitney. Tattoo through Time. (Advisor: Kozak, David)

Meacham, Evan. Anonymous: Re-imaging Deep Play in the Internet Age. (Advisors: Kozak, David and Jenks, Kelly)


O’Kane, Brianna. *Amazon Connections.* (Advisor: Fine-Dare, Kathy)

Smith, Cooper. *How Men and Women Became Leopards: Comparing the Textiles and Artwork of Çatalhöyük, Turkey.* (Advisors: Jenks, Kelly and Riggs, Charles)

Snead, Owen. *Do Factors such as Socio-Economic Status, Gender and Ethnicity Condition Attitudes Towards Certain Alternative Methods of Agriculture?* (Advisor: Austin, Rebecca)

Vaught, Rose. *A Linguistic and Visual Study of Gender Stereotyping in Graphic Novels.* (Advisors: Jenks, Kelly and Riggs, Charles)


**Department of Art & Design**

**Graduating Senior Art & Design Majors Exhibition**

Adney, Lacy. *ACE Ads*, digital media. (Advisor: Booth, Paul)

Begay, Christopher. *#breakingboundaries Poster Campaign*, digital media. (Advisor: Booth, Paul) *Transpire*, mixed media. (Advisor: Colby, Chad)


Cerda, Adreana Marie. *Letters from Panama*, mixed media. (Advisor: Colby, Chad)


Doane, Sarah. *I was one of the 50%*, stitch on fabric. (Advisor: Moss, Susan)


Lay, Matthew. *Angels on Vacation*, oil on canvas. (Advisor: Colby, Chad)


Nichols, Jolynn. *I am Trying to See*, oil on canvas. (Advisor: Colby, Chad) *Galaxies Within*, color pencil and pastel. (Advisor: none)

Petherick, Sara. *Where’d the Good Go*, digital media. (Advisor: Meek, Shawn)

Philopois, Lindsey. *O’Philo Beer Labels*, digital media. (Advisor: Meek, Shawn)


Smith, Audrey. *As You Blossom*, shibori natural dye/embroidery. (Advisor: Moss, Susan)

Smith, Jed. *Untitled*, encaustic on wood. (Advisor: Colby, Chad) *Broken*, oil on wood. (Advisor: Colby, Chad)


Whitten, Caitlin. *Solitude*, natural dye/embroidery. (Advisor: Moss, Susan)

**Athletic Training**

**Senior Seminar Projects**


Parsons, Nina and Harmelink, Ashley. *Concussion Symptom Differences in Males and Females*. (Advisor: Meyer, Carrie)

Wetzel, Maggie. *Immediate and 24 Hours Post-Treatment Effects of Foam Rolling vs Static Stretching on Hip Flexion ROM*. (Advisor: Meyer, Carrie)
Department of Biology
Senior Theses


Anderson, Zandelé. The Effects of Simvastatin Treatment on ERK 1 (Thr202/Tyr204) Phosphorylation in MCF-7 Breast Cancer Cells. (Advisor: Byrd, Shere)


Boyer, Kalyn. Understory Plant Species Richness and Abundance in Populus tremuloides Stands Affected by Sudden Aspen Decline and Coppice Harvest Treatments, Southwest Colorado, USA. (Advisor: Korb, Julie)

Breeden, Meredith. Phenology of Development and Pollinator Identification of the Narrow Endemic Ipomopsis ramosa in Roaring Forks Canyon, CO. (Advisor: McCauley, Ross A.)


Cahall, Candance. Effect of Leaf Litter species, Elaeagnus angustifolia (Russian olive) and Ulmus pumila (Siberian elm) on Detrital Breakdown in Vallecito Reservoir in Southwestern Colorado. (Advisor: Kendall, Deborah)

Chee, Taryn. The Effects of Cigarette Smoke Extract on Growth of Artificial Oral Bacterial Biofilms. (Advisor: Byrd, Shere)


Fountain, David. Conservation of Alternative Splicing Events of the Brain Protein Piccolo across Evolutionarily Diverse Species. (Advisor: Fenster, Steven)


George, Shelby. Effects of Sudden Aspen Decline on Large Mammalian Activity in Southwestern Colorado, USA (Advisor: Korb, Julie)

Haga, Casey. Soil Property Insufficiencies that are Present within Areas of Poor or Non-Producing Cropland. (Advisor: Steltzer, Heidi)


Izzo, Amber Sky.  The Effects of Increased Soil pH and Moisture Levels on Pre-Hibernation Foraging in Yellow-Bellied Marmots (Marmota flaviventris).  (Advisor: Lehmer, Erin M.)

Laue, Derek.  The Effects of Electrostimulation vs. Physical Exercise on Strength Gains in the Quadriceps femoris Muscle.  (Advisor: Byrd, Shere)

McDowell, Aaron.  Earth and Water: Land Cover and River Health on the Missouri River.  (Advisor: Steltzer, Heidi)

McLain, Katherine.  Validating the Use of English Lavender Extract as an Herbal Remedy to Combat Inflammation.  (Advisor: Byrd, Shere)

O’Hara, Nicole.  NIL-16 and HDAC3 Form an In Vivo Complex in Mouse Brain.  (Advisor: Fenster, Steven)

Parcel, Elyse, Clayton, Jennifer and Anderson, Brett.  The Influence of a Flood Event on Macroinvertebrate Community Composition and Dispersal of Leaf Packs.  (Advisor: Kendall, Deborah)

