



MOUNTAIN LION RESEARCH DAY

Mountain Lion Research Day 2017

Abstract Book & Event Calendar

December 1, 2017

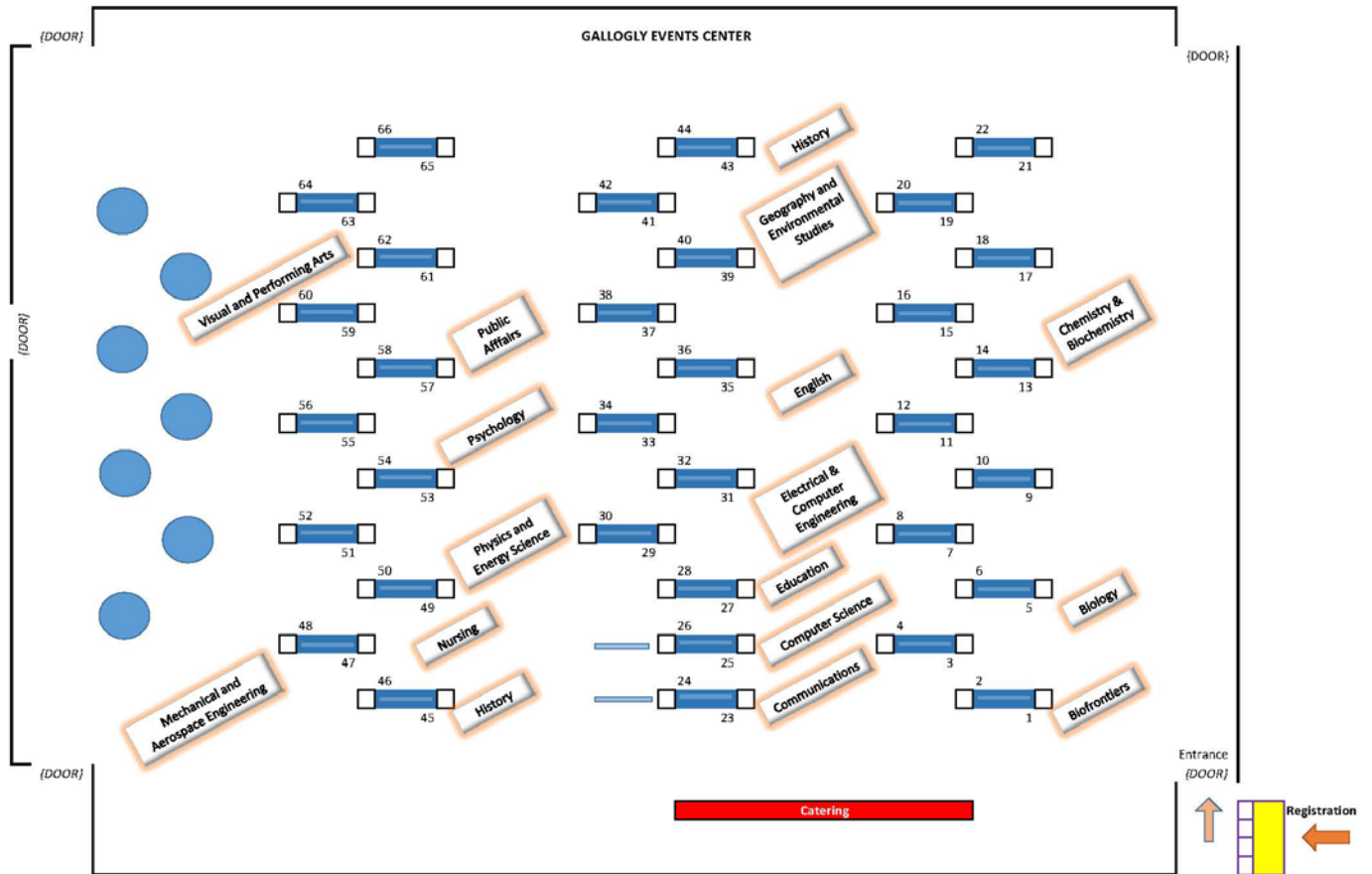
Gallogly Events Center and Berger Hall

UCCS University of Colorado
Colorado Springs

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Map of Poster Presentations in Gallogly Events Center



MOUNTAIN LION RESEARCH DAY

Welcome to the 2017 UCCS Mountain Lion Research Day!

