



Graduate Research Symposium:

Showcasing Scholarly
 & Creative Works

IDAHO STATE UNIVERSITY

2019

MARCH 29, FRIDAY
POSTER &
CREATIVE WORKS
SESSIONS
ORAL PRESENTATIONS

#ISUGradResearch2019



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Agenda

Friday, March 29, 2019

Undergraduate Research Symposium	9 AM–11 AM	Ballroom
Keynote Speaker Workshop	10:30–11:15	Salmon River, 3rd Fl
Keynote Speaker Luncheon	11 AM–1 PM	Wood River
Welcome	11:30–11:40 AM	
President Kevin Satterlee		
Lunch Buffet	11:40–12 PM	
Keynote	12–12:45 PM	
Jackie Wirz, Ph.D.		
<i>Graduate School is More Than a Degree: How to Overcome Obstacles, Advocate for Yourself, and Develop Your Career</i>		
3 Minute Thesis (3MT) Presentations	1–2:30 PM	Ballroom
Oral Presentations	2:45–5 PM	Salmon River, 3rd Fl
<i>Biological, Physical & Natural Sciences</i>	2:45–5 PM	North Fork
<i>Education, Learning & Training</i>	2:45–3:45 PM	Middle Fork
<i>Health, Nutrition & Clinical Sciences</i>	3:45–4:30 PM	Middle Fork
<i>Humanities, Behavioral & Social Sciences</i>	2:45–5 PM	South Fork
Poster Presentations	5–7 PM	Ballroom
GSA Booth – 2019 Initiatives	4–7 PM	Ballroom
Ice Cream Networking Social	7–7:30 PM	Ballroom
Awards Ceremony	7:30–8 PM	Ballroom

Location

All events will be located in Pond Student Union Building [PSUB], Idaho State University, Pocatello Campus

Keynote Speaker

Jackie Wirz, Ph.D.



Jackie Wirz, PhD is the Assistant Dean for Graduate Studies and the Director of the Career and Professional Development Center at Oregon Health & Science University. She earned her Ph.D. from Oregon Health & Science University in Biochemistry & Molecular Biology and has a B.S. from Oregon State University in Biochemistry & Biophysics. Jackie is dedicated to helping students thrive both during their tenure as students and as new professionals after graduation. As such, she

strives to provide innovative services that support student success. Working closely with student, postdoctoral and faculty organizations, she created the Career and Professional Development Center to centralize and grow programs that will facilitate the academic and professional success of graduate students at Oregon Health & Science University. Her research career has spanned 15 years and has covered diverse topics such as transcriptional regulation, macromolecular structure determination, collagen biophysics and DNA repair. Her professional interests include information, data, and knowledge management, as well as the publishing paradigms of researchers. She lectures on a variety of topics including professional skill development, data management, data science, scholarly publication ethics, research impact and semantic technologies, and research communication. She is a trained confidential advocate for victims of harassment and abuse, and has developed and funded programs to educate students, faculty, and staff on sexual harassment. Jackie is a strong proponent of science outreach and has developed programs and grants designed to promote scientific, data, and information literacy. Jackie believes in evolution, salted caramel buttercream and Jane Eyre.

Participant List

College of Arts & Letters

Anthropology

Amy Michael (Anthropology - MS)
Hannah Dawson (Anthropology - MS)
Morgan McKenna (Anthropology - MS)
Rebekah Rakowski (Anthropology - MS)
Shanda Putnam (Anthropology - MS)

English & Philosophy

Jaelyn Sutherland (English & the Teaching of English - PhD)
Paul Williams (English & the Teaching of English - PhD)

History

Sarah Menish-Geryk (History - MA)

Political Science

Christopher Brown (Political Science - DA)

Psychology

Danielle Cummings (Clinical Psychology - PhD)
Elizabeth Penix (Clinical Psychology - PhD)
Kathryn Lachance (Clinical Psychology - PhD)
Lucinda L. Scott (Clinical Psychology - PhD)
Rachel Dyson (Clinical Psychology - PhD)
Shelby Weber (Clinical Psychology - PhD)
Stephanie McManimen (Clinical Psychology - PhD)
Wilson Trusty (Clinical Psychology - PhD)
Aimee Bozeman (Experimental Psychology - PhD)
Chloe Pedersen (Experimental Psychology - PhD)
Erin Madison (Experimental Psychology - PhD)
Hillary Swann (Experimental Psychology - PhD)
Jacob Gibson (Experimental Psychology - PhD)
Kellie Brown (Experimental Psychology - PhD)
Lisa Baeten (Experimental Psychology - PhD)
Sheherezade Krzyzaniak (Experimental Psychology - PhD)

Sociology, Social Work and Criminology

Samantha Averett (Social Work - MSW)

College of Education

Organizational Learning & Performance

Michelle Munoz (Instructional Design & Technology - MEd)

School Psychology & Educational Leadership

Derek Gerber (Educational Leadership - EdD)

Jenifer Reader (Educational Leadership - EdD)
Laura Sheridan (Educational Leadership - EdD)
Minghui Hou (Educational Leadership - EdD)
Staci Phelan (Educational Leadership - EdD)
Steven Morton (Educational Leadership - EdD)
Emery Clayson (School Psychology - MEd)

College of Health Professions

Public Health

Mindy Curran (Public Health - MPH)

College of Nursing

M. Christine Henesh (Nursing - PhD)

Ian Troesoyer (Nursing Practice - DNP)

College of Pharmacy

Arina Ranjit (Pharmaceutical Science - PhD)

Farjana Afrin (Pharmaceutical Science - PhD)

Kaniz Fatema (Pharmaceutical Science - PhD)

Matthew Kirkham (Pharmaceutical Science - PhD)

Sana Khajeh Pour (Pharmaceutical Science - PhD)

College of Rehabilitation & Communication Sciences

Communication Sciences & Disorders

Jessica Hillam (Audiology - AuD)

Physical & Occupational Therapy

Brett Arnell (Physical Therapy - DPT)

Conor Smith (Physical Therapy - DPT)

Jacob Bratton (Physical Therapy - DPT)

Sarah Cairns (Physical Therapy - DPT)

Zach Maas (Physical Therapy - DPT)

College of Science & Engineering

Biological Sciences

Ruth MacNeille (Biology - DA)

Sophie Hill (Biology - DA)

Alyssa Millard (Biology - MS)

Ian Dudley (Biology - MS)

Kayla Glossner (Biology - MS)

Kayla Pavlick (Biology - MS)

Jade Ortiz (Biology - PhD)

James Paris (Biology - PhD)

Jeremy Brooks (Biology - PhD)

Jessica Whitaker-Fornek (Biology - PhD)

Engineering & Applied Science

N. Evelin Paucar (Applied Science & Engineering - PhD)

Chemistry

Shu-en Li (Chemistry - MS)

Geosciences

Angela Garcia (Geology - MS)

Joseph Thomas (Geology - MS)

Sara Warix (Geology - MS)

Ashley Shields (Geosciences - PhD)



2018 Awards

Three Minute Thesis

First Place in Three Minute Thesis Competition

An Empirical Examination of Stigma Toward Mental Health Problems and Treatment Use in Veterans

Jonathan Goode (Clinical Psychology, PhD) & Joshua Swift

Second Place in Three Minute Thesis Competition

Fast Dynamics Analysis and Active Control of Spike Type Stall Inception in a One Stage Axial Compressor System

Nirmet Adhvaryu (Measurements & Controls Engineering, MS) & Marco Schoen

Second Place in Three Minute Thesis Competition

Role of Central [H⁺] and CO₂ in Early Rhythmic Neural Activity and Breathing Rhythms in the Developing Zebra Finch Brainstem

Jessica Whitaker-Fornek (Biology, PhD), Casetin Lybbert, & Jason Pilarski

Oral Presentations

Top Oral Presentation in Biological & Natural Sciences

Nutrient Dynamics in Constructed Stormwater Wetlands in Semiarid Climates

Carolyn Macek (Biology, MS)

Top Oral Presentation in Business, Economics & Public Administration

Technology-Based Public Policy Interventions to Enhance Access to Health Care Support: A Study in the Context of Rural Bangladesh

Hassan Afzal, (Business Administration, MBA) & Larry Cravens

Top Oral Presentation in Education, Learning & Training

What Makes an Effective Subculture on a Community College Campus?

Jonathan Lord (Educational Leadership, EdD)

Top Oral Presentation in Engineering, Physical & Mathematical Sciences

Investigating Hypokalemic Periodic Paralysis Mutations in hNav1.4: a Mathematical Approach

Landon Bayless-Edwards (Biology, PhD), James Groome, Frank Lehmann-Horn, Vern Winston, & Karin Jurkat-Rott

Top Oral Presentation in Humanities, Behavioral & Social Sciences

Bigger On the Inside: Codifying the Chronotope of the Labyrinth Paul Williams (English, MA)

Poster Presentations

Top Poster in Biological & Natural Sciences

Characterizing the Role of Hydrologic Fluctuation on Suspended Sediment and Particulate Organic Carbon Export in a Semi-Arid Catchment, Reynolds Creek, Idaho

Kayla Glossner (Biology, MS)

Top Poster in Education, Learning & Training

International Student-Athletes in the Intermountain West: Motivations, Decisions, and Opportunities

Leila Riley (Athletic Administration, MPE), Natalee Fauple, & Brooke Blair

Top Poster in Engineering, Physical & Mathematical Sciences

Finite Element Modeling of an Alternative Bridge Deck Connection Method in Accelerated Bridge Construction

Utsa Rashique (Civil Engineering, MS), Arya Ebrahimpour, & Mustafa Mashal

Top Poster in Health, Nutrition & Clinical Sciences

*The Feasibility of Script Based Audio-Visual Speech
Entrainment for the Treatment of Nonfluent Aphasia*

Jeanna Ritter (Speech Language Pathology, MS)

Top Poster in Humanities, Behavioral & Social Sciences

*Personality Judgment Accuracy and the Role of Psychological
Well-Being and Cognitive Functioning*

Sheherezade Krzyzaniak (Experimental Psychology, PhD),
Chloe Pedersen, Jacob Gibson, Taeg Barclay, & Tera Letzring

People's Choice Poster

*Fast Dynamics Analysis and Active Control of Spike Type
Stall Inception in a One Stage Axial Compressor System.*

Nirmeet Adhvaryu (Measurements & Controls Engineering,
MS) & Marco Schoen



Three Minute Thesis

1 PM - 2:30 PM

Ballroom, PSUB

- 1:15 PM Real World Retention: A Qualitative Analysis of the Career Path Internship at Idaho State University
Staci Phelan
- 1:20 PM Is a Picture Worth 240 Characters?
Chloe Pedersen
- 1:25 PM To Speak or Not to Speak? The Limited Role of Summarization in Absolute Accuracy Judgments.
Erin Madison
- 1:30 PM The Impact of Prior Information on Personality Judgment Accuracy
Jacob Gibson
- 1:35 PM Understanding the Link Between Sleep and Suicidality: A Preliminary Analysis of an Underlying Neuropsychological Mechanism
Stephanie McManimen
- 1:40 PM Cognitive Emotion Regulation Strategies as Mediators of Shame Following Sexual Assault
Danielle Cummings
- 1:45 PM COKEROACHES: Training Periplaneta Americana to Detect and Locate Narcotics Using Classing and Operant Conditioning Methods
Kayla Pavlick
- 1:50 PM Assessing Teaching Strategies in Introductory STEM Courses and Addressing Barriers to the Use of Active Learning Techniques at ISU.
Ruth MacNeille
- 1:55 PM The Influence of Mindset of Aging in Older Adults
Kellie Brown
- 2:00 PM Why We Hunger: Female Appetite and the Repression of Sexual Desire in Bram Stoker's Dracula

Jaclyn Sutherland

2:05 PM Thesis Proposal: Reducing Obesity Stigma Using a Cognitive Dissonance Intervention

Lisa Baeten

2:10 PM The Oriental Superheroes: A Discussion of the Political Questions posed in G. Willow Wilson's Cairo: A Graphic Novel and the Ms. Marvel comic books

Noran Amin

2:15 PM A Peek Inside the Eggshell: How a Baby Bird's Nervous System Develops to Control Breathing

Jessica Whitaker-Fornek

2:20 PM Persistence of Greater Sage-Grouse Following Wildfire

Ian Dudley



Oral Presentations

Biological, Physical & Natural Sciences

2:45 PM - 5 PM

North Fork

- 2:45 PM *A Social-Ecological Investigation of Riverine Habitat Complexity: Insect Emergence, Terrestrial Insectivores, and Public Perceptions*
Jade Ortiz, Donna Lybecker
- 3:00 PM *Isotopic Analysis of Mineral Carbonate and Organic Matter from Morrison Lake, MT; Implications for HydroClimate of the Northern Rocky Mountains*
Joseph Thomas
- 3:15 PM *Long-term Estimates of Inland Riverine Sediment and Particulate Organic Carbon (POC) Fluxes from Reynolds Creek Experimental Watershed, Idaho USA*
Kayla Glossner, Sarah Godsey, Ken Aho
- 3:30 PM *Defining Functional Success Through Denitrification and Sedimentation in Restored and Unrestored Rangeland Streams.*
Alyssa Millard
- 3:45 PM *Investigating the Potential for Reverberating Responses to Trophic Cascades Across Ecosystems*
Jeremy Brooks, Dana Warren, William Ripple
- 4:00 PM *Groundwater Geochemistry and Flow in the Spring Mountains, NV: Implications for the Death Valley Regional Flow System*
Sara Warix
- 4:15 PM *Persistence of Greater Sage-Grouse Following Wildfire*
Ian Dudley, Mark Ricca, Dawn Davis, Scott Gardner, David Delehanty
- 4:30 PM *The Food Web Mosaic of the Snake River Floodplain and Consequences of River Regulation*
James Paris, Hunter Osborne, Zach Wadsworth