Reed, Chandra.  Phenological Life History Events of the Critically Imperiled Ipomopsis polyantha in its Last Remaining Habitat, Pagosa Springs, Colorado (Advisor: Korb, Julie)


Schroeder, Meghan.  The Effect of Food Restriction on Serum Ferritin and Activity Level in Female Mice.  (Advisor: Byrd, Shere)

Shepherd, Jacob.  The Effects of Streptococcus gordonii Derived H2O2 on RAW 264.7 Macrophage Cells.  (Advisor: Byrd, Shere)

Snider, Amanda.  Butterflies as Indicator Species in Stands Afflicted by Sudden Aspen Decline and Coppice Harvests in Response to Microclimate, Southwestern Colorado (Advisor: Korb, Julie)


Wilkey, Marissa.  The Inhibition of Liver Cancer Cell Migration and Proliferation with the Anti-Diabetic Drug, Metformin.  (Advisor: Byrd, Shere)

Winiecki, Nichol.  The Effects of IL-6 on Neutrophil Migration after Exercise that Induces Delayed Onset Muscle Soreness (DOMS).  (Advisor: Byrd, Shere)

Wooden, Dylan and DeKay, Dennis.  Comparing Freshwater Macroinvertebrate Communities in Leaf Packs in Lentic and Lotic Systems in a High Elevation Habitat in Southwest Colorado.  (Advisor: Kendall, Deborah)

Yazzie, Brandon and Chamberlain, Madison.  Quantification of Interleukin-16 Secretion from Cultured Murine Cerebellar Granular Neurons.  (Advisor: Fenster, Steven)

Yeager, Chris and Panawa, Jill.  Relationship between Foraging Behavior and Habitat Quality across Seasons in Yellow-Bellied Marmots (Marmota flaviventris).  (Advisor: Lehmer, Erin M.)

Independent research

Begay, Shawnee and Rivas, Haley. *The Effect of Capecitabine and Interleukin-12 on Tumor Metastasis in Colorectal Cancer.* (Advisor: Blake, David)

Conley, Erica and Lente, Leeroy. *The Effects of an Anti-Cancer Treatment and FOXM1 siRNA on 4T1 Lung Cancer Cells.* (Advisor: Blake, David)


Espinoza, Veronica and Harman, Stephen. *In vivo Combination Therapy against 4T1 Mouse Breast Cancer Cells Using Doxorubicin and CTLA-4 Blockade.* (Advisor: Blake, David)

Petty, Christopher and Byrd, Mallory. *Effects of Oscimum sanctum on Proliferation and Migration in a Breast Cancer Cell Line.* (Advisor: Blake, David and Byrd, Shere)

**Department of Chemistry**

**Senior Seminar Titles**

Dayish, Kolette. *Cytotoxic Activities of a Steroidal Glycoside from Yucca Glauca that is a Native American Herbal Medicine.* (Advisor: Miller, Kenny)

Gaffri, Codie. *Inhibition of Cathepsin B decreases Amyloid-β plaque, thus improving memory in Alzheimer’s.* (Advisor: Miller, Kenny)

Lake, Melvina. *A Look At How Insulin Binds To Its Receptor.* (Advisor: Miller, Kenny)

Lee, Audrianna. *Copper Transporting ATPases: the role of ATP7A and ATP7B in diseases.* (Advisor: Miller, Kenny)


McKenzie, Jason. *Deposition of Diphenylalanine Nanotubes.* (Advisor: Miller, Kenny)


Semple, Cooper. *μ-Conotoxins and Their Ability to Potentially Block Voltage Gated Channels.* (Advisor: Miller, Kenny)

Smith, Tehya. *Effect of Caffeine and Coffee on the Amyloid β-Protein Oligomerization in Alzheimer’s disease Patients.* (Advisor: Miller, Kenny)

Spring, Atma. *Gene Therapy through Structure Design.* (Advisor: Miller, Kenny)

Williams, Stephanie. *Differing effects of OPRM variants on the function of the mu opioid receptor and its effect on addiction and withdrawal.* (Advisor: Miller, Kenny)
Research Projects

Caldera, Hector, Glade, Michael, Spring, Atma, and Wilbanks, Joseph. Synthesis of Conformationally Constrained Diarylether Cyclophanes. (Advisor: Miller, Kenny)

Cox, Alexis and Gaffri, Codie. Paper-based Sensors and Chemiluminescence Detection. (Advisor: Milofsky, Rob)

Durnford, Kathryn, Atene, Antonia, Walker, Melanie, and Chadeayne, Devon. Structure and Function of the HTLV-1 pro-pol Frameshift Site. (Advisor: Mouzakis, Katie)

Fredericks, Elena and Abrams, Tara. Isolation and Characterization of Menaquinone and Quinone Membrane Components of Acidobacterium capsulatum. (Advisor: Sommerville, Les)

Lee, Audrianna, Lake, Melvina, and Dayish, Kolette. Computer Based Comparison of glucokinase, phosphofructokinase, and pyruvate kinase from Acidobacterium capsulatum. (Advisor: Sommerville, Les)


Semple, Cooper. Investigations of Potential Ligand Substitution Reactions using Trans-dichlorotetrakis(pyridine)cobalt(III) chloride with Ligands under Varying Reflux Conditions. (Advisor: Morris, Aimee)

Sheridan, Grace and Derksen, Austin. Defining the Minimal HTLV-1 gag-pro Frameshift Site. (Advisor: Mouzakis, Katie)

Department of English

Begay, Tia Jean. Complicating the Hero’s Journey: “Boardwalk Empire’s” Richard Harrow Struggles with the Monomyth. (Advisor: Orr, Delilah)