It is our pleasure to welcome you to the Ninth Annual Mountain Lion Research Day! This event is held annually to showcase the best and brightest research from UCCS faculty, students, and staff.

The objectives of Mountain Lion Research Day are to:

- Create and opportunity to connect with colleagues and community members through a unique networking event,
- Exhibit the breadth and depth of exciting research being conducted at UCCS, and
- Provide a venue for campus researchers, students in particular, to gain experience presenting and explaining their work to a diverse audience.

We are grateful to the UCCS faculty, students, and staff who are presenting at this year's Mountain Lion Research Day for their preparation and hard work. We invite our visitors and guests to enjoy and discover!

Sponsored by The Office of the Associate Vice Chancellor for Research

The public will be allowed to view the posters and discuss the research with the investigator(s) beginning at 8:30 a.m. in Gallogly Events Center.

Continental breakfast will be available.

We will be handing out a map for attendees of all participants and their corresponding poster board assignment numbers so the public can find the presentations they are interested in.

Abstracts and maps are available in the Guidebook App under Mountain Lion Research Day Please note that pictures will be taken during the event and may be posted to the UCCS web site

<https://www.uccs.edu/research/mountain-lion-research-day.html>

MOUNTAIN LION RESEARCH DAY

SCHEDULE OF EVENTS

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11:30 AM - 1:00 PM	Luncheon	UCCS- Berger Hall
12:00 PM - 1:00 PM	Keynote Speaker	UCCS- Berger Hall

Dr. Allison Friederichs

How the Adult Brain Learns: Implications for More Impactful Communication

The emerging field of neuroandragogy offers fascinating insights into the intersection of neuroscience and andragogy (the theory of adult learning). In this interactive presentation, Dr. Friederichs explores neuroandragogical concepts to illustrate what we know about how the adult brain learns, and offers three tips for utilizing that knowledge to craft more impactful communication with others.

1:45 PM - 3:00 PM Graduate Student TA Workshop UCCS- Berger Hall

Dr. Allison Friederichs

How the Adult Brain Learns: Implications for More Impactful Teaching

In this interactive presentation and workshop, Dr. Friederichs builds on the neuroandragogical concepts explored in her lunch keynote to examine implications of those concepts for effective teaching. Dr. Friederichs will lead a workshop so to provide participants the opportunity to apply these newly acquired concepts to their own teaching practice.

About the Keynote Speaker

Allison Friederichs, Ph.D.

Associate Dean for Academic Affairs
Assistant Teaching Professor
University College, University of Denver



Allison Friederichs serves as the Associate Dean for Academic Affairs and an assistant teaching professor at the University of Denver's college of professional and continuing studies, University College. Allison has taught communication courses for seventeen years, has earned University College's Master Teacher designation for continued professional development, and works as a curriculum design consultant. Allison engages in research and public speaking in the area of what we know about how the adult brain learns, and the implications of that knowledge on teaching and curriculum development.

In addition to her role in academia, Allison is a communication consultant, providing training across sectors from government to small businesses in areas such as how the adult brain learns for trainers, communication skills, and business writing. Allison is a member of the Women's Leadership Council of the University of Denver, and she serves her community by serving on the board of directors for Freedom Services Dogs of America.

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Department	PRESENTER Authors
Location	Title
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Biofrontiers	BENDESKY Justin Bendesky, Guy Hagen, Rosa Machado, Sarah Brock, & Kathrin Spendier
Poster 1	Super Resolution Microscopy Techniques using MAP-SIM and FFT Analysis

Widefield microscopy allows us to image cell samples at resolutions limited by a phenomena known as the diffraction limit of light. Maximum a posteriori Structured Illumination Microscopy (MAP-SIM), a super resolution (SR) microscopy technique is one solution to the diffraction limitations through optical sectioning techniques. With MAP-SIM we are able to push past the diffraction limit of optical microscopes by applying grid illumination patterns to sample, thus altering the recorded frequency spectrum. Our method reaches a resolution of about 140 nm, or about 1.8-fold better than a conventional microscope. We compared MAP-SIM to other optical sectioning methods on fluorescently labeled A431 cells through profile plots of fast Fourier transforms (FFTs) of our chosen images, confirming our image resolution. We also conducted large area scans of our samples with a motorized stage and stitched the images together to construct an image much larger than our original individual images, thus providing us with a large detailed image of the sample.