Education, Learning & Training

2:45 PM - 3:45 PM

Middle Fork

2:45 PM *The Correlation of School Principals' Mindsets and Teachers' Perceptions of Interpersonal and Informational Justice*

Steven Morton

3:00 PM *Comparing the Instructional Impact of the Signaling and Personalization Multimedia Principles on Knowledge Retention and Recall*

Michelle Munoz

3:15 PM *Real World Retention: A Qualitative Analysis of the Career Path Internship at Idaho State University*

Staci Phelan

3:30 PM *Internationalization in Higher Education and Cultural Changes*

Minghui Hou

Health, Nutrition, & Clinical Sciences

3:45 PM - 4:30 PM

Middle Fork

3:45 PM *Expanding Syringe Access in Idaho*

Ian Troesoyer

4:00 PM *Quantification of Cellular Ceramide by Targeting Sphingomyelin Synthase in Cancer Cells Utilizing Anhydrophytosphingosine, jaspine B.*

Farjana Afrin, James Lai, Srinath Pashikanti, Apurba Dutta

Humanities, Behavioral & Social Sciences

2:45 PM - 5 PM

South Fork

- 2:45 PM *Religious Microaggressions in Psychotherapy: Impact on Process and Outcome with Religious Clients*
Wilson Trusty, Allan Dimmick, Stephanie Winklejohn Black, Elizabeth Penix
- 3:00 PM *The Oriental Superheroes: A Discussion of the Political Questions Posed in G. Willow Wilson's Cairo: A Graphic Novel and the Ms. Marvel Comic Books.*
Noran Amin
- 3:15 PM *The Evolution of Terrorism Through the Use of Technology*
Sarah Menish-Geryk
- 3:30 PM *Examining Political Behavior's "Power/Knowledge" through Brave New World & Walden Two*
Christopher Brown
- 3:45 PM *Gender and Educational Differences in the Relationship Between Gratitude and Subjective Wellbeing.*
Douglas Cruthirds
- 4:00 PM *Why We Hunger: Female Appetite and the Repression of Sexual Desire in Bram Stoker's Dracula*
Jaclyn Sutherland
- 4:15 PM *The Use of Model Legislation to Draft Policy Beneficial to Corporate Interests: The Diffusion of Policies Drafted by the American Legislative Exchange Council (ALEC)*
Christopher Brown, Rebecca Bromley-Trujillo, Kellee J. Kirkpatrick
- 4:30 PM *Self-Narration, Utopianism, and Neo-Victorian Literature*
Paul Williams

Poster Presentations

5 PM - 7 PM

Ballroom, PSUB

Biological, Physical & Natural Sciences

#20 *Deletion of ARID1A in Osteosarcoma Enhances Aggressive Cell Phenotypes.*

Kaniz Fatema, Jared Barrott

#11 *Habitability Potential of Enceladus: An Analog Study of the Lō‘ihi Seamount System in Hawai‘i*

Angela Garcia, Ashley Shields

#14 *Spatiotemporal Implications of Urban Streetside Vegetation to Nutrient and Carbon Loads in Stormwater*

Sophie Hill

#1 *Utilizing Skeletal Bone as a Reservoir for Sustained Delivery of Effective Concentration of Antimalaria Drugs Aiming at Prevention of Drug Resistance*

Sana Khajeh Pour, Matthew Kirkham, Arina Ranjit, Ali A. Habashi,

#5 *The Exploration of Bone-Seeking Conjugate of GLP-1 for Enhancing Efficacy Through Prolongation of Its Half-Life*

Matthew Kirkham, Sana Khajehpour, Arina Ranjit, Ali A. Habashi,

#33 *ANS Binding of Halobacterium salinarum Cysteinylyl-tRNA Synthetase*

Shu-en Li, Caryn Evilia

#23 *Biogeochemical Patterns of Intermittent Streams in Space and Time: The Impacts of Drying and Wildfire on Carbon Dynamics*

Ruth MacNeille, Kathleen Lohse, Sarah Godsey, Perdrial, Julia; DeWayne Derryberry, Colden Baxter

#8 *O3/UV treatment Process for the Removal of Pharmaceuticals and Personal Care Products in*

Wastewater

**N. Evelin Paucar, Ilho Kim; Hiroaki Tanaka,
Chikashi Sato**

- #17 *Metal Isotope Movement in Human Dental Tissue*
**Rebekah Rakowski, Samantha Blatt, Amy Michael
John Dudgeon, Kateea Peterson,**

Education, Learning & Training

- #30 *Current School Psychology Recruitment Strategies*
Minghui Hou, Emery Clayson, Joel Bocanegra
#26 *Professional Development in Rural Schools*
Laura Sheridan

Health, Nutrition & Clinical Sciences

- #31 *Quantification of Cellular Ceramide by Targeting
Sphingomyelin Synthase in Cancer Cells Utilizing
Anhydrophytosphinoine, jaspine B.*
**Farjana Afrin, Jared Barrott, James Lai, Srinath
Pashikanti, Apurba Dutta**
#3 *Mental Wellness on College Campuses*
Samantha Averett
#9 *Ecological Association Between Arsenic Concentration
in Drinking Water and Physiological Health Symptoms
in American Falls, Idaho*
Mindy Curran
#28 *Comparing the Between Sport Differences in Landing
Mechanics of Female Collegiate Athletes*
**Derek Gerber, Brett Arnell, Conor Smith, Sarah
Cairns, Zach Maas, Jacob Bratton**
#21 *Nurse Practitioner Residencies: Confidence and
Competence*
M. Christine Henesh, Mary A.Nies
#6 *Data Collection and Factor Analysis of Three (C)APD
Tests for Normal Hearing 8- and 9-Year-Old Children*
**Jessica Hillam, Mary Whitaker, Ron Schow, Debbie
Vieira**

- #15 *Prodrug Strategy for Bone Targeting Delivery of the Angiotensin Receptors Blockers*
Arina Ranjit, Sana Khajeh Pour, Matt Kirkham
- #18 *Encouraging Increased Vegetable and Fruit Intake Through a Peer-Led Grocery Store Tour Model (Grant Application Process)*
Jenifer Reader
- #12 *Maternal Sugar Consumption, Body Mass Index, Gestational Weight Gain, and Postpartum Distress*
Lucinda L.Scott, Nicki L.Aubuchon-Endsley
- #24 *Expanding Syringe Access in Idaho*
Ian Troesoyer

Humanities, Behavioral & Social Sciences

- #19 *Hindlimb Stepping in Response to Treadmill Speed in Neonatal Spinal-Transected Rats*
Aimee Bozeman, Michele Brumley
- #7 *The Influence of Mindset of Aging in Older Adults*
Kellie Brown
- #27 *Cognitive Emotion Regulation Strategies as Mediators of Shame Following Sexual Assault*
Danielle Cummings
- #22 *Are Two Methods Better Than One? Examining the Utility and Comparability of Metric and Morphoscopic Traits to Estimate Ancestry*
Hannah Dawson
- #25 *Physical Fitness and the Role of Psychological Well-Being and Cognitive Functioning*
 Sheherezade Krzyzaniak, Chloe Pedersen, Jacob Gibson, **Doug Cruthirds, Tera Letzring**
- #4 *Assessing the Role of Prosocial Peers and Effortful Control in Adolescent Aggression*
Kathryn Lachance, Stephanie McManimen, Rachel Dyson, Maria Wong
- #10 *To Speak or Not to Speak? The Limited Role of Summarization in Absolute Accuracy Judgments.*
 Erin Madison, Erika Fulton

- #29 *Stable Isotope Analysis of Ancient Maya Diet*
Morgan McKenna, Amy Commendador, Amy Michael, Gabriel Wrobel, John Dudgeon, Patricia McAnany
- #16 *Understanding the Link Between Sleep and Suicidality: A Preliminary Analysis of an Underlying Neuropsychological Mechanism*
Stephanie McManimen
- #2 *Two Heads are Better than One: Multi-Component Forensic Analyses of Curated Shrunken Heads*
Shanda Putnam, Samantha Blatt, John Dudgeon, Amy Michael
- #13 *The Relationship Between Infant Equipment Use and Motor Milestones During the First 18 Months*
Hillary Swann, Nicki Aubuchon-Endsley, Bryan Gee, Michele Brumley
- #32 *Do Sexual Violence, Adverse Childhood Experiences (ACE), and Mental Health Distress Differ by Gender among Juvenile Offenders?*
Shelby Weber



Abstracts

Farjana Afrin, Jared Barrott, James Lai, Srinath Pashikanti, Apurba Dutta

Category: Health, Nutrition & Clinical Sciences

Poster #31

Quantification of Cellular Ceramide by Targeting Sphingomyelin Synthase in Cancer Cells Utilizing Anhydrophytosphingosine, jaspine B.

Anhydrophytosphingosine, jaspine B is a marine natural product, exhibited sub-micromolar cytotoxicity ($IC_{50} \leq 0.5 \mu M$) in several cancer cell lines.

Jaspine B induced dose- and time-dependent increases in apoptosis in murine B16 and human SK-Mel28 melanoma cells. Preliminary biochemical studies have identified that jaspine B inhibited Sphingomyelin Synthase (SMS) resulting in increased intracellular ceramide levels and initiating apoptotic events in the cancer cells. The main objective of this project is to develop inhibitors targeting SMS. The design of these analogs involves retaining the SMS substrate/cofactor/ enzyme transition state structural features towards improving potency. Analogues with a closer resemblance of an enzyme transition state might exhibit selectivity and potency. In this current study, we are developing a bench-top assay system towards quantification of cellular ceramide utilizing jaspine B.

Experimental design involves treatment of cells with fluorescent-labeled ceramide analog C6-NBD Ceramide. Sphingomyelin synthase activity results in formation of fluorescent-labeled C6-NBD Sphingomyelin (Fig 1). Quantification of cellular C6-NBD-Sphingomyelin is used to study the activity of sphingomyelin synthase. Higher expression of ceramide metabolizing enzymes is observed in cancer cells. Sphingomyelin synthase is one of the ceramide metabolizing enzymes and small molecules targeting SMS exhibit anticancer potential. A bench top non-radioactive assay will help to screen SMS analogs in a time efficient manner.

Noran Amin

Category: Humanities, Behavioral & Social Sciences

The Oriental Superheroes: A Discussion of the Political Questions Posed in G. Willow Wilson's Cairo: A Graphic Novel and the Ms. Marvel comic books.

This presentation focuses on how G. Willow Wilson uses fantasy in comics, namely Cairo and the Ms. Marvel series, to pose political questions that defy neo-Orientalist thinking. In Cairo, Wilson employs comics to subtly challenge and reconstruct the reality of the political status quo of Arab-Israeli conflicts as well as the endless cultural divide between the East and the West. Through magical realism, Wilson creates a world where coexistence and genuine peace between the two poles is possible.

Moreover, she interweaves Islamic mythology and Middle Eastern folk tales with the genre of superhero fiction to produce a hybrid global narrative. She also reinvents the concept of the “superhero” by introducing an oriental hero whose superpowers emanate from and are immersed in Middle Eastern culture. Cairo poses a series of political questions about the true meaning of universally controversial notions. In *Ms. Marvel*, Wilson continues expanding what the word superhero stands for by creating the oriental superheroine Kamala Khan, which subverts the traditional notion of the American superheroine. Wilson gives superpowers to an American-Pakistani teenager, a Muslim girl affiliated with an ethnic minority in New Jersey. Kamala uses the teachings of her conservative family and verses from the Koran to justify heroic acts of saving those in need. The imaginary world of *Ms. Marvel* allows a brown Muslim girl to have a significant role in the society that she is deprived of in reality. *Ms. Marvel* raises political questions about identity, religion, gender roles, color, race, ethnicity, and cultural hybridity in modern day America. The theoretical frame that this presentation will use is what I term “the interrogative mode”: a mode of critique for comics that I devised. It creates a dialogue between pioneer comics creators and major comics critics and presents a set of questions that scrutinize various aspects of comics.

Samantha Averett

Category: Health, Nutrition & Clinical Sciences

Poster #3

Mental Wellness on College Campuses

The topic of mental wellness is often times packed with challenges and stigma that potentially create barriers for college students’ ability to access services (Michaels, Corrigan, Kanodia, Buchholz & Abelson, 2015). The lack of mental health awareness and intervention on college campuses has become increasingly concerning, creating a “decreased sense of wellbeing and academic concerns” (Silvers, 2018). These consequences lead to lower grade point averages, higher dropouts rates and less satisfying college experiences (Salzer, 2012). Mental Wellness is something everyone can benefit by improving; however, many college students perceive getting help in terms of their mental wellness as a sign of weakness and therefore are less likely to seek services for their overall wellbeing (D’Amico, Mechling, Kempainen, Ahern & Lee. 2016). It is important to know that certain amounts of stress is perfectly normal; however, too much stress can be unhealthy (Mental Health America, 2018). According to the American Mental Wellness Association, healthily balancing our biophysical, psychological, social and spiritual needs is the best way to improve our mental wellbeing (2019). The importance of a healthy brain is essential to our mental wellness; therefore, by exercising, restfully sleeping, avoiding substances and maintaining a healthy diet we can help our brain grow and develop properly (AMWA, 2019). Psychologically, we can practice self care and mindfulness, avoid perfectionism and engage in stress management techniques (AMWA, 2019). The act of being present in the

moment is known as mindfulness (Brown & Ryan, 2003). Mindfulness practice has significantly shown reduction of stress, enhanced adjustment to college, decreased substance use and prevention of the development of psychopathology (Felver, Morton & Clawson, 2018). Socially and spiritually we can build a support system with good friends and family, have healthy dreams and aspirations and practice good morals (AMWA, 2019).