Cogswell, Alexandra. Criminal Desire: A Psychological Analysis of Tarantino’s Pulp Fiction. (Advisor: Cardona, Nancy)

Demmert, Christina. Snow White as the Modern Heroine: A Feminist Critique of the Modern Fairy Tale Snow White and the Seven Dwarves. (Advisor: Cardona, Nancy)

Diaz, Emilio. Before the Fabric Falls: Yves San Laurent and Orientalism, Iconography, and Cultural Influence. (Advisor: Cardona, Nancy)


Elliott, Katherine. Octavia Butler’s Dialogue on Race and Gender in Speculative Fiction. (Advisor: Malach, Michele)


Helvoigt, Jonathan. Walter Pinkman and Jesse White. (Advisor: Orr, Delilah)
Hoffman, Paul. *Poetry and its Purpose in the Classroom.* (Advisor: Cardona, Nancy)

Kidd, Whitney. *Broad City Bra-mance: Pushing the Gender Boundaries of Comedy.* (Advisor: Cardona, Nancy)

Lane, Jillian. *Donald Judd’s Art and Writing.* (Advisor: Cardona, Nancy)

Majeski, Remi. *The Unconventional Heroism of V in “V for Vendetta”.* (Advisor: Orr, Delilah)


Mullins, Lauren. *A Romantic Twist: Following Hannibal Lecter’s Journey from Villain to Anti-Hero.* (Advisor: Orr, Delilah)

Souder, Jaimee. *Elizabeth Gaskell’s North and South: Breaking from Althusser’s System.* (Advisor: Cardona, Nancy)


Vaughn, Emma. *Exploring Spike’s Relationships and Gender Roles in “Buffy the Vampire Slayer”.* (Advisor: Orr, Delilah)

Wall, Erin. *American Identity Translated Through the American Western Film Genre.* (Advisor: Cardona, Nancy)

**Environmental Studies Program**

Allen, Sam, Black, Jessica, Gering, Christian, Grady, Brendan, O’Leary-Brennan, Andrew. *Fort Lewis Campus Year-round Food Producing Greenhouse Initiative.* (Advisor: Hilimire, Kathy)

Anton, Cameron, Cooper, Steven, Holloway, Marshall, Jesus, Brandon, Lipp, Sarah, Tiner Rachel, Whittier, Sarah. *Perceptions of Public Lands: Case Study of Hermosa Creek.* (Advisor: Hilimire, Kathy)

Black, Jessica. *Impacts of Community Gardens on Youth: An Effective Social and Ecological Agriculture Program.* (Advisor: Hilimire, Kathy)


Davis, Christopher. *Culture Assimilation, Agriculture, and Disease on the Navajo Nation.* (Advisor: Hilimire, Kathy)


Fields, Max. *A New Generation of Resilience: Analysis of the Challenges Facing Young Farmers in the West.* (Advisor: Hilimire, Kathy)

Francis, Brandon. *The Reintroduction of Cultural Concepts into Diné Gardening Workshops: The Effect it may have on Levels of Interest and Participation on the Navajo Reservation.* (Advisor: McCormick, Pete).


Herasimchuk, Caitlin. *Irrigating Resilience: Creating Solutions to Food Desert Issues on the Navajo Nation.* (Advisor: Hilimire, Kathy)


Lasley, Keegan. *Ski Tourisms’ Side Effects and a Natural Urge to Build and Explore.* (Advisor: Hilimire, Kathy)


O'Leary-Brennan, Andrew. *Sustainable Beer Brewing: A Case Study into Water and Energy Usage in the Craft Brewing Industry.* (Advisor: Hilimire, Kathy)


Sheahan, Kevin. *Compost on the Fort Lewis College Campus.* (Advisor: Hilimire, Kathy)


Tiner, Rachel. *Enjoying it or Destroying it? Spreading a “Leave No Trace” Ethic at Lake Powell and Glen Canyon National Recreation Area.* (Advisor: Hilimire, Kathy)

Department of Exercise Science


Barnes, Brett. Effects of Creatine Loading over a Five Day Period on College Aged Male Athletes. (Advisor: Simbeck, Cathy)

Barnett, Jordan. Analysis of ESS Scores of Metropolitan Firefighters in Comparison to ESS Scores of Corporate Workers. (Advisor: Erickson, Mary Ann and Simbeck, Cathy)

Barton, Christopher M. Effectiveness of an Exercise Program on Self-Esteem and Body Composition for Women who are Incarcerated. (Advisor: Simbeck, Cathy)

Bell, Heath. Effect of Athletic Tape and Prophylactic Ankle Braces on Performance in Collegiate Basketball Players. (Advisor: Simbeck, Cathy)

Bhotia, Ken. Comparison of Traditional Modalities and Chiropractic Care for the Treatment of ADHD. (Advisor: Thompson, Missy)

Boroff, Eleanor. Correlation of a Type II Diabetic Patient’s Blood Glucose Levels to their Performance on the Diabetes Self-Management Questionnaire. (Advisor: Simbeck, Cathy)

Bothner, Jenna D. Could another Culture have a Better Model for Food Consumption? A Cross-National Examination on the Relationship between Diet and Urine pH in College Females. (Advisor: Frazer, Lee)

Boyd, Matt and Wilson, Oliver (Opie). Exploring Social Media use in NCAA Division II Athletic Departments. (Advisor: Houghton, Emily)