Biology	DADDARIO Michael Daddario & Meghan Lybecker
Poster 2	Characterization of the intragenic-rpnC RNA in Escherichia coli

Advances in high-throughput sequencing have revealed that most of the genome is transcribed; termed pervasive transcription. Intragenic RNAs are a new class of pervasive transcripts that originate from within annotated genes and may function as regulatory RNAs and/or encode a proteins. We recently identified 25 intraRNAs bound to the RNA chaperone Hfq, including the intra-rpnC RNA encoded within the rpnC gene of Escherichia coli. We have characterized the promoter of intra-rpnC and generated an endogenous FLAG-tagged rpnC gene to determine if a peptide is synthesized from the intra-rpnC transcript. In addition, we are currently employing MS2-affinity purification coupled with RNA sequencing (MAPS) to identify the targetome of intra-rpnC.

Biology	DEN UYL/MULLINS James Den Uyl, Maria Mullins, & Emily Mooney
Poster 3	Aphid Population Responses to Host Plant Phenology and Site Factors

Plants and animals use climate cues to initiate the onset of important life events such as flowering and reproduction. Climate change has the potential to create mismatches, i.e. alteration 14 of the overlap between the interdependent plant and animal life cycles. Studies have largely focused on mismatches for plant-pollinator interactions; however, mismatches may also alter herbivory, another critical ecosystem level process. In this study, we tested the importance of host plant phenology for an insect herbivore (*Aphis helianthi*) on the plant *Ligusticum porteri*. We monitored aphid abundance and host-plant phenology in 20 populations along an elevation gradient (2700m to 3100m) across nine weeks. Using these data, we determined the extent to which host plant phenology predicted (1) aphid phenology, (2) aphid population growth and (3) aphid abundance versus other site factors (slope, aspect and elevation). Our model-selection approach revealed that host-plant phenology, aspect and elevation were equally good at predicting variation in aphid phenology, although these relationships were not significant ($P < 0.05$). Aspect best predicted variation in aphid population growth rates among sites, with sites on north-facing aspects achieving higher growth rates. The multivariate model including interactions among host plant phenology, aspect, slope and elevation best predicted variation in aphid abundance among sites. At high elevation sites, host plant phenology had little effect on aphid abundance. At low elevation sites, aphid abundance was greater in populations with delayed host plant phenology. However, aspect decreased this interactive effect seen with elevation. Taken together, the interactions among site factors (slope, aspect and elevation) and host plant phenology in determining aphid abundance suggests the timing of snowmelt at our sites may be an important underlying factor. We have planned a manipulative experiment for 2017 to test for the effect of snowmelt timing, and we will track snowmelt timing directly at these sites.

Biology	GARCES Amy Garces & Meghan Lybecker
Poster 4	Elucidating the function of PlzA in <i>Borrelia burgdorferi</i>

Lyme disease is the most common arthropod-borne disease in the United States. The etiologic agent of Lyme disease is *Borrelia burgdorferi*. *B. burgdorferi* cycles between a tick vector and a vertebrate host, two vastly different environments. c-di-GMP is a ubiquitous second messenger that regulates cellular functions, including virulence and often controls adaptation of bacteria to different environments. In *B. burgdorferi* Rrp1, a diguanylate cyclase, synthesizes c-di-GMP and is part of the Hk1/Rrp1 two-component system. PlzA is the only known c-di-GMP binding protein in *B. burgdorferi* and is required for acquisition and survival of *B. burgdorferi* in the tick as well as infectivity in mice. However, the molecular mechanism employed by PlzA remains elusive. Comparative genomics revealed sequence similarities between PlzA and the RNA chaperone ProQ. Preliminary RNA chaperone assays demonstrate that indeed PlzA has RNA annealing activity. We hypothesize that PlzA globally regulates gene expression through its RNA chaperone activity. Currently we are epitope-tagging plzA on the chromosome in order to perform cross-linking RNA immunoprecipitation-sequencing (CLIP-seq) to determine the PlzA RNA targetome and binding site.