Lisa Baeten

Category: Humanities, Behavioral & Social Sciences

Thesis Proposal: Reducing Obesity Stigma Using a Cognitive Dissonance Intervention

Individuals who are overweight or obese frequently experience negative interactions because of their weight. These stigmatizing events negatively impact both psychological and social outcomes of those with excess weight, and can lead to internalization of weight bias. Additionally, because obesity appears to share bodily features (e.g., fluid buildup, abnormalities of the body) of some diseases, pathogen disgust sensitivity is linked to obesity stigma. Unfortunately, interventions aimed at reducing obesity stigma by targeting its origins have yielded mixed results. However, weight-related cognitive dissonance, the discrepancy between one's values and one's antifat attitudes, can reduce weight-based stigmatization. This randomized, controlled experimental study will attempt to replicate the effectiveness of a cognitive dissonance intervention to reduce stigma towards persons with obesity. Two hundred college women will be randomized into a cognitive dissonance group or a control group. All participants will complete an online set of questionnaires including measures of personal values and antifat attitudes. A week later, participants will come into the lab and complete a second set of questionnaires. Prior to this task, those in the cognitive dissonance group will receive false feedback that their antifat attitudes are at odds with their personal values. We expect weight-based stigmatization at the lab session to be significantly lower for the cognitive dissonance group. This study will also extend past research with stronger methodology (significantly larger sample, objectively measured weight as a covariate) and additionally examine improvements in internalization of weight bias, social exclusion, and pathogen disgust sensitivity as a function of cognitive dissonance.

Aimee Bozeman, Michele Brumley

Category: Humanities, Behavioral & Social Sciences

Poster #19

Hindlimb Stepping in Response to Treadmill Speed in Neonatal Spinal-Transected Rats

Examining locomotor behavior in complete spinal-transected animals can provide insights into the mechanisms of plasticity that regulate locomotion and contribute to recovery following a spinal injury. Sensory stimulation is important for the induction and regulation of stepping in adult animals with

a spinal cord transection. In the current study, we examined changes in hindlimb stepping in response to a moving treadmill belt, in intact and spinal-transected neonatal rats. Rats received a low-thoracic spinal transection or sham operation on postnatal day 1 (P1). On P5, pups were tested on one of four treadmill belt speeds: slow, medium, fast, or non-moving (control). Following a 5-min baseline, subjects received an intraperitoneal injection of 3.0 mg/kg quipazine (a serotonin receptor agonist) to induce stepping. They were then tested for 30 minutes on a treadmill, to examine if sensory feedback/treadmill training affects stepping. Results showed that spinal subjects exhibited significantly more alternating hindlimb steps, total hindlimb movements, and percentage of alternating steps compared to shams. This is consistent with previous studies demonstrating hindlimb supersensitivity to quipazine. Interestingly, there were no differences in hindlimb activity, including stepping, among the different treadmill speed conditions. Further analyses will examine hindlimb step cycle duration, step area, and paw placement on the treadmill belt to determine kinematic parameters among the groups. Current results suggest that induction of alternating hindlimb stepping can be controlled at the low spinal level, however in the neonatal rat suprathoracic circuitry may be necessary for regulating changes in hindlimb activity to treadmill speed.

Jeremy Brooks, Colden Baxter, Dana Warren, William Ripple,

Category: Biological, Physical & Natural Sciences

Investigating the Potential for Reverberating Responses to Trophic Cascades across Ecosystems

The loss of apex predators is a worldwide phenomenon, and understanding the extent of direct and indirect effects of these losses or the potential responses to restoration of such predators is a fundamental challenge in ecology. We are addressing this challenge in Yellowstone National Park (YNP) where a large-scale manipulation of gray wolves (*Canis lupus*) has led to a series of well documented indirect effects, including a terrestrial trophic cascade resulting in the patchy regeneration of riparian woody vegetation (RWV). The presence of RWV is known to influence stream-riparian linkages through changes in allochthonous and autochthonous resources for the stream ecosystem. Moreover, the emergence of stream insects can be mediated by stream basal resources and fish predation, which ultimately can influence the abundance and distribution of riparian insectivores including spiders, songbirds, and bats. We began investigating the potential for these reverberating responses to a terrestrial trophic cascade in the Northern Range of YNP in the summer of 2018. At each site, we measured community assemblage and population of fishes, stream invertebrates, and riparian spiders. Sites with reduced browsing, where top down control was initiated by wolves, tended to have higher stream invertebrate biomass, higher fish biomass, and higher abundances of riparian spiders. These results indicate that the top down control

initiated by wolves might result in higher emergence flux and a numerical increase in riparian insectivores. In the summer of 2019, we will conduct more thorough investigations of stream ecosystem processes, fish diets, aquatic insect emergence, and riparian bat and songbird populations in order to better understand stream-riparian food web interactions that may mediate the extent of direct and indirect effects of apex predators.

Christopher Brown

Category: Humanities, Behavioral & Social Sciences

Examining Political Behavior's "Power/Knowledge" through Brave New World & Walden Two

The relationship between speculative art and the state of the society which produces it can be considered cyclical, each influencing the other. This includes the advancement of science and technology. While such issues of culture, science, and society have been explored within literary and social theory referencing questions of empirical social science, these three perspectives are rarely synthesized. This paper seeks to explore these themes by way of analyzing the expression of advances in the knowledge of political behavior and technology in two major pieces of 20th century social fiction, Aldous Huxley's *Brave New World* and B.F. Skinner's *Walden Two*. Both novels describe a society which bases its political system on direct applications of behavioral sciences, yet their contexts apply the relationship between power and knowledge differently. By applying textual analysis of these influential cultural statements with the use of both contemporary social theory and the current state of thematically relevant behavioral research, this analysis creates an essential disciplinary bridge between theory and empirical social science to demonstrate the prescience of speculative art for understanding an advancing world.

Christopher Brown, James W. Stoutenborough, Rebecca Bromley-Trujillo, Kellee J. Kirkpatrick

Category: Humanities, Behavioral & Social Sciences

The Use of Model Legislation to Draft Policy Beneficial to Corporate Interests: The Diffusion of Policies Drafted by the American Legislative Exchange Council (ALEC)

The American public generally believes that special interest groups have too much power. The prevailing wisdom both among the public and many within the academy is that the money that changes hands directly influences the policies proposed. However, political scientists have a long history of finding little to no definitive influence of these interest groups on policymakers. We propose a different way to examine the influence of special interest groups on the policy process. This project explores the influence of the American Legislative Exchange Council (ALEC), a conservative (though claiming to be "America's largest nonpartisan") organization that aids state legislators by providing model legislation to members. The twist on traditional interest group studies is that ALEC's

corporate benefactors sit on the very task forces that draft model legislation on issues affecting that corporation. Using textual analysis, we examine how closely state bills match the model legislation proposed by ALEC. Preliminary evidence suggests that ALEC has a substantial impact on state legislative agendas, suggesting that interest groups may have found a way to directly influence policy, but with little to no evidence.

Kellie Brown

Category: Humanities, Behavioral & Social Sciences **Poster #7**

The Influence of Mindset of Aging in Older Adults

Growth mindset refers to the belief that qualities or traits are malleable, while fixed mindset refers to the contrary belief that these things are non-malleable. Whereas mindset studies have been applied extensively within the personality and intelligence fields, there is a dearth of research that examines mindset of aging (MA); that is beliefs about the aging process. Preliminary studies point to MA being related to future time perspective and anxiety about one's own aging. The present experiment tests the influence of mindset of aging (MA) on four different psychological outcomes. These are: self-perceptions of aging (SPA), age identity, implicit old-age bias, and working memory (WM) in older adults. Participants are randomly assigned to one of two priming conditions (growth or fixed MA) in which they are asked to read an article supporting the view that aging is either fixed or malleable. Next, participants complete a SPA measure, a computer-based implicit old-age bias task, an age identity measure, and the O-SPAN task as a measure of WM. It is hypothesized that older adults primed with a growth MA will exhibit more positive SPA, more positive implicit attitudes towards older adults, a younger age identity, and higher O-SPAN scores than individuals primed with a fixed MA. Data collection is nearly complete and preliminary results will be discussed.

Douglas Cruthirds, Jacob Gibson

Category: Humanities, Behavioral & Social Sciences

Gender and Educational Differences in the Relationship Between Gratitude and Subjective Wellbeing.

Previous research explains many of the critical aspects of the relationship between gratitude and subjective well-being; however, gender and educational differences are an overlooked area. Using participants who just completed a gratitude intervention (N =184), a multigroup structural equation model was created to test if the relationship between gratitude, measured by the Gratitude Resentment and Appreciation Test (GRAT), and subjective well-being, measured by a latent variable created from questions of the Satisfaction with Life Scale, is different based on gender or education. Results show the gratitude-SWB relationship is significantly different by gender and education, with males and those educated with less than a bachelor's degree displaying a negative relationship between the sense of abundance subscale of the GRAT and SWB, and females and

those with a bachelor's degree or more displaying a positive relationship. A further breakdown of results and implications for future research will be discussed.

Danielle Cummings

Category: Humanities, Behavioral & Social Sciences **Poster #27**

Cognitive Emotion Regulation Strategies as Mediators of Shame Following Sexual Assault

Sexual assault (SA) is a pervasive and personal crime. It may be experienced more often by certain populations (e.g., women), and under differing circumstances (e.g., no alcohol/alcohol incapacitation). Following the traumatic event of sexual assault, victims frequently report mental health problems. Treatment models, such as cognitive-behavior therapy, have posited that post-traumatic cognitions or affective states (e.g., shame) may serve to increase or maintain trauma-related distress such as PTSD. This study examined adaptive (positive reappraisal) and maladaptive (self-blame) cognitive emotion regulation strategies as mediators in the relationship between sexual assault characteristics (alcohol vs. non-alcohol involved) and current levels of assault-related shame. A sample (N = 164) of female-identified college students was taken from a larger online study. Participants reported at least one instance of sexual victimization since age 14 and completed self-report questionnaires through an anonymous online survey tool. Ninety-five women reported alcohol-involved assault. In a test of a double mediation model, neither self-blame nor positive reappraisal mediated the relationship between SA and trauma-related shame. However, usage of self-blame significantly predicted higher levels of shame, and strength of ethnic identity was significantly negatively correlated with traumatic shame. These results suggest that self-blame may be associated with increased affective shame whereas stronger ethnic identity may serve as a protective factor against shame following sexual assault. Implications for treatment and future research are discussed.

Mindy Curran

Category: Health, Nutrition & Clinical Sciences **Poster #9**

Ecological Association Between Arsenic Concentration in Drinking Water and Physiological Health Symptoms in American Falls, Idaho

Arsenic is a contaminant endemic to Idaho that is typically tested for in ground water. Chronic arsenic exposure can lead to a number of physiological health symptoms including skin pigmentation, gastrointestinal issues, and various types of cancer (ATSDR, 2010). American Falls, Idaho has reported higher levels of arsenic in recent years than it has in the past (IDEQ, Sample History Report, 2018). The aims of the project were: 1) to determine levels of arsenic in American Falls drinking water, 2) to describe the prevalence of residents of American Falls with >1 self-reported physiological health symptoms and compare with state and national data, and 3) to determine if there is an association

between levels of arsenic and occurrence of physiological health symptoms in the city of American Falls from 2015-2018. Water samples were collected from participants' homes who had opted to receive free tap water testing through an online survey about physiological health conditions, water consumption and demographics. The levels of arsenic in sampled tap water were greater than 0 mg/L but less than the Maximum Contaminant Limit (MCL) of .01 mg/L (M= .004mg/L). Overall prevalence of participants reporting >1 physiological health symptom was 43.3%. Analyses used water sample data collected from participants' at-home tap and self-reported physiological health data to determine potential significant relationships between level of contaminant in the water and presence of experienced physiological health symptoms. Logistic regression analyses showed no significant relationship between presence of physiological health issues and levels of arsenic measured from at-home tap water in 2018 ($p=.59$; $B=-.129$). Specific prevalence comparisons will be further discussed. It is important to continue monitoring water sources in American Falls for arsenic levels that may be above the MCL, because this area is at high risk for arsenic contamination.