Byrne, Adam. Motivation Differences between Genders among Student-Athletes. (Advisor: Simbeck, Cathy)

Canaparo, Nick. The Wisdom of Climbers. (Advisor: Houghton, Emily)

Carney, Bradley and Mason, Robert W. Stress Reduction in Nature through Dog Companionship. (Advisor: Frazer, Lee)

Carrish, Brandon. Effects of Pressure on Males and Females through a Putting Simulation Test. (Advisor: Simbeck, Cathy)

Chenoweth, Zachary. Effect of Honey on a 1600 meter Run. (Advisor: Simbeck, Cathy)


Dasugo, Dusty, Chavarria, Manuel, and DeSouchet, Nicki. The Role of Cutaneous Sensory Feedback during Running. (Advisor: Thompson, Missy)

Dear, Kalen. Influence of Time Management Skills on Stress Levels of In Season and Out of Season Student Athletes. (Advisor: Simbeck, Cathy)

Dodge, Amanda. Assessing Type II Diabetes Risk Prevention Program on a Native American Reservation. (Advisor: Houghton, Emily)

Fortini, Andrew J. and Rafferty, Jake. Risk Homeostasis and Compensation: The Impact of Helmet Use on Collegiate Downhill Mountain Bike Racing. (Advisor: Frazer, Lee)


Gonzales, Jared. Comparison of Injury Prevalence in Crossfit to Traditional Weight Training. (Advisor: Simbeck, Cathy)

Gonzales, John. Relationship between Activity Levels and Higher Academic Achievement. (Advisor: Simbeck, Cathy)

Harley, Jon. and Robinson, William. Respect is Vital for Positive Trail Experiences. (Advisor: Frazer, Lee)

Harvey, Brandon and Hetrick, Jacob. Effects of Competitive Sports Participation on College Stress Levels. (Advisor: Houghton, Emily)

Higginson, Jarrett. Knowledge of Performance vs. Knowledge of Results. (Advisor: Simbeck, Cathy)


Kaplan, Dan. Pain Tolerance between Collegiate Athletes and Non-Athletes. (Advisor: Simbeck, Cathy)

Knight, Jimmy and Thompson, Myndee. Realistic Inertial Load Ergometer. (Advisor: Thompson, Missy)

La Paz, Mae. The Effects of Dehydration on Athletic Performance. (Advisors: Meyer, Carrie and Rhodes, Greg)


Lucas, Caitlin and Martinez, Tatum. Strength and Plyometric Training Effects on Vertical Jump Height. (Advisor: Thompson, Missy)

Mackey, Jessie. Effects of a Camp Environment on the Counselors’ Perceptions of Individuals with Disabilities. (Advisor: Simbeck, Cathy)

Malone, Brain. Pre-workout and its Effects on Blood Lactate and Muscle Activation during the Bench Press. (Advisor: Simbeck, Cathy)

Martin, Christopher P. Effects of Five Weeks of Yoga on Perceived Stress Levels and Mindful Awareness. (Advisor: Simbeck, Cathy)

McCormick, Laurel. Effects of Aerobic Exercise and Weight Training Exercise on College Students’ Memory. (Advisor: Simbeck, Cathy)

McWhorter, Alex, Schulke, Forest, Dillon, Noah, and Savage, Kevin. Stroke Volume Response Varies Amongst Cyclists. (Advisors: Thompson, Missy and Knight-Maloney, Melissa)

Miller, Kellen: The Relationship between Adventure Activity and Academic Performance. (Advisors: Houghton, Emily and Thompson, Missy)

Morris, Vernon. Effects of Whey Protein on Body Composition and Muscle Growth. (Advisor: Simbeck, Cathy)
Rodriguez-Warner, Emiliano. “In the Flow”: The Progression of the Flow State in Fort Lewis Adventure Education Courses. (Advisor: Simbeck, Cathy)

Rogers, Tanner. Correlation between Confidence and Low and High Pressure While Putting. (Advisor: Simbeck, Cathy)

Sallenbach, Claire G. High Intensity Interval Training (HIIT): Superior Training to Reduce Metabolic Health Risks. (Advisors: Frazer, Lee and Simbeck, Cathy)

Sandoval, Gabriel G. and Walters, Daniel. College Stress Levels in Male/Female Athletes. (Advisor: Houghton, Emily)

Shepherd, Kyle and Montoya, Jake. Effects of Age and Activeness on Heart Rate Variability. (Advisors: Thompson, Missy and Knight-Maloney, Melissa)

Toledo, Marti. Relationship between Fitness Testing and Academic Achievement. (Advisor: Frazer, Lee)

Velasquez, Abel A. Effects of Caffeine on Bench Press 1RM Strength. (Advisor: Frazer, Lee)

Wetzel, Derik. Effects of Free Weight and Elastic Band Squats for Narrow Shoulder Width and Wide Stances. (Advisor: Simbeck, Cathy)

Wilkinson, Nicole. Can Yoga be Cardiovascular? (Advisors: Thompson, Missy and Knight-Maloney, Melissa)

Wilson, Gabe and Cuban, Blaise. Muscle Activation during Sprint Cycling. (Advisor: Thompson, Missy)

Gender and Women’s Studies Program

Knudsen, Lucas. Transgender Young Adult Experiences: Shifting Normative Expectations and Experiences. (Advisors: Brandt, Keri and Jenks, Kelly)

Weston, Carla. You Are What You Play: Video Games, Gender, and Socialization. (Advisors: Jenks, Kelly and Houghton, Emily)