Department	PRESENTER Authors
Location	Title
	Abstract

Biology	HEWETT Alexander Hewitt & Emily Mooney
Poster 5	Measuring Ant Diversity Along an Elevational diversity gradient (EDG)

We used sweep netting to sample the insect communities at 20 sites along an elevational gradient (2768â€”3108.5 m a.s.l) near Crested Butte, CO. To sample the ant community, we used replicate pitfall traps (n=3) at each site. We identified insects to taxonomic order and used an area-specific key to identify ants to species. We calculated Shannon and Simpson diversity indices using the 'vegan' package in R. Shannon diversity showed a bimodal distribution, with sites tending to have values 0.8-1 or 1.2-1.4. Simpson's diversity index was skewed to the right, with most sites tending to have values less than 0.6. Elevation of a site did not correlate with either diversity index. While we are still processing ant samples, we predict that other site features (e.g. aspect, light etc.) may better predict site-to-site variation in these communities.

Biology	HOANG Toan Hoang, Jeremy Bono, & Luciano Matzkin
Poster 6	Male-Transferred Proteins during Heterospecific and Conspecific Crosses Between <i>Drosophila mojavensis</i> and <i>D. arizonae</i>

Speciation, the process in which populations of organisms become distinct species, can arise from reproductive perturbations in which complications occur between the male ejaculate and the female reproductive system. Little is known about the genetic basis behind this phenomenon. However, recent studies have ascertained that protein along with sperm is transferred in ejaculate during copulation. The fruit flies, *Drosophila arizonae* and *D. mojavensis* are ideal study systems to understand how reproductive isolation can lead to speciation since they are closely-related and crosses between both species exhibit reduced fertility. This study focuses on what proteins are being transferred from the male during copulation and their effects on the female reproductive tract between same species and different species crosses of *Drosophila arizonae* and *D. mojavensis*. The *D. mojavensis* larvae are fed yeast containing a light nitrogen isotope while the *D. arizonae* larvae are fed yeast containing a heavy nitrogen isotope as a means of labelling the proteins of interest. Once the larvae of both species mature, the female *D. mojavensis* are paired with either a male *D. mojavensis* or a male *D. arizonae*. After a successful mating has been observed, the females' reproductive tracts are dissected and analyzed by mass spectrometry.

Biology	LYBECKER Dorian Carter, Fabienne Haas, Breana Hoynes, Brian Moulton, Megan Nelson, & Amber Vannaman
Poster 7	Characterization of a putative RNA polymerase aptamer in the antisense-RNA dependent mazEF gene expression

Natural RNA polymerase aptamers (RAPs) are a newly identified class of cis-encoded regulatory RNAs. RAPs are RNA sequences on a nascent transcript that directly bind the RNA polymerase transcribing them and regulate their own transcription. A putative RAP was identified in the mazEF antisense RNA. Preliminary data suggest that the transcription of the antisense mazEF RNA inhibits the synthesis of MazF protein. We are currently characterizing the role of the putative RAP in the antisense-dependent mazEF gene regulation. Gfp reporter fusions were constructed to characterize the affect of the putative RAP and antisense RNA in the mazEF expression.

Biology	RICHARDSON Katrina Richardson & Meghan Lybecker
Poster 8	Characterization of intra-ygcB in <i>Escherichia coli</i>

Hfq is an RNA chaperone that facilitates the annealing of many trans-encoded sRNAs and their mRNA targets. Recently we identified a new class of Hfq-binding RNAs, called intragenic RNAs (intraRNAs). IntraRNAs are encoded from within an open reading frame of an annotated gene and can either have their own promoter, located within the gene, or can be processed from the full-length mRNA. Currently, we are characterizing an Hfq-binding intraRNA, intra-ygcB, encoded from within the ygcB gene of *E. coli*. The ygcB gene encodes for the Cas3 protein of the CRISPR-Cas system. Our data demonstrate that intra-ygcB is transcribed from a promoter within the ygcB gene. Presently, we are determining whether intra-ygcB functions as a non-coding regulatory RNA and/or a small peptide. In addition, we are generating a loss-of-function mutant strain to examine the function of intra-ygcB.