Hannah Dawson

Category: Humanities, Behavioral & Social Sciences **Poster #22**

Are Two Methods Better Than One? Examining the Utility and Comparability of Metric and Morphoscopic Traits to Estimate Ancestry

Ancestry estimation is an important component of the biological profile that forensic anthropologists reconstruct to aid in identifying unknown skeletal remains, but it is amongst the most contentious and least refined. Many methods based on discriminant function analyses with the use of metric traits to create ancestry classes have been developed. Few, however, address the need to combine metric and nonmetric methods in any one case to increase overall accuracy, particularly when remains are incomplete. Few even address the lack of comparability with these methods. Further, population programs like FORDISC have come under scrutiny with little attempt at evaluating alternatives. Therefore, limitations of a multi-method approach to ancestry estimates are misunderstood and problematic for identification in a medico-legal setting. This project compares the ancestry classification of 59 skulls from the Ada County Coroner's Office (ACCO). Metric and morphometric data from this collection were analyzed using FORDISC, optimized summed score attributes, and metric and discrete traits of the mandible. Descriptive comparisons of the ancestry estimation outputs from these different methods are presented and limitations of their comparability are discussed. Intra- and interobserver error was also assessed to address the precision and utility of these methods. Use of multiple methods and skeletal elements is ideal when building the biological profile, but the methods employed for this skeletal collection were found to generate incomparable results. Morphometric methods may be able to provide a viable alternative and addition to traditional methods

but more work is needed to build the databanks of more recent and diverse populations to elevate medico-legal study and evaluation of the benefits and limitations of multi-method analyses deserve further discussion.

Yousef Deikna

Category: Humanities, Behavioral & Social Sciences

Margaret Cavendish and Lucy Hutchinson: Empathy in War

During the English Civil War, Margaret Cavendish, a royalist, and Lucy Hutchinson, a parliamentarian, found themselves engulfed in severe political and social polarization. One might think that these authors will stick to their in-group, confirmation biases from their adherence to their own political group, but when examining their writings, it appears that Cavendish and Hutchinson empathize with their opponent party during the course of the Civil War period and after. The question is why and how such empathy takes place.

Ian Dudley, Peter Coates, Mark Ricca, Dawn Davis, Scott Gardner, David Delehanty

Category: Biological, Physical & Natural Sciences

Persistence of Greater Sage-Grouse Following Wildfire

Loss and degradation of sagebrush steppe ecosystems has resulted in concordant declines of the greater sage-grouse (*Centrocercus urophasianus*; hereafter sage-grouse), a sagebrush (*Artemisia* spp.) obligate species. In the Great Basin, increased fire frequency and intensity and associated replacement of sagebrush with invasive annual grasses and forbs are predicted to reduce sage-grouse populations further through habitat loss and by nullifying positive effects of favorable weather cycles. Following the 126,000-ha Rush Fire in northeastern California and northwestern Nevada, we used radio telemetry to locate and monitor 80 sage-grouse nests during 2015-2018 and compared sage-grouse micro-habitat selection and survival within and outside the burned area. Using our own and historic data, we quantified sage-grouse habitat use relative to availability at multiple spatial scales in burned and unburned areas before and after the fire event. Using information-theoretic modeling, we identified factors that influenced sage-grouse nest-site selection and survival to better understand the capacity for sage-grouse to persist, at least temporarily, in severely altered sagebrush habitat. Preliminary results indicate differential selection of shrub canopy cover at nests within the burned area versus outside the burned area. Specifically, sage-grouse within the burned area often nested without shrub canopy cover. We hypothesize female sage-grouse continued to express breeding site fidelity despite reduced shrub cover following fire. This research will provide wildlife managers with context for adaptive management of sage-grouse habitat under prevailing fire regimes. These findings are preliminary and provided to meet the need for timely best science.

Kaniz Fatema, Jared Barrott

Category: Biological, Physical & Natural Sciences

Poster #20

Deletion of ARID1A in Osteosarcoma Enhances Aggressive Cell Phenotypes

Osteosarcoma - is a form of bone cancer that primarily affects children and young adults. 30 years ago survival rates went from 20% survival to 75% survival with the introduction of aggressive chemotherapy combined with surgery. For the past three decades, the survival rate has remained the same despite the increase in targeted therapies to treat other cancers. Our research is aimed at discovering new drugs that can treat patients who do not respond to traditional chemotherapy. With recent cancer discoveries, osteosarcoma has been identified as a genetically complex disease. In a forward genetic screen using the transposon piggyBac, we discovered a strong correlation between ARID1A gene repression and increased osteosarcoma rates. The ARID1A protein plays a role in epigenetics by directing chromosomes to unwind from histones.

In an attempt to discover whether ARID1A contributes to Sarcomagenesis, osteosarcoma cell lines were grown in culture dishes. Using CRISPR/Cas9 gene editing, the ARID1A gene was disrupted from the main sequence and various methods were used to test proliferation rates. Not only are we testing gene disruption in cell lines, but we are also testing mouse models that have had ARID1A knocked out to determine if osteosarcoma growth rates increased.

Our long term goal is to provide a therapy that can be tested in humans with osteosarcoma to help those who do not respond to traditional chemotherapy and provide an alternative therapy with potentially fewer side effects.

Angela Garcia, Ashley Shields

Category: Biological, Physical & Natural Sciences

Poster #11

Habitability Potential of Enceladus: An Analog Study of the Lō'ihī Seamount System in Hawai'i

The Cassini orbiter discovered that Saturn's moon, Enceladus contains a hydrothermally-active liquid water ocean, potentially capable of supporting microbial life (e.g., Porco et al., 2006; Waite et al., 2017). As such, Enceladus is one of NASA's priority astrobiology targets for future robotic missions (e.g., McKay et al., 2014). However, before a multi-billion-dollar mission could take place, we must first address fundamental knowledge gaps about volcanically-hosted hydrothermal systems. For example, it remains unclear which elements are present and in what concentrations they are readily available in these deep sea environments for microbes to exploit as chemical energy sources. The alteration of the surface exposures of submarine basalts represent the chemical energy released via water-rock

ion exchanges at the seafloor. Since the rugosity (seafloor topographic complexity) of basalt controls the physical access for the water-rock chemical exchanges that release ions, we hypothesize that rugosity may provide a first-order estimate on these available element budgets. I will investigate the microbial habitability potential of Enceladus by approximating the element budgets of the active underwater volcano, Lō'ihi, which is located ~30km off the southwest coast of Hawai'i. To accomplish this objective, I will calculate rugosity and correlate results to basalt alteration rind thicknesses, geochemistry measurements, and petrographic characteristics. Our submarine basalt samples will be collected ~1,000 m below the ocean surface at Lō'ihi using robotic manipulator arms on the remotely operated vehicle (ROV) Hercules.

Derek Gerber, Brett Arnell, Conor Smith, Sarah Cairns, Zach Maas, Jacob Bratton

Category: Health, Nutrition & Clinical Sciences **Poster #28**

Comparing the Between Sport Differences in Landing Mechanics of Female Collegiate Athletes

INTRODUCTION Dynamic genu valgum is a major risk factor for ligamentous injury of the knee, especially the anterior cruciate ligament (ACL). Females are found to experience higher valgus forces at the knee joint and are 1.6 times at greater risk for ACL injury compared to their male counterparts during sport. Different sports are associated more frequently with ACL injuries than others, with female athletes ACL injury risk highest in soccer, followed by basketball and lacrosse. The drop jump test (DJT) is effective in replicating sport specific functional tasks of jumping and landing on either one or two feet in an aggressive manner. The purpose of this study was to investigate the lower extremity biomechanics of the knee in female collegiate athletes of various sports while performing a DJT. **METHODS** Subjects Female athletes who were current members of Idaho State University women's athletic teams, including basketball, soccer, and softball, were evaluated for this study. Procedure Participants performed the drop jump test wearing reflective markers on the lower extremities to record knee valgus angles on the Vicon Bonita Motion Capture system. These angle were measured and compared between groups to determine the differences in functional knee valgus between sport groups. **RESULTS** Female athletes of different sports displayed statistically significant differences in knee angles for both right and left knees. Basketball players utilized a more valgus right knee angle compared to both soccer and softball players and a more varus left knee angle compared with softball players. **CONCLUSION** Our study suggests that collegiate-level female basketball players have an increased risk of right leg non-contact ACL injury during landing mechanics when compared to collegiate level softball and soccer players. Collegiate-level basketball players may benefit from intervention designed to decrease right

knee valgus moments in jumping and landing to decrease their risk of injury.

Jacob Gibson

Category: Humanities, Behavioral & Social Sciences

The Impact of Prior Information on Personality Judgment Accuracy

Most accuracy research relies on zero acquaintanceship interactions where judges have no information about a target before the initial interactions and personality judgments. This study aims to investigate the impact of giving judges prior information about a target and examining its impact on personality judgment accuracy. Specifically, judges will be given either true, false, or no information and then will watch a recorded interview of a target before making personality judgments. The impacts of this information will be investigated, and it is predicted that true information will increase distinctive but decrease normative accuracy, and false information will decrease both distinctive and normative accuracy; and that false information will have a stronger influence on accuracy than true information. This study will also investigate the impact of prior information for more versus less visible traits. It is predicted that the more visible a trait is, the less impact false information will have on how accurately it is judged.

Kayla Glossner, Kathleen Lohse, Sarah Godsey, Ken Aho

Category: Biological, Physical & Natural Sciences

Long-term Estimates of Inland Riverine Sediment and Particulate Organic Carbon (POC) Fluxes from Reynolds Creek Experimental Watershed, Idaho USA

There are large uncertainties in how inland riverine suspended sediment (SS) and particulate organic carbon (POC) fluxes will respond to climate change as key controls driving fluxes remain uncertain, specifically within semi-arid regions. The objective of this study was to quantify a 25-year sediment export record utilizing four nested watersheds within the Reynolds Creek Experimental Watershed (RCEW) in southwestern Idaho, including Tollgate and Johnston Draw. Utilizing historic sediment data, data were interpolated with Loadflex. Three years of POC concentrations were then correlated to sediment concentrations, and POC export was estimated for each nested watershed. Initial results using linear interpolation suggest that flow-normalized SS fluxes ranged by ~3 orders of magnitude across RCEW from 14.80 kg/yr in water year (WY) 2011 at Tollgate to 0.029 kg/yr at Johnston Draw during the WY2017. Inter-annual variability spanned ~1 order of magnitude; for example, at Tollgate, flow-normalized flux varied from 14.80 kg SS/yr in WY2011 to 2.02 kg SS/yr in WY1996. sediment fluxes are thought to be predominately influenced by quantity and phase of precipitation, with peak concentrations during

high WY. At RCEW, flowpaths shift in high WY, leading to distinct SS fluxes. Typically, clockwise hysteresis loops are observed at Tollgate in average WYs (e.g., WY2004), suggesting SS is transported and exhausted from in-stream sources. However, this hysteresis shifts directions in high WYs (e.g., WY2017) and counter-clockwise hysteric loops suggest that sediment is transported from overland sources. These overland sources may vary with elevation, depending on whether rapid snow melt, rain-on-snow, or rain-on-frozen-ground events predominate. The model currently underestimates carbon at high flows, perhaps because POC was undersampled at these flows. Findings from our study suggest there is large inter-annual variability in sediment and POC export from streams, and that rain-on-snow events and timing of snowmelt are important drivers of variability in semi-arid regions.

M. Christine Henesh, Mary A. Nies

Category: Health, Nutrition & Clinical Sciences

Poster #21

Nurse Practitioner Residencies: Confidence and Competence

Introduction Confidence and competence are paramount to the care nurse practitioners (NPs) provide. Despite the completion of an advanced degree, newly graduated nurse practitioners may experience feelings of doubt, frustration, and anxiety with their newly designated role as a health care provider [1, 2]. Researcher demonstrates when a new graduate NP completes a postgraduate nurse practitioner residency, the new graduate NP experiences an increase in both confidence and competence [1, 3-5]. Purpose The purpose of this presentation/poster is to discuss the importance of nurse practitioner residencies. Methods The literature review was conducted using CINAHL, PubMed, Ovid, and google scholar. The search terms included nurse practitioner residency, nurse practitioner fellowship, nurse practitioner confidence, nurse practitioner competence, new graduate nurse practitioner, and nurse practitioner transition. A multiple step approach was used to narrow the search results, retaining or deleting based on title and abstract review, and then via full journal article assessment. In order to be included in this review, a study had to (a) be from a peer-reviewed journal; (b) have been written in the past ten years; and (c) evaluate the concept of post-graduate nurse practitioner residencies. Results An examination of research supports this transition is wrought with anxiety, feelings of doubt, and inadequacy. In a survey of new graduate NPs, 70% perceived themselves as being “somewhat uncomfortable” and 55% reported feeling “somewhat prepared” in their new role [3]. Three studies have shown increased competence and confidence in the population of new nurse practitioners after being part of a formalized nurse practitioner residency program [1, 4, 5]. Data show the mean NP self-assessment rating and mentor ratings all demonstrated statistically significant improvement in measured competency domains [4, 5] Conclusion Literature supports the benefit of nurse practitioner residencies in easing the transition to advanced practice.

Sophie Hill**Category:** Biological, Physical & Natural Sciences**Poster #14*****Spatiotemporal Implications of Urban Streetside Vegetation to Nutrient and Carbon Loads in Stormwater***

Vegetative litter from street trees can be a significant source of nutrients and carbon to urban runoff. Most work done to analyze these nutrients has been done in mesic environments, but climate can cause differences in nutrient concentrations and leaching potential. Therefore, nutrient impacts of trees may vary across cities, even for the same species. We sought to identify the impacts of climate on leachate concentrations from litter from street trees common to both Pocatello, ID and Minneapolis, MN. We found leaf leachates of soluble reactive phosphorus (SRP), total nitrogen (TN), and dissolved organic carbon (DOC) were species-dependent with particularly high variation in phosphorus concentrations. We are conducting preliminary work to assess additional small-volume litter inputs from street-side vegetation throughout the growing season when nutrient uptake via primary production is highest. This information is essential and timely as many major cities face restrictions on nutrients and carbon in runoff. Ultimately, this produces actionable results for city planners on temporal variation in street-side vegetation's role in nutrient inputs to stormwater allowing for informed practices in development of sustainable cities.