Department of Geosciences

Adams, Cale L. “Chasing Fossils”: Tracing the Lateral Extent of a Fossil-Fearing Pennsylvanian Hermosa Group Deposit. (Advisor: Gianniny, Gary)

Adams, Joshua G. Application of Noble Gas Isotopic Signatures at McElmo Dome-Doe Canyon to Investigate CO₂ Source and System Characterization. (Advisor: Gonzales, David)


Anway, Zane S. Field Confirmation and Analysis of Plio-Pleistocene Bayfield Gravels in ArcGIS: Southern San Juan Mountains, Colorado. (Advisor: Kenny, Ray and White, Scott)


Condiff, Lauren. Analog Modeling of Restraining Bends. (Advisor: Hannula, Kimberly)

Dwyer, Nora. Age Constraints on the Chicago Basin Stock, Needle Mountains, Southwestern Colorado. (Advisory: Gonzales, David)

**Holden**, Sara. *A Review of *$^{40}$Ar/$^{39}$Ar and Fission-Track Thermochronology Applied to Hydrothermal Systems.* (Advisor: Gonzales, David)

**Lewis**, Kyle. *Age and Origin of the Mount Sneffels Stock, western San Juan Mountains, Colorado.* (Advisor: Gonzales, David)

**Passehl**, Candice D. *Luminescence Chronology of a Post-Bull Lake Glacial Deposit in the Southern San Juan Mountains: implications for Revisiting the Glacial Stratigraphy in the Durango, Colorado area.* (Advisor: Kenny, Ray)

**Salter**, Nicholas R. *Investigation of Silver Concentrations in Galena and Tetrahedrite at the Highland Mary Mine, San Juan County, Colorado.* (Advisor: Gonzales, David)


**Topper**, Timothy K. *Earth Science Integration for Freshmen Science at Durango High School in Durango, Colorado.* (Advisor: Hannula, Kimberly)

**Valdez**, Justin R. *Constraining the Origin of Igneous Detritus in the McDermott Formation Using the Chemical Composition of Inherited Zircons.* (Advisor: Gonzales, David)

**Vogel**, Catherine. *Insight into the Origin of Gold at the Bessie G Mine, La Plata Mining District, Southwest Colorado.* (Advisor: Gonzales, David)

**Department of History**

**Brunner**, Alex. *The Role of Women in the Colorado Coal Strike of 1927-1928.* (Advisor: Baranski, John)


Trump, TJ. *Government Development of Liberia, 1815-1847.* (Advisor: Honchell, Stephanie)

Vigil, Giancarlo. *Revisitar la rebelión de los Pueblos nuevos mexicanos de 1680: el debatehistoriográfico* [Revisiting the Pueblo Revolt of New Mexico in 1680: The Historiographical Debate]. (Advisor, Fry, Michael)


West, Evan. *Dilemma or Delight? The Role of Dioramas in Colorado History Interpretation, 1930–Present.* (Advisor: Gulliford, Andrew)

**Department of Mathematics**

Dunseth, Marcus and Jesset, CJ. *Betweenness Centrality of Undirected Trees.* (Advisor: Lienert, Carl)


Seaney, Cassie. *Digraphs of Rings.* (Advisor: Lienert, Carl)

Thomas, Liz. *Unique Euler Circuits.* (Advisor: Lienert, Carl)

**Department of Modern Languages**


Easter, Griffin. *Los nuevos conquistadores: El ciclismo colombiano.* (Advisor: Ubiera, Diego)

Jenkins, Addi. *La masculinidad en The Brief Wondrous Life of Oscar Wao.* (Advisor: Ubiera, Diego)

Martin, Tony. *Diáspora e identidad en la literatura nuyorican y la poesía de Pedro Pietri.* (Advisor: Ubiera, Diego)

Ratko, Katie. *West Side Story y los mitos de la diáspora puertoriqueña,* (Advisor: Ubiera, Diego)

Robb, Lauren. *José Martí en el exilio.* (Advisor: Ubiera, Diego)


**Native American & Indigenous Studies Program**


Santistevan, Dawn. *A Discourse Analysis of the Native American Studies Program at Fort Lewis College.* (Advisor: Boxer, Majel)

Summers, Myriah. *Oneida Language Revitalization.* (Advisor: Boxer, Majel)


**Department of Philosophy**

Baca, Joshua. *Justification for Knowledge.* (Advisor: McBrayer, Justin)

Brittain, Ben. *Intergenerational Fairness through Taxation.* (Advisor: McBrayer, Justin)

Fine, Michael. *Who or What has Rights?* (Advisor: McBrayer, Justin)

Klomps, James. *Fraternity: The Lost Value of Justice.* (Advisor: McBrayer, Justin)

Myers, Justin. *A Left-Libertarian Defense of Wilderness.* (Advisor: McBrayer, Justin)


O’Hare, Theresa. *The Case for Parental Rights as Property Rights.* (Advisor: McBrayer, Justin)

Smith, Jon. *Meta-Ethics & the Mind.* (Advisor: McBrayer, Justin)

**Department of Physics and Engineering**

Abshire, Dan, Hughes, Dillon, Martinez, Gavin, Montoya, Cody, and Revak, Michael. *Development of an Off-Road Vehicle for the SAE Baja Competition.* (Advisor: Leahy, Devin)


Graves, Kevin. *Formation and Characterization of Porous Silicon.* (Advisors: Crawford, Gerald; Jessing, Jeff; and Palmer, Randy)

Klomps, Nate, Owen, Gayle, Higashi, Ty, and Christofanelli, Kyle. *Thermal Electric Generators - A Versatile Power Source.* (Advisor: Williams, Laurie)

Department of Political Science


Koenig, Shaun. The U.S. Constitution and the Interpreted Right to Privacy.