Biology	RYAN Alexis Ryan & Jeremy Bono
Poster 9	Investigating the role of a reproductive gene in <i>Drosophila arizonae</i>

Biologists seek to understand the causes of infertility. This research studies the underlying genetic basis of this reproductive failure in fruit flies. We hypothesize that certain gene products transferred from males during copulation interact with proteins within the female post-mating. These protein interactions lead to a proper post-mating response that allows successful fertilization and offspring production. We've identified a group of candidate genes that code for proteins likely involved in these interactions and used the CRISPR-Cas9 genome editing system to generate flies with an impaired copy of one candidate gene. We are conducting mating experiments with the mutant flies to determine the gene's specific effect in reproduction. These results will identify the necessary factors for reproductive success in this fruit fly species. Not only will this experiment explain which genes function in the creation of new life, but the project will also explain why similar species of flies cannot interbreed. The data will provide insight into reproductive incompatibilities across a broad variety of organisms. Our results may even aid human infertility studies because similar protein interactions presumably govern fertility in eukaryotes other than fruit flies.

Department	PRESENTER Authors
Location	Title
	Abstract

Biology	THORNTON Shawna Thornton & Eugenia Olesnicky-Killian
Poster 10	Determining the Extent of Combinatorial Post Transcriptional Gene Regulation by Shep

Knowledge of the development and maintenance of the nervous system is critical to understanding how to manage neurological diseases such as Alzheimer's, Parkinson's and ALS. In this project I aim to elucidate the RNA binding proteins responsible for the silencing, stabilization, localization, and induction of translation of mRNA's critical to neuron morphology.

Biology	TITUS Michael B. Titus, Eugenia Olesnicky-Killian, & Jeremy Bono
Poster 11	Belle interacts with Shep to regulate neuron morphology in Drosophila

Neuron morphology is integral to the appropriate wiring of the nervous system. Defects in neuron morphology are associated with several neurological disorders. RNA-binding proteins (RBPs) have several roles in post-transcriptional regulation and mutations in RBPs have been linked to multiple neurological disorders. Alan Shepard (shep) is an RBP that is integral to the development of proper neuron morphology in *Drosophila melanogaster*. Importantly, Shep is also conserved across multiple species and is active in the human nervous system. Co-immunoprecipitation of Shep identified other interacting RBPs including Belle (bel). The objective of our research is to understand the role bel has during neuron development and how its interactions with shep regulate neuron morphology. Quantitative analysis was performed on the morphology of dendrite arborization (da) neurons of *Drosophila* larvae of bel6/belneo30 transheterozygotes to observe the effects of bel mutation on neuron morphology. Also, epistasis analysis was performed comparing da neurons from larvae that only overexpress shep with larvae that overexpress shep combined with reduced dosage of bel using either the bel6 or belneo30 hypomorphic alleles. Analyses of neuron morphology showed that bel mutants had increased number of dendritic branches and decreased total branch length. The epistasis analysis revealed that defects in neuron morphology in larvae overexpressing shep is rescued when combined with a bel mutation. Overall, our analyses reveal that bel is integral to neuron development and that it interacts with shep during this process.

Biology	VAN GUNDY Taylor Van Gundy, & Meghan Lybecker
Poster 12	Antisense RNA-dependent regulation of the MazEF toxin-antitoxin system

Pervasive transcription is the principle that the majority of DNA is transcribed. The functionality of pervasive transcription is a topic of intense debate in RNA biology. Bacterial genomes are compact with around 90% being protein-coding DNA. Therefore, most pervasive transcripts in bacteria are antisense to protein coding genes. These antisense RNAs (asRNAs) are found in all domains of life, yet few have been functionally characterized. We recently demonstrated that over 300 asRNAs are found duplexed with their complementary mRNAs in the cell, suggesting these asRNAs regulate the expression of their sense counterparts via a double stranded RNA (dsRNA)-intermediate. However, many of these asRNAs were not found in a double-strand suggesting these asRNAs may regulate their cognate mRNA via a different mechanism. We identified a dsRNA-independent antisense RNA opposite to the type II toxin-antitoxin operon mazEF. Our preliminary data suggests that asmazEF inhibits MazF. We hypothesize that asmazEF regulates transcription and/or translation of mazEF via a dsRNA-independent pathway, as a non-coding RNA. We are currently determining the molecular mechanism of asmazEF. This is the first example of a type II toxin-antitoxin system to be regulated by both an asRNA and a protein antitoxin. Understanding the regulatory role and mechanisms of pervasive transcripts in gene regulation in *E. coli* will also offer insight into the general gene regulation strategies of other bacteria.