Jessica Hillam, Mary Whitaker, Ron Schow, Debbie Vieira**Category:** Health, Nutrition & Clinical Sciences**Poster #6*****Data Collection and Factor Analysis of Three (C)APD Tests for Normal Hearing 8- and 9-year-old Children***

This poster will document the results from a study comparing the relationship between the Multiple Auditory Processing Assessment-2 (MAPA-2), the Listening in Spatialized Noise- Sentences (LISN-S), and the Gaps in Noise (GIN). The MAPA-2 subtests have been shown to strongly factor in three separate auditory processing domains including, Monaural, Temporal, and Binaural Integration/Separation. The purpose of this study was to compare the performance of 8 and 9 year olds participants on all three tests and determine if the LISN-S and GIN will factor in the same areas, different areas, or show no relationship.

Minghui Hou, Emery Clayson, Joel Bocanegra**Category:** Education, Learning & Training**Poster #30*****Current School Psychology Recruitment Strategies***

The field of school psychology has been experiencing what the researcher has called the Shortage Crisis (National Association of School

Psychologists, 2016). A possible solution to alleviate this shortage crisis is to improve the quality of recruitment practices used by school psychology programs. This study is being conducted to better identify recruitment practices currently being used in the school psychology program.

Participants were chosen from a list of school psychology programs from the NASP Approved Programs, School Psychology Program Information, APA-Accredited Programs, and the Database of Accredited Postsecondary Institutions and Programs lists. A survey created by a detailed review of school psychology, postsecondary institution and minority recruitment literature using Qualtrics' survey creation was sent to 249 school psychology program directors and those who were appointed as points of contacts by their institutions. Findings from the study and effective recruitment strategies will be discussed.

Minghui Hou

Category: Education, Learning & Training

Internationalization in Higher Education and Cultural Changes

Internationalization has become a key topic and phenomenon in higher education in the United States since the twentieth century. With the increasing number of international students pursuing further education in the U.S., cultural changes are necessary for both domestic and international students, faculty, staff, and the organization as a whole. This article focuses on the meaning and scope of internationalization, cultural/social rationale for internationalization, and how to approach internationalization of higher education in the United States through cultural changes from students and organizational responsibilities.

Sana Khajeh Pour, Matthew Kirkham, Arina Ranjit, Ali A. Habashi

Category: Biological, Physical & Natural Sciences

Poster #1

Utilizing Skeletal Bone as a Reservoir for Sustained Delivery of Effective Concentration of Antimalaria Drugs Aiming at Prevention of Drug Resistance

Background: Nearly 3 billion people live at risk of malaria across the world. Primaquine (PQ) and tafenoquine (TQ) are used for prevention and treatment of malaria. Globally, drug resistance due to lack of patient adherence resulting in subtherapeutic plasma concentration is one of the major challenges in battle against malaria. Bone targeting strategy, using bone as a drug delivery reservoir could provide sustained plasma levels above the effective concentration which can prevent drug resistance, increase the efficacy and eventually leading to eradicate the malaria all together. Materials and Methods: PQ and TQ conjugates are synthesized by conjugation with bone targeting moiety bisphosphonate (BP). The intermediate and final products are separated and characterized using HPLC and MALDI-TOF. The bone binding capacity of these conjugates will be tested using Surface Plasmon Resonance on gold chips coated with hydroxyapatite. Anti-parasite activity against malaria parasite will be tested

in infected red blood cells. Pharmacokinetic (PK) and pharmacodynamic (PD) studies will be conducted using animal model of malaria. Results: PQ-BP and TQ-BP conjugates were synthesized and characterized using MALDI-TOF. An HPLC method is developed for assessment of PQ, TQ and their conjugates in solution and plasma. After final validation, this method will be used for PK and PD studies of these conjugates.

Conclusion: Targeting of antimalaria drugs to the bone and utilizing it as reservoir will provide a sustained effective plasma concentration which can eliminate the major obstacle of drug resistance in antimalaria drug therapy. This applies to current or new antimalaria agents. Through controlled release of drug from bone-bounded conjugate, this approach will prolong drug circulation half-life and increase its mean residence time and body exposure. Consequently, it can translate to superior efficacy, less dosing frequency and better patient compliance and finally better management of malaria infection around the globe.

Matthew Kirkham, Sana Khajepour, Arina Ranjit, Ali A. Habashi

Category: Biological, Physical & Natural Sciences **Poster #5**

The Exploration of Bone-Seeking Conjugate of GLP-1 for Enhancing Efficacy Through Prolongation of Its Half-Life

INTRODUCTION: GLP-1 (glucagon-like peptide), a biological incretin, releases from the gut during nutrient ingestion, having peripheral effects on gut motility and inhibition of gastric acid and glucagon secretion, centrally inducing satiety. Within the pancreas, it augments insulin secretion, a glucose-dependent mechanism, avoiding hypoglycemia. GLP-1 agonists are indicated in safe and effective treatment of Type 2 diabetes. However, short half-life and multiple invasive administrations restricts their application. Long-acting GLP-1 agonists have been introduced but do not completely resolve their shortcomings. This project proposes targeting skeletal bone using transdermal delivery of bone-seeking conjugates of GLP-1 or its agonists and utilizing it as sustained drug reservoir for non-invasive, safe and effective treatment of type 2 diabetes.

MATERIALS AND METHODS: Our research aims for an effective conjugation method for GLP-1 utilizing non-immunogenic linkers to conjugate GLP-1 or its agonist peptides to bone-targeting moieties, i.e. bisphosphonate (BP), to utilize bones as natural reservoirs for delivery of GLP-1 conjugate. Characterization will be determined using High Performance Liquid Chromatography (HPLC) and matrix-assisted laser desorption ionization time-of-flight mass spectrometry (MALDI-TOF-MS) methods, and Surface Plasmon Resonance on a novel hydroxyapatite (HA) coated chip to characterize the binding kinetics and affinity of our bone-targeting conjugate. In vitro and in vivo testing on cell lines and animal models and development of a novel, non-invasive transdermal delivery system will determine efficacy.

RESULTS: GLP-1-BP conjugates are successfully synthesized and structurally characterized using HPLC and MALDI-TOF methods. Initial

testing is performed to develop HA coated chips for SPR monitoring, with successful binding of bisphosphonate on the surface of the chip.

CONCLUSION: The conjugation of GLP-1 with BP resulted in effective bone-targeting, concluded from current SPR results. The prolongation of half-life of active peptide using this conjugation with non-invasive transdermal delivery could translate to introduction of a more efficient therapeutic option for type 2 diabetes.

Sheherezade Krzyzaniak, Chloe Pedersen, Jacob Gibson, Doug Cruthirds, Tera Letzring

Category: Humanities, Behavioral & Social Sciences **Poster #25**

Physical Fitness and the Role of Psychological Well-Being and Cognitive Functioning

Physical fitness is a vital aspect of health and well-being and is related to a host of positive psychological, cognitive, and mental-health outcomes. Regular engagement in physical activity is related to higher levels of multiple types of psychological well-being (PWB) and improvements in cognitive abilities. The role of various aspects of PWB and cognitive functioning in predicting physical fitness level was explored by assessing 248 participants. Physical fitness was defined as objective physical fitness based on a fitness test and self-reported physical activity. Individual aspects of PWB and cognitive functioning did not significantly predict self-reported physical activity. However, several individual aspects were predictive of objective physical fitness, including affect balance, perceived social support, attributional complexity, and dispositional intelligence. These findings suggest that physical fitness is related to several psychological and cognitive benefits that have not been investigated within previous research, and that the use of an objective measure of physical fitness is essential to identify these relationships.

Kathryn Lachance, Stephanie McManimen, Rachel Dyson, Maria Wong

Category: Humanities, Behavioral & Social Sciences **Poster #4**

Assessing the Role of Prosocial Peers and Effortful Control in Adolescent Aggression

Aggressive behavior has been identified as a public health issue with consequences for the perpetrator and its recipients. Systemic social variables such as peer group values have been found to affect the development of these behaviors (Dishion, Nelson, Winter, & Bullock, 2004). Moreover, individual characteristics such as self-control or regulatory skills have also been identified as predictive factors for problem behaviors (DeWalt, Baumeister, Stillman & Gaijlot, 2007). The current study examined how social relationships, particularly prosocial peer group interactions influence aggressive behavior in response to a laboratory provocation. The extent to which an individual's self-control mediates that relationship was also explored. Adolescents aged 11-14 were asked to

participate in the Survivor Game, a mock social media contest in which they were provided either positive or negative feedback by same-age peer confederates. They also completed questionnaires assessing their effortful control (self-control) and perceptions of peers' prosocial behaviors. It was hypothesized that adolescents who reported higher prosocial peer behaviors would exhibit higher levels of effortful control, which would predict lower aggressive behavior. Self-control significantly mediated the relationship between peer prosocial behaviors and aggression, 95% ACI [.009, .177], $p < .05$. Multiple groups analysis did not yield any significant differences across experimental and control conditions, suggesting that the mediated effect was the same regardless of the level of provocation received during the experimental manipulation. Implications for continued research and clinical intervention in a developmental framework will be discussed.

Shu-en Li

Category: Biological, Physical & Natural Sciences **Poster # 33**

ANS Binding of Halobacterium Salinarum CysteinyI-tRNA Synthetase

Archaeal extremophiles are organisms that can withstand extremes in environments that would otherwise be undesirable to other organisms. *Halobacterium salinarum* is an extremophile that lives in extremes of salt and, due to this, has proteins that are salt tolerant. Because the protein adaptations that convey salt tolerant aren't obvious, we are studying the conserved protein, cysteinyI t-RNA synthetase (CysRS), which catalyzes cysteine's attachment to its cognate tRNA. The focus of our research is how halophilic proteins maintain structure and stability under extremes of salts, specifically group 1 metals. In order to probe their structure, we are using the protein binding dye 1-anilinonaphthalene-8- sulfonate (ANS), which can probe the halophilic CysRS's structure as conditions change by indicating the degree of unfolding as it will bind to exposed hydrophobic core. From previous studies, it was shown that group 1 metals are able to increase halophilic protein structural stability. To further support this hypothesis, both the *H. salinarum* and *E. coli* CysRS were used in an ANS binding assay to investigate the structural changes associated with various salt concentrations and temperatures. It was observed that when the salt concentrations were high, ANS fluorescence was higher for the halophilic CysRS than the *E.coli* CysRS. This seems to indicate that, with higher ANS fluorescence intensity, more binding sites might be present with more interactions between the protein and ANS. This is currently being explored in our lab. By knowing how salt concentrations change the *H. salinarum* structure, we can draw conclusions about the interactions between the protein and the cations. These studies can give us information on what makes halophilic proteins, halophilic, and how they maintain stability.

**Ruth MacNeille, Kathleen Lohse, Sarah Godsey, Julia Perdrial,
DeWayne Derryberry, Colden Baxter**

***Biogeochemical Patterns of Intermittent Streams in Space and Time:
The Impacts of Drying and Wildfire on Carbon Dynamics***

Stream drying (intermittency) and wildfire are expected to increase under current climate change projections for the western United States (Jaeger et al., 2014; Parks et al., 2016). However, the impacts of both stream drying and fire on stream carbon and nutrient dynamics are not well understood. In 2016, we examined spatial and temporal patterns in surface water biogeochemistry of a burned and an unburned headwater stream in southwest Idaho. We predicted that constituent heterogeneity increases with drying, and hypothesized that as streams dry, carbon concentrations increase due to evapoconcentration and/or increased in-stream production. We expected that spatial heterogeneity in biogeochemistry would decrease with time following fire. In 2016 there was more than a 2-fold increase in DOC and DIC concentrations from upstream to downstream. 2016 DIC overall semivariance showed a 20-fold increase for the burned stream and a 3-fold increase for the unburned stream from April to June. We conclude that stream DIC chemistry becomes more heterogeneous with stream drying, and that heterogeneity increases following fire. Based on strontium/DIC ratios, we suspect DIC is strongly linked to groundwater which organic carbon patterns and sourcing is surprisingly varied longitudinally. Understanding these drying dynamics will shed light on the dynamic roles of streams as both transporters and transformers of their chemical constituents throughout seasonal and spatial variation.