Manycattle, Bryan. Out with the Old, In with the New: Setting Term Limits for the State of Arizona and the Navajo Nation.

Matney, Luke. Emerging Theories on the Geo-Political Struggles between Russia and the West.


Pelagio-Williams, Jeran. America, the Global Defender.

Suta, Taylor. The Effectiveness of Targeted Sanctions.

Waldman, Aaron. The Old War/New War Debate.

Wholey, Max. The Use of Racism and Dehumanization as a Tactic in War.

Department of Psychology

Benally, Leayah. The Relationship between Personality Tendencies and Level of Physical Aggression. (Advisor: Templeton, Janice)

Bultemeier, Hunter. The Effect of Art Therapy on Stress and Coping in College Students. (Advisor: Kraus, Sue)

Bultemeier, Hunter. Art Therapy Related to Well-Being: Do Differing Artistic Mediums have Higher Stress Reduction Benefits. (Advisor: Templeton, Janice)

Corcorran, Brandon. Psychopaths Among Us: What Predisposes People to become Psychopaths. (Advisor: Templeton, Janice)

Dexter, Stephanie. Community Connections: The Integration of People with Developmental Disabilities into Community Settings. (Advisor: Dorr, Betty)

Dexter, Stephanie, Meyer, Kaley, Janes-Paulsen Austin and Isaac, Victoria. How Many Jelly Beans are in the Jelly Bean Jar? The Effect of Power Figures on Conformity. (Advisor: Kraus, Sue)

Fife, Ashley. *Feelings of Disgust and their Relationship with Approval of Non-normative Sexual Expression.* (Advisor: Dorr, Betty)


Golden, Christopher, Opp, Eric, John, Ericka, Augustine, Kirstin and Richmond, Zach. *Team Dynamics and Coaching Styles in a Sport Setting.* (Advisor: Kraus, Sue)

Henthorn, Erin. *Effects of Nutritional Style on Cognition and Mood in Children.* (Advisor: Templeton, Janice)

Horn, Hannah, Miller, Gwendolyn, Gwilliam, Jessica, DiCecco, Marissa, and Shields, Maia. *The Effect of Quotes from Authority on Victim Blaming Attitudes in Cases of Sexual Assault.* (Advisor: Templeton, Janice)

Howlett, Pamela. *Homeless Adolescents: Relationship with Mental Illness.* (Advisor: Dorr, Betty)


John, Erika. *Gender Sensitivity to Disgust.* (Advisor: Dorr, Betty)

Johnson, Chanetel. *Compatibility in Romantic Relationships.* (Advisor: Templeton, Janice)

Kinlicheene, Bryanna and LeClaire, Kaylyn. *Effects of Self-Perceived Stereotypes and Self-Efficacy on Academic Success Specific to Native American Students.* (Advisor: Kraus, Sue)

Miera, Jordan. *Decisions are Emotional, Not Always Rational: The Role of Psychology in Genetic Counseling.* (Advisor: Dorr, Betty)


Smith, Jonathan, Leonard, Elise, Tovarnak, Julie and Slutsky, Sheridan. *Relationships between Well-Being, Locus of Control, Compassion, Materialism and Racism.* (Advisor: Kraus, Sue)

Smithson, Callie. *Psychological Benefits of Activities in Wilderness Therapy Programs and the Effects on At-Risk Troubled Youth.* (Advisor: Templeton, Janice)


Thompson, Alex and Diiacovo, Natalia. *How Does an Individual’s Level of Introversion Effect their Perception of Similar or Dissimilar Personality Types?* (Advisor: Kraus, Sue)

Traversie, Paige. *The Effects of Exercise on Memory.* (Advisor: Templeton, Janice)

West, Claire. *Easing the Pain: Alternative Treatments for Healing and Wellness.* (Advisor: Dorr, Betty)

Yazzie, Jennifer and Yazzie, Shaquilla. Effect of Skin Tone on Attractiveness Level. (Advisor: Templeton, Janice)

Department of Sociology

Ahart, Dawn. The Bureaucracy of Cancer. (Advisor: Vicenti, Carey)

Ascencio, Kristen. Truancy and the Check and Connect Program. (Advisor: Smith, Kate)


Benabides, Michael. Effects of After School Programs on At-Risk Youth. (Advisor: Clausen, Becky)


Canuto, Janice. Investigating Struggles of Native American High School Students. (Advisor: Smith, Kate)

Cramer, Wolfgang. The Economic Inequality in Higher Education. (Advisor: Vicenti, Carey)

Dalla, Andrea. Solutions for Changing Sentencing in La Plata County Courts. (Advisor: Clausen, Becky)

Dempsey, Nicole. A Step towards Change in Women’s Equality. (Advisor: Seis, Mark)


Fields, Kaylen. The Disconnect of Emotional Learning in Public Schools. (Advisor: Clausen, Becky)

Foran, Tomlyn. Ferocious Hatred or Reverent Coexistence: Disparate Human Ontologies of the Wolf. (Advisor: Seis, Mark)

Frazee, Tiffany. Youth in Diversion Programs and the Mental Health Epidemic. (Advisor: Smith, Kate)


Glover, Kiara. Life and Emotions of Youth in Low Income Housing. (Advisor: Clausen, Becky)