Biology	WILLIAMS Kristen A. Williams, Kathryn S. Bell, Claire E. Trotter, Robert A. Jacobs, Andrew W. Subudhi
Poster 13	Effects of Supplemental Oxygen on Submaximal and Maximal Cycling Performance at Moderate Altitude

Introduction: Supplemental oxygen is an effective strategy to increase power output during high-intensity training sessions at moderate altitude, but it is unclear if it can be used to augment lower-intensity workouts. We reasoned that if the degree of arterial oxygen saturation (SpO₂) influences teleoanticipatory regulation of power output, supplemental oxygen given at moderate altitude might increase average power output during exercise performed at RPE 9 (very light) and 13 (somewhat hard).

Methods: Twenty-three subjects (17 males, 6 females) completed one familiarization (FIO₂=0.209) and two blinded, experimental trials (FIO₂=0.209 and FIO₂=0.267). In each trial, subjects self-regulated their work rate on a cycle ergometer to maintain RPE 9 for 5 min and RPE 13 for 10 min, before performing an incremental step test to exhaustion (25W/min). Oxygen consumption (VO₂) and arterial oxygen saturation (SpO₂) were continuously monitored. Subjects were asked to guess the experimental condition after each phase of the protocol to see if they could perceive the difference in FIO₂.

Results: Within the experimental trials, supplemental oxygen increased SpO₂ throughout exercise (~4%; P<0.001) and was associated with greater peak power output (4±4%; P<0.001) and VO₂ (5±10%; P=0.010), but did not increase average power output during exercise at RPE 9 (P=0.235) or RPE 13 (P=0.992). Subjects were unable to perceive the difference in FIO₂.

Conclusions: The use of supplemental oxygen during altitude training would be best reserved for high-intensity or exhaustive efforts.

Department	PRESENTER Authors
Location	Title
	Abstract

Biology	WRIGHT Ethan Wright & Eugenia Olesnicky-Killian
Poster 14	How does the RNA Binding Protein Caper influence NMJ development and behavior in Drosophila
	Neuronal morphology is critical for correct wiring and function of the nervous system. Dysmorphic neurons are directly correlated with many neurodegenerative diseases, including ALS, yet the genetic basis for many of these heritable diseases is not understood. Therefore, elucidating which the genes control neuron development and maintenance is critical to gaining insight into these diseases. Recently, RNA regulatory mechanisms have increasingly been implicated in myriad neurological disorders. RNA binding proteins (RBPs) mediate RNA regulatory mechanisms, such as splicing. In fact, defective splicing has specifically been implicated in ALS. Our research shows that an RBP named Caper plays an important role in the development and maintenance of the Drosophila nervous system in a sex type specific manner. Specifically we show that Caper plays a role in the development of the neuromuscular junction (NMJ) and regulates behavior in Drosophila. Our preliminary data also show that Caper dysfunction results in increased severity of behavioral phenotypes with age, implicated Caper in the maintenance of neural function during aging. Importantly, Caper is conserved in humans and is active in the nervous system. Nonetheless, nothing is known about the function of Caper within human neurons. Thus the results of this research have far reaching implications.