Ruth MacNeille, Kathleen Lohse, Rosemary Smith**Category:** Education, Learning & Training***Assessing Teaching Strategies in Introductory STEM Courses and Addressing Barriers to the Use of Active Learning Techniques at ISU***

Active learning is an umbrella term for student-centered teaching techniques that engage students in the learning process. Despite a rich body of scholarship providing evidence that active learning improves learning (Freeman et al., 2014), traditional lecturing remains the dominant teaching method used and modeled in university classrooms (Stains et al., 2018). Time required in the classroom for activities and for preparation, lack of faculty professional training, student resistance to an active role, and limited institutional support or incentive are among some barriers discussed in the literature. However, research suggests that building a reflective faculty body is a strong driver of change towards active learning. We ask at what level do introductory STEM courses use active learning strategies at ISU, what barriers exist specifically for ISU faculty to implementing active learning techniques, and can professional development training workshops improve ISU science faculty's comfort and use of active techniques? We expect that individual ISU faculty implement active learning strategies or run student-centered courses, but on a departmental or institutional level, student-centered teaching occurs at a low rate. We will use classroom

observations (Smith, Jones, Gilbert, & Wieman, 2013), faculty self-assessment (Wieman & Gilbert, 2014), and student surveys to assess the use of active learning in ISU introductory classes across the sciences by evaluating biology, geology, chemistry, and physics classrooms. We have also develop a workshop training series for faculty that focuses on incorporating and implementing active learning techniques in their teaching. This project addresses gaps in ISU professional development and may open the door for improved faculty teaching, practice and comfort with facilitating student-centered activities, and student satisfaction in introductory science courses.

Erin Madison, Erika Fulton,

Category: Humanities, Behavioral & Social Sciences **Poster #10**

To Speak or Not to Speak? The Limited Role of Summarization in Absolute Accuracy Judgments.

Metacomprehension is the ability to monitor and regulate reading (Flavell, 1979). Individuals tend to overestimate their reading comprehension but can improve their accuracy when metacognitive strategies are implemented (Dunlosky & Lipko, 2007). One such strategy, delayed summarization, increases monitoring accuracy (Anderson & Thiede, 2008; Thiede & Anderson, 2003), but it is unknown if the summary modality plays a role. The current study manipulated summary modality, comparing a spoken summary, written summary, and no summary condition to assess which condition would have the highest metacomprehension accuracy. It was predicted that the control condition would display the greatest levels of overconfidence; the relationship between the written and spoken condition was not predicted. The results suggest that level of confidence was not different between groups, which is inconsistent with past literature suggesting delayed summaries increase metacomprehension accuracy. However, past research only reported increases in relative accuracy (Anderson & Thiede, 2008), so it is feasible that delayed summaries, whether written or spoken, do not influence confidence levels. This study can inform students about their study habits. Further analyses will include a group comparison between relative accuracy judgments.

Morgan McKenna, Amy Commendador, Amy Michael, Gabriel Wrobel, John Dudgeon, Patricia McAnany

Category: Humanities, Behavioral & Social Sciences **Poster #29**

Stable Isotope Analysis of Ancient Maya Diet

This research project explores diet variability among the ancient Maya who lived in Belize between 100-900 CE. Stable isotope analysis was conducted on ancient human remains representing about 25 individuals from seven different archaeological sites in Central Belize. Bone collagen (organic part of the bone) and bone carbonate (inorganic part of the bone) were separated and analyzed. When the $\delta^{13}C$ (carbon) and $\delta^{15}N$ (nitrogen) values in the bone collagen and the $\delta^{13}C$ value in the bone

carbonate are interpreted together, a greater understanding of the whole diet can be achieved (Froehle et al. 2012). Comparing the $\delta^{13}\text{C}$ and $\delta^{15}\text{N}$ values in the human bone samples to local plant and animal values will allow us to estimate the relative contributions of certain types of foods in their diets, and find where individual diets may vary by time period and site location.

Stephanie McManimen

Category: Humanities, Behavioral & Social Sciences **Poster #16**

Understanding the Link Between Sleep and Suicidality: A Preliminary Analysis of an Underlying Neuropsychological Mechanism

Suicide rates increased nearly 30% in the United States since 1999 (Stone et al., 2018), yet our ability to predict who will attempt suicide in their lifetime is only slightly better than chance as many studies focus on individual affective risk factors rather than the complex relationship between risk factors (Franklin et al., 2017; Office of the Surgeon General, 2012). The current study takes a multivariate approach to predicting suicidality by examining the hypothesized underlying cognitive mechanism for the relationship between suicide and dysfunctional sleep, which has been shown to increase risk for suicide beyond the effects of depression (Bernert & Nadorff, 2015; Wong et al., 2016). Specifically, structural equation modeling was utilized to determine how a ruminative thinking style and neuropsychological performance (e.g., inhibition, interference, and selective attention), which are also linked to increases in suicidality (Keilp et al., 2013; Rogers & Joiner, 2017), interact in an impaired disengagement framework to predict an individual's level of suicidality. This is a short-term longitudinal study in which participants will be assessed at baseline and six months later. The cross-sectional baseline results will be presented and the implications on the field of suicide prevention will be discussed.

Sarah Menish-Geryk

Category: Humanities, Behavioral & Social Sciences

The Evolution of Terrorism Through the use of Technology

The use of technology by terrorist organizations has increasingly influenced their methods. The purpose of my thesis is to show the evolution of terrorism through the use of technology, with a focus on al-Qaeda and the Islamic State of Iraq and Syria. My presentation will have three main points; social media, magazines, and globalization. Social media has allowed al-Qaeda and ISIS to spread their ideology throughout the world. Twitter, Facebook, Whatsapp, and many other forms of social media and apps have been means for terrorist organizations to gain followers. They are able to recruit, indoctrinate, incite, plan attacks, and communicate with one another. One of their many forms of propaganda is videos. These videos are well-edited "campaign ads" displaying the goal of each organization and why someone should join their mission. Magazines

are digital handbooks to share inspiration to become a Jihadi, as well as guides on how to create weapons to cause the most casualties. Overall, technology has had an impact on both organizations' globalization efforts. They have been able to spread their message to anyone in the world. Therefore, the more advanced our technology becomes, the more opportunities terrorist organizations will have to indoctrinate and incite.

Alyssa Millard

Category: Biological, Physical & Natural Sciences

Defining Functional Success Through Denitrification and Sedimentation in Restored and Unrestored Rangeland Streams.

Stream restoration projects are often completed with the intent to improve water quality, including reducing stream sediment and nitrogen concentrations. Yet the effects of restoration on water quality are infrequently measured and are generally seen as indirect responses to structural improvements. Our approach was to study the flux of sediment and denitrification potential of different-aged restoration sites in two watersheds located in the High Divide region of Idaho and Montana. We asked: how does ecosystem function related to improving water quality vary across restored and unrestored stream sites? At paired restored and unrestored sites, we quantified the deposition of monthly sediment on artificial turf pieces and collected stream bank soil cores to measure denitrification potential using the denitrification enzyme activity (DEA) assay method. In this study, denitrification potential and sedimentation were not significantly different between paired restored and unrestored stream sites, even at sites that were restored >10 years prior. Each watershed responded differently, with Teton watershed having a much greater positive response to restoration. Overall our soil characteristics and measurements of denitrification potential exhibited a wide range of values across sites. Each watershed specific model indicated opposite relationships of predictor variables on DEA rates. Evaluation of restoration projects must move beyond visual assessment, but we should be cautious about how we define ecological success because of the absence of a clear response to restoration. Designing and implementing a stream restoration project that satisfies all ecological and social parameters is an ideal that may not be possible.

Steven Morton

Category: Education, Learning & Training

The Correlation of School Principals' Mindsets and Teachers' Perceptions of Interpersonal and Informational Justice

Teacher engagement in professional development is the key to increased student academic achievement. Hattie (2012) wrote that "teacher's beliefs and commitments are the greatest influence on student achievement over which we can have some control" (p. 25). But how can a school principal promote teacher engagement in the process of developing professionally?

The framework of organizational justice and Dr. Carol Dweck's model of mindsets (2006) offers some insight into how an administrator can increase teacher engagement. Organizational justice has evolved to incorporate four separate domains that describe areas in which an employee perceives fairness: distributive, procedural, interpersonal, and informational (Colquitt, 2001). Research has shown that perceived justice increases positive organizational citizenship behavior such as work engagement (Moorman, 1991). Carol Dweck's (2006) model of growth versus fixed mindsets offers a theoretical approach to understanding an individual's motivating thoughts that support engagement and development. A small amount of research has been conducted involving how a supervisor's growth mindset can enhance an employee's perception of justice in the workplace (Heslin & VandeWalle, 2011). This study seeks to establish a correlation between a principal's mindset and teachers' perceptions of justice in the interpersonal and informational domains. The study incorporates surveys of K-12 public school principals and teachers who work under them. Principals will complete a survey that assesses their mindset. Teachers will complete a survey that assesses their perceptions of the principal's mindset as well as their perceptions of interpersonal and informational justice. A Pearson product moment correlation coefficient (Pearson r) will be calculated to determine the extent to which a correlation exists between the principal's mindset and the teachers' perceptions of both interpersonal justice and informational justice. A Pearson r will also be calculated to determine if a correlation exists between a principal's mindset and the teachers' perception of their principal's mindset.

Michelle Munoz

Category: Education, Learning & Training

Comparing the Instructional Impact of the Signaling and Personalization Multimedia Principles on Knowledge Retention and Recall

With the increased use of e-learning in K-12 and higher educational settings, educators have turned their attention to the ways that instructional technology can be adapted to the cognitive processes involved in learning. Cognitive information processing (CIP) theory of learning presupposes three constructs: that information is absorbed and processed in two channels, that learners must actively process information to store it in long-term memory via schema, and that human working memory capacity is limited. Previous researchers have developed twelve multimedia principles for use as guidelines to assist instructional designers in creating teaching tools that work within the limits of human memory capacity. Existing research has sought to determine the effectiveness of each principle in promoting recall and transfer of knowledge. With limited resources, designers may have to prioritize implementing one principle over another. This present study compared two principles, signaling and personalization, to determine if a statistically significant difference exists between the two

in the promotion of knowledge retention and recall of academic advising essentials. After conducting a repeated-measures t-test this study found no statistical significance existed between the two principles, concluding that designers could use either depending upon their instructional needs.

Jade Ortiz, Colden Baxter, Donna Lybecker

Category: Biological, Physical & Natural Sciences

A Social-Ecological Investigation of Riverine Habitat Complexity: Insect Emergence, Terrestrial Insectivores, and Public Perceptions

Emergence of adult aquatic insects constitutes a resource flux that can influence a suite of terrestrial insectivores, and the timing, magnitude, and composition of these aquatic–terrestrial fluxes can vary considerably in space. Thus, spatial complexity of riverine habitats (or, reciprocally, their homogenization) may influence numerous terrestrial organisms, but these relationships are poorly understood. We conducted a comparative study during summer of 2016 to investigate the effect of spatial heterogeneity on the emergence of aquatic insects, and subsequent consequences for terrestrial predators (using spiders and bats as indicator species) on the Portneuf River in southeast Idaho. Additionally, we administered a social survey assessing public perceptions of habitat complexity to better understand the ways in which people might support or oppose restoration efforts. Although our ecological study demonstrated that complex habitats support greater fluxes of insect emergence and increased densities of riparian spiders, the results of the social survey revealed a potential mismatch. While citizens generally recognized the ecological importance of heterogeneity, they tended to exhibit preference for only moderately complex river systems. Our findings provide a direct, locally relevant basis to inform and adapt restoration efforts planned for the Portneuf River.

James Paris, Colden Baxter, Hunter Osborne, Zach Wadsworth

Category: Biological, Physical & Natural Sciences

The Food Web Mosaic of the Snake River Floodplain and Consequences of River Regulation

In river-floodplains, spatial heterogeneity creates and maintains a food web mosaic that sustains fishes across different life stages, but losses of natural fluvial dynamics due to river regulation may potentially alter these processes. During 2015-2016, we investigated how decreased hydrologic connectivity due to regulation affected food webs in a river-floodplain of the Snake River, Idaho, USA, by generating flow food webs and estimating trophic basis of fish production within a range of floodplain habitats. Here, we compare four springbrook habitats: two that span a lateral, environmental gradient from the Snake River, and two that span a longitudinal gradient down the length of one of the largest springbrooks on the floodplain. We observed that overall, there are a larger flows of energy through the food webs in the springbrook habitats that receive hydrologic scour when compared to non-scoured habitats, and the strength of trophic

interaction between fishes and drifting invertebrate prey are greater in the scoured habitats. The loss of scour appears to be altering the food web mosaic of the Snake River floodplain by influencing food availability for, and energy flow to, fishes, particularly trout, with potential implications for the life histories of fishes and the maintenance of biodiversity.

Noris Paucar, Ilho Kim, Hiroaki Tanaka, Chikashi Sato

Category: Biological, Physical & Natural Sciences

Poster #8

O3/UV Treatment Process for the Removal of Pharmaceuticals and Personal Care Products in Wastewater

A municipal wastewater treatment plant (WWTP) is a melting pot of numerous pharmaceuticals and personal care products (PPCPs) together with many other substances. Removal of PPCPs using advanced oxidation processes within a WWTP is one way to reduce the amount of PPCPs that potentially enter an aquatic environment. The aim of this study was to examine the effectiveness of the O₃/UV treatment process, especially, the effects of ozone (O₃) dose and reaction time, on the removal of PPCPs in secondary effluent of a WWTP. Experiments were conducted using a pilot-scale treatment process that was consisted of two flow-through reactors connected in series. Each reactor was equipped with a 65-W lamp (UV65W). The experimental variables were ozone dosage (1, 2, 3, 4 and 6 mgL⁻¹) and hydraulic retention time (HRT; 5 and 10 min). Based on the PPCP concentrations after the O₃/UV65W treatment and their limit of detection (LOD), 38 PPCPs detected in the secondary effluent were classified into five groups ranging from the category of “sensitive” to O₃/UV65W or “unstable” in the O₃/UV65W process to the category of “insensitive” to O₃/UV65W or “very stable” in the O₃/UV65W process.