Johnson, Chanetel. Sexual Assault Education and Prevention among Navajo Youth. (Advisor: Smith, Kate)

Ketelsleger, Travis Michael. Public Perception of the Police. (Advisor: Clausen, Becky)

Lawson, Dawnmarie. Insane and Incarcerated: The Injustice of Criminalizing the Mentally Ill. (Advisor: Clausen, Becky)

Lewandowski, Lisa. Thou Shalt Attend School: The Historical and Societal Impact of Compulsory Education in America. (Advisor: Seis, Mark)

Lewis, Darcy Rose. Understanding and Preventing Animal Abuse. (Advisor: Vicenti, Carey)
Lyons, Wynter. *Industrialization of Childbirth and the Subconscious Detachment from Aspects of Modern Life*. (Advisor: Clausen, Becky)


Meyer, Evan. *At-Risk Youth and the Modern Compulsory Education System*. (Advisor: Seis, Mark)


Roehl, Mara. *Kill the System, Save the Indian*. (Advisor: Seis, Mark)

Ross, Ryan. *Juvenile Corrections: Strategies and Tactics to Aid in Youth Rehabilitation*. (Advisor: Clausen, Becky)

Ruppert, Skye. *Communities in Action: Preventing Juvenile Delinquency*. (Advisor: Clausen, Becky)

Salazar, Rita. *Bringing Culture Back to Education*. (Advisor: Clausen, Becky)


Teague, Matt. *Capitalism’s Relation to the Environment and Land Use: Impacts to Southwest Colorado*. (Advisor: Smith, Kate)


Young, Emily. *Eco-Education: Nature as a Window into the World*. (Advisor: Seis, Mark)

Zambricki, Kayla. *Homelessness and Stigma in a Community of Plenty*. (Advisor: Clausen, Becky)

**Department of Teacher Education**

Alfara, Marco. *Multiple Subject Integration*. (Advisor: Greer, Kristine)

Albright, Bonnie. *Implementation and Refinement of Various Expeditionary Learning Protocols in the Classroom*. (Advisor: Greer, Kristine)

Duggan, Michaela. *Accessing Individualized Instruction*. (Advisor: Kristine Greer)

Ferguson, Kimberly. *Differentiation for Gifted Students in the Classroom*. (Advisor: Kristine Greer)

Gillen, Brittany. *Interconnectedness and Comprehension through Inquiry and Reflection*. (Advisor: Greer, Kristine)

Gurr, Rachael. *Smarter Instruction Using Brain Breaks*. (Advisor: Greer, Kristine)

Holland, Brittany. *Implementing Mindfulness in the Classroom*. (Advisor: Greer, Kristine)

Lanning, Miranda. *Challenging Each Other*. (Advisor: Greer, Kristine)

Major, Elizabeth. *Use of Number Talks within Mathematical Instruction*. (Advisor: Greer, Kristine)
Matthews, Kelsey. *A Push for Movement: Is Movement really benefiting our schools?* (Advisor: Greer, Kristine)

Mendieta, Renee. *Successful Technology Integration in Primary Grades.* (Advisor: Greer, Kristine)

Peterson, Jule. *The Classroom Community: An Essential Part of a Productive Day.* (Advisor: Greer, Kristine)

Pickett, Nicole. *Co-Teaching in a Project Based Learning Charter School.* (Advisor: Greer, Kristine)

Pritts, Brittany. *Developing Reading Comprehension through Read Aloud: Literacy Driven Instruction in a Fifth Grade Classroom.* (Advisor: Greer, Kristine)

Reimuth, Leslie. *Classroom Behavior for Listening.* (Advisor: Greer, Kristine)

Smith, Taylor. *Cooperative Learning: Hey! Teachers are Artists Too!* (Advisor: Greer, Kristine)

Starcher, Alexiss. *Mastering Elementary Math Instruction: Strategies to Benefit Students and Teachers.* (Advisor: Greer, Kristine)

Stonebraker, Jennifer. *Reading IEPs and the Methods for Success.* (Advisor: Greer, Kristine)

Ute, Cassandra. *Effective Classroom Management Skills That Lead to a Safe and Respectful Environment.* (Advisor: Greer, Kristine)

Zick, Juliet. *Light a Fire: Motivating Students to Learn.* (Advisor: Greer, Kristine)

**Department of Theatre**

Breece, Kenneth. *Anton Chekhov’s Legacy in Performance.* (Advisor: Davis, Ginny)


Norris, Fletcher. *Discontent, Longing and Comedy through Chekhov.* (Advisor: Davis, Ginny)


Rollins, James. *The Chekhovian Actor.* (Advisor: Davis, Ginny)

West, Evan. *Scenic Design for A CHEKHOVIAN SONATA: Tsarist Russian Life on Stage.* (Advisor: Davis, Ginny)
Recipients of Undergraduate Research and Creative Activities Grants, Awarded Spring 2014

Allen, Shilah, Biology. (Mentor: Ross McCauley)

Altermatt, Eva and Di Giacomo, Lionel. Adventure Education. (Mentor: Lee Frazer)

Anderson, Peter Ivan, Geosciences (Mentor: Ray Kenny)

Austin, Rita, Avant, Kelly, Dina, Meghan, Myers, Christine, and Rodgers, Jake. Honors Conference. (Mentor: Eric Juergensmeyer and Cathy Hartney)

Betancur, Alec, Hubbard, Dan, Izzo, Amber, Mestas, Michael, Panawa, Jillian, Webb, Courtney, and Yeager, Chris, Biology. (Mentor: Erin Lehmer)