Biology	YOUNG Lauren Young & Eugenia Olesnicky-Killian
Poster 15	Determining the Role of the RNA-binding Protein Caper within the Neuromuscular Junction to Direct Larval Locomotor Behavior

Alternative splicing is a gene regulatory mechanism that can increase the complexity of the proteome despite genomes having a comparatively small number of protein coding genes. The brain and nervous system have been found to have some of the highest levels of alternative splicing. Unsurprisingly, mutations within genes that encode RNA-binding proteins (RBPs) involved in alternative splicing have been implicated in many neurodegenerative disorders including spinal muscular atrophy (SMA) and amyotrophic lateral sclerosis (ALS). Only a few disease-associated RBPs have been studied in detail, and each of these are ubiquitously expressed, yet their dysfunction affects certain neuronal cell types more severely than others. However, a lack of information exists about which genetic and molecular mechanisms that are affected in these diseases. Our preliminary research shows that the RBP, Caper, plays an important role in the development and maintenance of the Drosophila nervous system, particularly in the development of the neuromuscular junction (NMJ), which regulates behavior in Drosophila. This project focuses specifically on understanding the role of Caper in the development of the NMJ in directing larval locomotor behavior in Drosophila. Larval locomotion assays will be employed to determine whether Caper dysfunction affects larval locomotor behavior in a tissue specific manner. We hypothesize that aberrant locomotion will be observed in caper mutants compared to wild type, and also that caper will function pre-synaptically within motor neurons to regulate locomotor behavior.

Chemistry and Biochemistry	FAUSSET/HAGGREN Hunter Fausset, Faith King, Seth Young, & Wendy Haggren
Poster 16	Genetic Engineering of Magnetotactic Bacteria

Magnetospirillum magneticum (AMB-1) are bacteria that deposit magnetic nanoparticles in internal membrane-bound organelles. This strain is also microaerophilic, meaning cells grow efficiently in and actively seek low oxygen environments. Together, these properties suggest that AMB-1 cells might be an organism with which to study drug delivery systems targeting mammalian tumor masses which contain hypoxic regions. Our initial idea was to introduce a plasmid with bacterial alpha-amylase into magnetic cells to evaluate secretion of homologous proteins. During the process, we discovered that we needed to make a modification to the conjugative plasmid vector. Our novel plasmid pAK22/AmpR was first transformed into WM3064 cells, a conjugative strain of E.coli, and from there, the plasmid was introduced into a culture of AMB-1 cells through conjugation. The resulting conjugant AMB-1 cells were able to grow in the presence of ampicillin in broth culture. This work opens the door to future studies with these magnetic cells since previously it was problematic to select for conjugants. The next steps involve genetically modifying AMB-1 to secrete cytotoxic compounds that can potentially treat cancer.

Department	PRESENTER Authors
Location	Title
	Abstract

Chemistry and

Biochemistry WILLIAMS/HALL/KOVACS | Brandon Williams, Simone Hall, & James Kovacs

Poster 17 The Role of Complement in the Establishment of a Latent HIV-1 Reservoir

It has been suggested that components of the complement system are necessary to initiate the establishment of a latent HIV-1 reservoir in an infected individual. Results from the early 1990s show a potential interaction between complement receptor 2 and an intact HIV-1 virion are needed to establish the latent reservoir; however, a subsequent manuscript suggested that an intact immune complex was required to initiate the latent reservoir. Therapeutics exist for every life cycle stage of HIV-1, except for the latent reservoir establishment. Currently, an infected individual treated with a drug cocktail against multiple life cycle stages of HIV-1 can manage an active infection, resulting in the viral load being very low- however the virus cannot be cleared. Our work aims to determine the molecular determinants that allow for the latent reservoir to be established in hopes of rationally designing therapeutics to block the latent reservoir establishment and result in clearing the virus.

Chemistry and

Biochemistry KHOSHNAW | Laveen Khoshnaw (UCCS Student), Carmen Priolo, MD, Ph.D., You Feng, Ph.D.

Poster 18 Identification of a Novel Therapeutic Target for the Treatment of Tuberous Sclerosis Complex: The LPA-Autotaxin Pathway
Tuberous Sclerosis Complex (TSC), an autosomal dominant disorder characterized by neuropsychiatric disorders and multiple hamartomas of the brain, kidney, and lung, is caused by loss-of-function mutations in the TSC1 or TSC2 gene. Inactivating mutations of TSC1 or TSC2 lead to constitutive activation of mTORC1, a serine/threonine kinase complex that acts as regulator of cell proliferation and cell metabolism. Rapamycin is the current FDA approved treatment for TSC-associated renal tumors and Lymphangioliomyomatosis (LAM), a manifestation of TSC leading to cystic lung destruction and respiratory failure. Rapamycin is effective in reducing tumor volume and stabilizing pulmonary function, however, tumor growth and lung function decline resumes when treatment is discontinued. In this study, we have examined the therapeutic impact of GLPG1690, an Autotaxin inhibitor, in preclinical models of TSC and LAM. We performed cell viability, cell migration, and cell death assays to determine the efficacy of GLPG1690. We also tested the effect of the drug on cancer signaling pathways including the serine/threonine-specific protein kinase B (Akt) and S6 Kinase (S6K). GLPG1690 induces apoptosis, decreases viability, and suppresses the migration of TSC2-deficient cells. These results support that the Autotaxin/LPA pathway is a novel potential target of TSC and LAM.