Kayla Pavlick

Category: Biological, Physical & Natural Sciences

COKEROACHES: Training *Periplaneta americana* to Detect and Locate Narcotics Using Classing and Operant Conditioning Methods

Law enforcement officers are challenged with controlling the illegal drug market via search and seizure. The most commonly used method to perform this job is by employing a canine detection unit (CDU). These CDUs are heavily relied upon because of their ability to be trained to perform tasks and identify trace amounts of illegal substances using olfaction. They do possess a considerable number of limitations though. These include infiltration limits, susceptibility to the Clever Hans effect, and the overall moral challenge that presents by employing these dogs in potentially hostile environments. A potential solution to address these limitations is by utilizing insects. I use cockroaches to demonstrate that they are capable of discriminating between distracting odors (vanilla) and target narcotics (cocaine and amphetamine) and identifying the substance on which they have been trained.

Chloe Pedersen

Category: Humanities, Behavioral & Social Sciences

Is a Picture Worth 240 Characters?

As of March 2018, 68% of adults use social networking sites (SNSs) such as Facebook, Instagram, and Twitter. SNS use is even more common in younger populations with 86% of adults under 30 years of age using at least one SNS (Pew Research Center, 2018). With the increasing popularity of SNSs, many first impressions and personality judgements are being made within the context of a social media profile. The proposed research aims to explore the accuracy of judgments made on two popular SNSs: Instagram and Twitter. In addition to examining judgements of personality, this research also examines judgments made of political ideology and political party affiliation. It is hypothesized that 1) judges will be able to achieve significant normative and distinctive accuracy for overall personality traits on both Instagram and Twitter, and 2) judgements about targets' political ideology and party association will be more accurate on Twitter than on Instagram. Four exploratory research questions will also be examined. Ninety targets will be recruited to collect Twitter and Instagram profiles to use as stimuli, as well as personality ratings by targets and acquaintances of the targets, to create a realistic accuracy criterion. Three-hundred judges will be recruited to view both Twitter and Instagram profiles and provide ratings of the targets. Hypothesis 1 will be tested by entering SNS type as a moderator into the Social Accuracy Model (SAM). To test Hypothesis 2, analyses will again be run by entering SNS type as a moderator into SAM but examining accuracy of political ideology judgements as opposed to trait judgements. Additionally, to test judgements of political party association, a chi-squared test of association will be conducted with SNS type as one factor and incorrect and correct as the other factor.

Staci Phelan

Category: Education, Learning & Training

Real World Retention: A Qualitative Analysis of the Career Path Internship at Idaho State University

Retention of students is a problem faced by institutions of higher education around the world. Higher education institutions are required to report retention data to government agencies and they depend on tuition funding more than ever before. Prior research has identified many characteristics that when present, increase the likelihood of early departure. Most retention research is quantitative, examining large numbers of students to generate findings that are generalizable to the population at large. However, students depart for multiple reasons, not just one. The CPI program provides opportunities for students to gain real-world work experience in their field. The current study aims to determine if the CPI

program, as a college experience, contributes to retention for students who might otherwise dropout.

The study used qualitative analysis to gain understanding of student perspectives about why they chose to remain enrolled, as well as their perspectives about the CPI program. Results confirmed prior research for many of the reasons students remain enrolled, such as support from family, connection with a faculty mentor, and a sense of belonging on campus. Every student in this study had at least one characteristic that increased their likelihood of early departure, and 80% of participants had three or more. In terms retention, 80% self-reported a graduation date within six years of starting college and none had a GPA below a 2.0. These findings indicate students in the CPI program are successfully completing college, but further research should examine if CPI students are different from the student body in general.

Shanda Putnam, Samantha Blatt, John Dudgeon, Amy Michael

Category: Humanities, Behavioral & Social Sciences **Poster #2**

Two Heads are Better than One: Multi-Component Forensic Analyses of Curated Shrunken Heads

Shrunken heads served as visceral war trophies of slain enemies among the Shuar of Ecuador. In the 1850's, curio-trade of shrunken heads was booming throughout Europe and production and trade of commercial grade heads flooded the market. It was estimated that 80% of shrunken heads on the market or curated by museums are commercial (Houlton, 2018), yet very few analyses or standards of investigation exist distinguishing commercial from ceremonial origins. This project forensically analyzed two shrunken heads curated by the Idaho Museum of Natural History since the 1950's in order to determine 1) if they are human, 2) if they are of commercial or ceremonial origin, and 3) to assess the repatriation and curation issues of dark tourism (visiting places associated with death and tragedy) artifacts within museums. Both heads were analyzed using metric, morphological, microscopic, and chemical analyses of hair, skin, and fibers. Care was taken to limit destructive analyses, while exercising a wide range of analytical tools including laser ablation-inductively coupled plasma mass spectroscopy (LA-ICPMS), fourier transform infrared spectroscopy (FTIR), and scanning electron microscopy (SEM). Results of the structure, trace element, and composition of specimen samples were assessed against comparative collections and existing data from other museum-held shrunken heads. Preliminary results indicates the specimens are human, but with mixed of ceremonial and commercial features. The head shrinking process includes significant chemical and manual manipulation of specimens and therefore leaves chemical and morphological markers. However, there are methodological limitations to determining ambiguous traits of heads which leave open the possibility that specimens could be commissioned to appear ceremonial. Nevertheless, identifying if shrunken heads are of human or animal origin has significant

implications for their future curation and highlights the investigative role of anthropology for addressing ethical consumerism and dark tourism collections.

Rebekah Rakowski, Samantha Blatt, Amy Michael, John Dudgeon, Kateea Peterson

Category: Biological, Physical & Natural Sciences

Poster #17

Metal Isotope Movement in Human Dental Tissue

Strontium isotopes (^{87}Sr and ^{86}Sr) dissolve into groundwater, entering the food chain through plants and animals, and are incorporated into the bones and teeth of vertebrates, including humans (Weiner 2010). Ericson (1985) noticed that the $^{87}\text{Sr}:$ ^{86}Sr ratio in the bones of these vertebrates was reflective of the geological ratio, opening the field of biological anthropology for over 30 years of isotope-based studies. In order to test how a burial environment may affect the uptake of strontium, soil matrixes of sand, clay, and diatomaceous earth were created using 5ml of strontium and 10 mL of distilled water. Three pH levels (pH 5, 7, and 9) were created for each soil matrix using 10.0 M NaOH, and then were adjusted to a total volume of 30mL using 1.0 M NaOH and more distilled water. Each of these slurries was placed into 5mL tubes with a tooth in each. These covered tubes were then placed into pressure vessels and into a customized heating oven. Dry nitrogen lines were fed into the oven and attached to each of the vessels. Once in the oven, the samples were kept at a constant pressure of 60 psi and temperature of 55°C , between 14-21 days. After removal, the teeth were cleaned and prepared for analysis with a scanning electron microscope. Sequential experiments were also done using a similar method and a variety of heavy and rare earth metals. The results of this study may give way to a better understanding on the effect of histological and burial context, both for archaeology and forensics.

Arina Ranjit, Sana Khajeh Pour, Matt Kirkham

Category: Health, Nutrition & Clinical Sciences

Poster #15

Prodrug Strategy for Bone Targeting Delivery of the Angiotensin Receptors Blockers

Background: Angiotensin II receptors blockers (ARBs) are indicated in diabetic neuropathy, hypertension, stroke, and cardiovascular risk reduction, and heart failure with reduced ejection fraction alone or in combination with other medications. Through binding to Angiotensin II Type I receptor (ATR1), ARBs block the vasoconstriction, growth, promotion, inflammation and, CNS activation effects of Angiotensin II. However, short half-life and poor bioavailability of most of them and need for frequent use have limited their widespread therapeutic applications. Hence, our proposed prodrug approach of bone-targeting drug delivery can be used to alleviate their shortcoming for efficacy and expand their indication spectrum for other disorders such as cancer, inflammatory disorders, and neuroinflammatory disorders such as Alzheimer disease, etc.

Material and methods: ARB prodrugs will be synthesized by using a cross-linking agent for conjugation with bone targeting moiety bisphosphonate. The intermediate and final products will be characterized using High-Performance Liquid Chromatography (HPLC)/Mass Spectrometry (MS). The binding propensity of these compounds to the bone will be analyzed by Surface Plasmon Resonance using hydroxyapatite coated surface. Their in vitro efficacy will be evaluated using relevant cell lines. The pharmacokinetics and pharmacodynamics studies will be carried out using animal models for different disorders. Results: An HPLC assay method for simultaneous determination of some selected ARBs in solution and rat plasma is developed and validated. The synthesis of prodrugs is in progress and in vitro and in vivo studies will follow. Conclusion: This proposed prodrug strategy and utilizing of bone as a reservoir for drug delivery could prolong the half-life of the ARBs and consequently improve their pharmacological efficacy. Their prolonged systemic circulation not only will improve the efficacy for their current indication, but also increase their brain tissue accumulation and make them effective against inflammatory conditions such as brain cancer, Alzheimer's disease, etc.

Jenifer Reader

Category: Health, Nutrition & Clinical Sciences

Poster #18

Encouraging Increased Vegetable and Fruit Intake Through a Peer-Led Grocery Store Tour Model (Grant Application Process)

Adequate vegetable and fruit (V/F) intake has a positive and preventive effect on health conditions, yet current public health strategies designed to increase V/F intake have not achieved the desired results. Although V/F intake is below the daily recommended amount for individuals in all age groups, males and females ages 18-44 have the lowest intake.

Grocery store tours which include a nutrition education component are one type of intervention health educators use to encourage increased V/F consumption. This type of intervention is particularly successful among students who are part of a university nutrition and dietetics program. This project proposes to implement a peer-led grocery store tour model that will provide nutrition education to college students with the aim of increasing V/F consumption.

Project activities will include orientation to V/F locations throughout the store, nutrition education, food demonstration, food tasting opportunities, and distribution of V/F discount coupons. Incorporating Social Cognitive Theory concepts into programs aimed at increasing V/F intake has a positive impact on increasing V/F consumption. The proposed project's grocery store tour activities align with these concepts.

Data will be collected from pre- and post-tour surveys. Both qualitative and quantitative results will be analyzed to identify gender, age, expectations, perceptions, knowledge, and self-reported V/F intake, both at baseline and 30 days after the tour. Results will be used to further refine

strategies and interventions used by health professionals to increase V/F consumption among the target population.

This project proposal was completed as part of a final grant proposal project submission for a master's degree in Health Education (MHE).

Lucinda Scott, Nicki L.Aubuchon-Endsley

Category: Health, Nutrition & Clinical Sciences

Poster #12

Maternal Sugar Consumption, Body Mass Index, Gestational Weight Gain, and Postpartum Distress

Trends from 2011-2016 indicate that rates of elevated pre-pregnancy body mass index (PPBMI) are increasing in U.S. women, with 26% of those giving birth having a PPBMI in the obese range (i.e., $BMI \geq 30$) (1,2). Elevated PPBMI is associated with increased risk of anxiety, depression, and stress symptoms during and after pregnancy, and with excessive gestational weight gain (GWG), which predicts postpartum maternal distress (PMD) and increases risk for long-term negative health outcomes (3-11). Sugar intake is similarly associated with distress and weight gain in animal and human models (7,8,12-19), but has not been thoroughly investigated in relation to postpartum distress. It is important to address this gap in the literature to identify a common, modifiable health behavior that may play a role in linking prenatal and postnatal risk factors associated with long-term health consequences for women and infants. Therefore, this study aims to investigate the role of sugar consumption in the third trimester and 5-6 months postpartum in a rural perinatal population to determine whether the amount of perinatal sugar consumption interacts with PPBMI or GWG to predict PMD. Findings may help to identify prospective targets for behavioral health research to prevent excessive perinatal weight gain/retention and mental and physical health comorbidities.

Laura Sheridan

Category: Education, Learning & Training

Poster #26

Professional Development in Rural Schools

Preparing students for advanced education and the workforce requires increasingly complex skills. Teacher professional development is at the forefront of providing the effective pedagogical strategies teachers need to prepare students with the skills necessary to excel in the 21st century. Over the past two decades, research has been able to inform the qualities of effective professional development. Some of the qualities identified provide that professional development needs to be on-going, job-embedded with active teacher engagement, supports collaboration, provides expert support, and is topic specific.

Teachers in rural Idaho schools are often faced with barriers that are not always found in other areas of the state. These barriers may make it difficult for teachers to participate in high quality professional development. Additionally, very little research has been published on the

nature, quality, and impact of professional development in rural schools. This study examines the professional development opportunities available to small rural Idaho school teachers and how these opportunities compare to quality professional development as described in educational literature. Participants for this study include teachers in Idaho who work in small rural schools. The schools will be identified using a matrix developed from a listing of schools provided by the Idaho Department of Education. Schools will be randomly selected from this matrix and teachers will be sent an electronic Likert type survey. Data will be analyzed to determine how professional development offered in small rural Idaho school compares to the national standards for high quality professional development.