Bock, Kevin, Hullinger, Luke, O'Malley, Steven, Shafer, Brendan, and Watkins, Scott, Physics and Engineering. (Mentor: Devin Leahy)

Boyer, Kalyn, Biology (Mentor: Julie Korb)

Breeden, Meredith, Biology (Mentor: Ross McCauley)

Canova, David, Geosciences (Mentor: Ray Kenny)

Collins, Mifaunwy, Psychology (Mentor: Brian Burke)

Davila, Brittney, Psychology (Mentor: Betty Dorr)

Davis, Javis, Geosciences (Mentor: Ray Kenny)

Gagnon, Kayla, Biology (Mentor: John Condie)

Garchar, Krista, Biology (Mentor: Shere Byrd)

Garcia, Jaqueline Ashley, Biology (Mentor: Ross McCauley)

George, Shelby, Biology (Mentor: Julie Korb)

Girts, Jeffrey, Geosciences (Mentor: Kim Hannula)

Haga, Casey, Biology (Mentor: Heidi Steltzer)

Hale, Leah, Biology (Mentor: Heidi Steltzer)

Hewey, Danielle, Biology (Mentor: John Condie)

Holden, Sara, Geosciences (Mentor: David Gonzales)

Hutchins, Amber Lynn, Psychology (Mentor: Brian Burke)

Lewis, Kyle, Geosciences (Mentor: David Gonzales)

Martinez, Jessee, Eckerman, Chloe, Gardere, Aimee, Quinn, Ayla, Alexander, Jordan, and Heaton, Stacey. English. (Mentor: Barth Cox)

McCutchen, Eliza, Adventure Education (Mentor: Melissa Knight-Maloney)

McDowell, Aaron, Biology (Mentor: Heidi Steltzer)

Parcell, Elyse, Biology (Mentor: Deb Kendall)

Passehl, Candice, Geosciences (Mentor: Ray Kenny)

Redmond, Caitlin, Psychology (Mentor: Brian Burke)
Reed, Chandra, Biology (Mentor: Julie Korb)
Salyers, Leroy, Geosciences (Mentor: Ray Kenny)
Smith, Shaun, Geosciences (Mentor: Kim Hannula)
Snider, Amanda, Biology (Mentor: Julie Korb)
Spencer, Nathan, Geosciences (Mentor: David Gonzales)
Valdez, Justin, Geosciences (Mentor: Ray Kenny)
Vogel, Catherine, Geosciences (Mentor: David Gonzales)
Vokorokos, Spencer, Geosciences (Mentor: Ray Kenny)
Weber-Sauer, Melanie, Biology (Mentor: Ross McCauley)

Recipients of Undergraduate Research and Creative Activities Grants, Awarded Fall 2014

Abshire, Daniel, Montoya, Cody, Martinez, Gavin, Hughes, Dillon, and Revak, Michael, Engineering. (Mentor: Devin Leahy)
Anderson, Zandele, Biology. (Mentor: Shere Byrd)
Begay, Shawnee, Biology. (Mentor: David Blake)
Boren, Justin, Chambellan, Megan, Somogyi, Aaron, and Taziwa, Benson, Engineering. (Mentor: Don May)
Canova, David, Geosciences. (Mentor: Ray Kenny)
Chadeayne, Devon, Chemistry. (Mentor: Katie Mouzakis)
Chamberlain, Madison and Yazzie, Brandon, Biology. (Mentor: Steven Fenster)
Conley, Erica and Lente, Leeroy, Biology. (Mentor: David Blake)
Durnford, Kathryn, Chemistry. (Mentor: Katie Mouzakis)
Durnford, Kathryn and Landing, Samuel, Biology. (Mentor: David Blake)
Dasugo, Dusty, Chavarria, Manuel, and DeSouchet, Nicki, Exercise Science.(Mentor: Missy Thompson)
Fountain, David, Biology. (Mentor: Steven Fenster)
Fountain, David, Biology. (Mentor: Steven Fenster)
Graves, Kevin, Physics. (Mentors: Jeff Jessing, Jerry Crawford, and Randy Palmer)
Harmon, Stephen and Espinoza, Veronica, Biology. (Mentor: David Blake)
Johnson, Geoff, Liebel, David, McCarthy, Jordann, and Stuntz, Andrew, Engineering. (Mentor: Ryan Smith)
Laue, Derek, Biology. (Mentor: Shere Byrd)
McClain, Katherine. Biology, (Mentor: Shere Byrd)
McWhorter, Alex, Dillon, Noah, and Schulke, Forest, Exercise Science. (Mentor: Missy Thompson)
O'Hara, Nicole, Biology. (Mentor: Steven Fenster)

Owen, Gayle, Christofanelli, Kyle, Klema, Nate, and Higashi, Ty, Engineering. (Mentor: Laurie Williams)

Powers, James, History.

Robison, Ashlee, Chemistry. (Mentor: Aimee Morris)

Schroeder, Meghan, Biology. (Mentor: Shere Byrd)

Shepherd, Jacob, Biology. (Mentor: Shere Byrd)

Shepherd, Kyle, Exercise Science. (Mentor: Missy Thompson)

Shorthair, Hallie and Washington, Racheal, Biology (Mentor: Steven Fenster)

Smith, Tucker, Benally, Jeffrey, Brenner, Joey, Brooks, Ryan, and Heermance, David Engineering. (Mentor: Billy Nollet)

Winiecki, Nichole, Biology. (Mentor: Shere Byrd)