Jaclyn Sutherland

Category: Humanities, Behavioral & Social Sciences

Why We Hunger: Female Appetite and the Repression of Sexual Desire in Bram Stoker's Dracula

The theme of female hunger, and conversely lack of appetite, is a prevalent one in Victorian literature. Women were often portrayed as either lacking in appetite and described as small, petite, pretty, and good; or as giving over to their hunger, consequently making them appear to be larger, less womanly, plain, or as taking parts in acts of moral turpitude. In *Dracula*, Mina Harker and Lucy Westenra go for a long walk and, as result, have “a capital ‘severe tea’” together. This moment, in particular, shows the restrictions upon female appetite, which were often regulated by other women. Mina claims that the “New Woman” would be “shocked” by their appetites and that “Men are more tolerant!” (91) This walk comes just before the reader is told of Lucy’s sexual awakening at the hands of *Dracula*, but alludes to the fact that women were not meant to show hunger, or sexual appetite, because of the way others of their social class would view them. It is the goal of this paper to use *Bram Stoker’s Dracula* (1897) as a lens through which to view the world of 19th century London. I aim to look at the reasons why women were starving themselves and the link female hunger has to female sexuality. Much of the scholarship done on female hunger in Victorian literature focuses on the topic of anorexia nervosa, rather than illuminating the cultural and religious reasons for the repression of female hunger. Historical documents of the era often show these women as they wish to be seen, embodying the ideal of Victorian virtue. Yet literature, such as *Dracula*, shows another side to the women of the time: women who know their own minds, feelings, and desires, and who are unafraid to show them.

Hillary Swann, Nicki Aubuchon-Endsley, Bryan Gee, Michele Brumley

Category: Humanities, Behavioral & Social Sciences

Poster #13

The Relationship Between Infant Equipment Use and Motor Milestones During the First 18 Months

The influence of infant equipment (e.g., walkers, jumpers, exersaucers, high chairs, etc.) use on early motor development is not clear. Thus, the purpose of the current study is to characterize infant equipment use, and examine the relation between equipment use and motor milestones during the first 18 months. One hundred and twenty five pregnant women were recruited during their third trimester and returned at 10, 14, and 18 months postnatally. Participants completed maternal-report measures of infant equipment use and motor milestones at each postnatal session. Results indicate that infant equipment use occurred at each age, with less than 10% of moms reporting no equipment use at 18 months. Infants were placed into equipment while awake on a daily basis for a mean of 139 ± 55 (SD) minutes at 10 months, 118 ± 45 minutes at 14 months, and 107 ± 49 minutes at 18 months. The relation between infant equipment use and motor milestones varied across age and equipment type. Specifically, at 10 months, exersaucer use was negatively correlated with all 4's crawling ($r=-.46, p<.05$) and unsupported standing ($r=-.38, p<.05$), such that infants who did not engage in all 4's crawling and unsupported standing had higher durations of exersaucer use. Similar relationships were seen at 10 months with high chair use and unsupported standing ($r=-.34, p<.05$), and at 14 months with walker use and quad posture ($r=-.43, p<.01$). Results suggest that greater use of equipment during infancy is related to fewer motor behaviors that represent developmentally-important milestones.

Joseph Thomas

Category: Biological, Physical & Natural Sciences

Isotopic Analysis of Mineral Carbonate and Organic Matter from Morrison Lake, MT; Implications for Hydroclimate of the Northern Rocky Mountains

Hydroclimatic variability in high elevation, headwater environments of the northern Rocky Mountains has significant implications on downstream ecosystems. Current knowledge of precipitation variability is limited to data collections over the last several decades by SNOTEL, weather stations, and precipitation-sensitive tree ring records. Paleoclimatic proxies that span the Holocene are necessary to better develop our understanding of multidecadal to centennial scale hydroclimatic variability, and frame modern weather trends. Isotopic analysis has been conducted on both the inorganic carbonate mineral fraction and the bulk organic fraction of sediment cores collected at Morrison Lake, Montana. This headwater lake is characterized by significant authigenic calcite production, allowing its sediments to record oxygen isotopic variability of the lake water, which is strongly modified by evaporation. Isotopic values from both the inorganic and organic fractions, over the past 7,500 yrs BP, show both multidecadal and centennial scale variability. Carbon to nitrogen mass ratios indicate shifts between an organic fraction dominated by a mix of terrestrial and

aquatic plants, to one that is primarily aquatic by the mid Holocene. Nitrogen isotopes show significant multi-centennial scale variability with increasing $\delta^{15}\text{N}$ values in the early Holocene, shifting to near atmospheric values throughout the mid Holocene, and then shifting back to enriched values in the late Holocene. Over the past 7,500 years, $\delta^{18}\text{O}$ values are increasingly lower, with punctuations of increases of up to 8%. Overall, this data indicates that the Morrison Lake region was characterized by an increasingly wetter and cooler climate over the past 7,500 years with a notable shift around 3,500 yrs BP. The lacustrine sediment record of Morrison Lake can assist in the development of a regional framework of Holocene hydroclimatic variability in the northern Rocky Mountains due to its unique characteristics and location.

Ian Troesoyer

Category: Health, Nutrition & Clinical Sciences

Poster #24

Expanding Syringe Access in Idaho

The prevalence of injection drug use in the United States is rising in step with increases in opioid drug abuse. Injection drug use is an efficient mode of transmission for serious chronic infections such as Human Immunodeficiency Virus (HIV) and Hepatitis C Virus (HCV) and threatens to significantly deepen the financial and human costs of the opioid crisis for generations to come. Some state and local governments have demonstrated that changing policies to make syringes more accessible to injection drug users has decreased the likelihood that users will share injection equipment, thereby preventing new blood borne infections and saving taxpayer money. However, traditional syringe exchange programs are politically controversial and may not be an acceptable intervention for Idaho. Deregulating the distribution and decriminalizing the possession of injection equipment are alternative, evidence-based methods for expanding syringe access that do not require public money, can be less publicly visible, and may be more acceptable in Idaho. This Doctor of Nursing Practice scholarly project (SP) assesses the feasibility of expanding syringe access in Idaho by conducting a stakeholder analysis regarding deregulating the distribution and decriminalizing the possession of injection equipment through legislative action, and policy development.

Wilson Trusty, Joshua Swift, Allan Dimmick, Stephanie Winklejohn Black, Elizabeth Penix

Category: Humanities, Behavioral & Social Sciences

Religious Microaggressions in Psychotherapy: Impact on Process and Outcome with Religious Clients

Psychotherapy is generally an effective treatment, but it does not benefit all clients. Microaggressions in psychotherapy, or covert, unconscious acts from therapists that send denigrating messages toward people of a certain group, are one possible reason for suboptimal client progress. For example, previous studies have found that racial minority clients and women

sometimes experience racial or gender-related microaggressions from their therapists, and this has been found to be associated with a weaker working alliance and lower client satisfaction. It is possible that religious clients also experience religious microaggressions in psychotherapy, but no prior research has examined this. The goal of the current study was to determine whether religious microaggressions occur in psychotherapy and to measure their impact on client-reported treatment process and outcome variables. Participants (religious psychotherapy clients) completed cross-sectional, self-report measures of religious microaggressions in psychotherapy, the working alliance, and satisfaction with and change during treatment. Data collection is currently underway, and data from the first 124 participants has been obtained. Preliminary results indicated that 35.68% of the participants endorsed having experienced at least one religious microaggression from their therapist during treatment, and religious microaggressions were negatively correlated with the working alliance ($r = -.20, p = .03$), satisfaction with treatment ($r = -.24, p = .005$) and change while in treatment ($r = -.24, p = .009$). This provides preliminary evidence for the presence of religious microaggressions in psychotherapy and their negative association with process and outcome variables. Implications for research and clinical practice will be discussed.

Sara Warix

Category: Biological, Physical & Natural Sciences

Groundwater Geochemistry and Flow in the Spring Mountains, NV: Implications for the Death Valley Regional Flow System

Springs in the Spring Mountains, NV were used to predict the geochemistry and strontium ratios of groundwater that has been hypothesized to flow from the Spring Mountains to Death Valley as part of the Death Valley Regional Flow System (DVRFS). Groundwater flow was interpreted using spring geochemistry, spring and rock strontium ratios, and observations from geologic maps and cross-sections. Spring Mountains groundwater separates into three flow groups that separate by silicate and carbonate water-rock interaction and are structurally isolated by major thrust faults. The Keystone Thrust flow group has a strontium ratio of ~ 0.71 and weathers both Mesozoic silicates and Permian and Cambrian carbonates. Central Spring Mountains groundwater has a strontium ratio of ~ 0.708 and weathers Permian and Cambrian limestones and dolostones. The Montgomery Hills flow group has a strontium ratio > 0.71 and weathers both Permian and Cambrian carbonates and Precambrian siliciclastics. Groundwater mixing between flow groups occurs in pervasive dolostones along major thrust faults such as the Wheeler Pass Thrust and the Keystone Thrust. Spring Mountains groundwater observations and existing hydrogeologic characteristics of the Death Valley Regional Flow System combine to suggest that groundwater in the Central Spring Mountains has the greatest potential to reach Death Valley but may be supplemented by groundwater from flow from the

Keystone Thrust and the Montgomery Hills after mixing along major thrust faults.

Shelby Weber

Category: Humanities, Behavioral & Social Sciences **Poster #32**

Do Sexual Violence, Adverse Childhood Experiences (ACE), and Mental Health Distress Differ by Gender among Juvenile Offenders?

Youth involved with the justice system are likely to have experienced multiple types of victimization. For example, one study of justice-involved youth found that juveniles describe experiencing an average of five traumatic events, with over a third (39%) reporting experiences of physical or sexual abuse. Youth who have experienced victimization are at greater risk of developing mental health problems. Though juvenile offenders are exposed to traumas at high rates, prevalence of victimization seems to vary by gender, with girls generally reporting higher rates than boys. The purpose of this study is to examine the associations among, sexual violence, adverse childhood experiences, and mental health distress in male and female juvenile offenders. Data collection is ongoing, as part of a larger file review project. At detention intake, juveniles are administered a structured clinical interview by a staff clinician and asked to complete several self-report measures. Included is the Adverse Childhood Experiences (ACE) questionnaire, consisting of 10 items which measure presence or absence of several types of neglect and abuse in childhood. Juveniles were also asked within the interview if they have ever received a mental health diagnosis. On average, juveniles reported four adverse childhood experiences ($M=4.27$, $SD=2.74$). Girls experienced significantly more adverse events ($t(120)=5.48$, $p<.001$). A total of 14% of the sample indicated an experience of sexual violence. The girls' rate of exposure to sexual violence was significantly higher than the boys' ($X^2(1)=14.272$, $p<.001$). Finally, 58.6% of the sample reported a mental health diagnosis. Next, a logistic regression was used to examine sexual violence and cumulative childhood adversity as a predictor of mental health diagnosis. Cumulative adverse experiences were a significant predictor of mental health diagnosis (Wald $\chi^2(1)=11.773$, $OR=1.531$, $p<.01$). Sexual violence was not. These data suggest the importance of trauma-focused treatment and assessment in this vulnerable population.

Jessica Whitaker-Fornek

Category: Biological, Physical & Natural Sciences

A Peek Inside the Eggshell: How a Baby Bird's Nervous System Develops to Control Breathing

Although breathing seems to require little conscious effort in practice, the breathing control infrastructure responsible for coordinating the muscular efforts of breathing must first develop properly. Rhythmic spontaneous neural activity (rSNA) is a characteristic feature of normal nervous system development. To date, we do not fully understand the factors responsible

for maintaining rSNA. Using the in vitro zebra finch embryo medulla preparation, the Pilarski laboratory has recorded rSNA from embryonic day (E) 4 through E14. During this time the bird embryo transitions from purely diffusive gas exchange to aerial ventilation. In addition, the physiochemical environment within the egg changes over the course of incubation—becoming increasingly acidic due to the metabolism of the growing embryo. Accordingly, I hypothesized that changes in pH could play a role in rSNA maintenance. To test this hypothesis, I performed an experiment in which I delivered acidic fluid to the medulla preparation for one hour while recording rSNA. Experiments were performed on 33 embryos aged E4-E14. Each embryo received one treatment. Results suggest that rSNA is sensitive to changes in pH and the effects of the treatments differ depending on embryonic age. E4-E6 and E7-E11 embryos demonstrated slower rates of rSNA when exposed to acidic treatment ($75 \pm 7.1\%$ and $64 \pm 12\%$ of control frequency, respectively). In contrast, E12-E14 embryos increased their rSNA frequency during acidic treatment ($172 \pm 23\%$ of control frequency). This switch in the pH-evoked response may reflect a shifting role for pH as medullary neural circuits specialize for breathing control.

Paul Williams

Category: Humanities, Behavioral & Social Sciences

Self-Narration, Utopianism, and Neo-Victorian Literature

Orson Scott Card's use of characters who self-narrate is a central tenet of his fiction: "Our very identity is a collection of the stories we have come to believe about ourselves" (Maps in a Mirror 274). These narratives not only provide character identity and motivation, but provide a basis for community, a core theme in Card's aesthetic. As characters share their chosen narratives with others they offer an exchange of ideas, and depending on how those ideas are received can either rupture a community (e.g., the effects of Amy's story inadvertently slandering Alvin; Calvin Miller breaking from his family out of envy for Alvin's abilities) or develop unity (e.g., Alvin's supporters, who want to join him in building the Crystal City). In place of a grand narrative in which characters transform into archetypes, conflict in the Alvin Maker books comes primarily from self-generated narratives colliding. Card answers this dilemma by providing a grand meta-narrative that characters adapt their own lives around, suggesting an alternative radically distinct remedy for both conflict and an answer to the utopian impulse.