Chemistry and

Biochemistry RECKARD/RODRIGUEZ/KLOCKO | Andrew Reckard, Sara Rodriguez, & Andrew Klocko

Poster 19 Characterization of the higher order organization of the heterochromatin machinery genes in the nucleus of *Neurospora crassa*

Eukaryotic genomes are specifically compacted and organized in the nucleus. In humans, the 6.6x10⁹ basepairs of diploid genome DNA, which extends two meters if chromosomes are aligned end-to-end, fits into an organelle that is ~1-10 microns in diameter. Current research shows that DNA is compacted through precise loops, which are thought to correctly control intra-chromosomal transcription by bringing distal promoter / enhancer elements in close contact; loop placement may also control long-range inter-chromosomal contacts for proper gene expression. Currently, the dynamics and control of DNA looping, as well as the genetic factors necessary to establish loops, are unknown. To mechanistically explore the establishment and regulation of intra-chromosomal loops and inter-chromosomal contacts, we utilized the genetically-tractable organism *Neurospora crassa*, as its chromatin, including the heterochromatin or silent DNA, resembles that of humans. However, the smaller *Neurospora* genome (4.1 x 10⁷ basepairs) is amenable to the high-throughput chromosome conformation capture sequencing (Hi-C) studies examining long-range contacts. Using published Hi-C datasets, we examined how heterochromatin pathway genes interact within the nucleus. Mining of the Hi-C data revealed strong interactions between *dim-5* and *dim-2*, *dim-8*, *dim-9*, and *cul4* genes suggesting long-range interactions are occurring; these direct contacts are lost in $\hat{\imath}$ *dim-5* and $\hat{\imath}$ *hpo* strains, suggesting these genes facilitate these interactions. 3C experiments will validate gene interactions, and deletion experiments will examine how the regulatory regions of these genes impact the formation of the observed contacts and influence gene expression. These experiments should be directly applicable to how the heterochromatin machinery is regulated in humans.

Department	PRESENTER Authors
Location	Title
	Abstract

Chemistry and

Biochemistry RUSSELL/MUIR/KOVACS | Nicole Russell, Alessa Muir, & James M Kovacs

Poster 20 Understanding the Molecular Interactions of a Complement Directed Therapeutic

Systemic Lupus Erythematosus (SLE) is an autoimmune disease that results in more than 200,000 new cases each year. Currently, only symptomatic treatment is available and the disease cannot be cured. The adaptive immune system, activated through the complement system has been implicated in the development of SLE. Working closely with our collaborators we have discovered two antibodies that effectively reverse the symptoms of SLE in a mouse model. Our lab is taking a two-pronged approach to understanding the molecular interactions driving the reversal by working to elucidate a 3-D structure of complex of the antibody and complement component using x-ray crystallography and computer simulated docking of the antibody and small molecule libraries in silico. The results that we have gathered will lead to new small molecule targets and imaging agents for complement related diseases.

Chemistry and

Biochemistry MC GRATH | Andrew McGrath & Allen Scoffstall

Poster 21 Towards the synthesis of "Phoenix"

bis-1,3-{4,6-difluoro-4-[4-(quinoxalin-2-ylmethyl)-1H-1,2,3-triazol-1-yl]pyridin-2-yl} 5-methyl-6-phenylpiperazine-2,3-dicarbonitrile, a potential p-38a inhibitor, dubbed phoenix was synthesized from readily available starting materials. The synthesis and biological activity of this molecule and all intermediates will be reported.

Chemistry and

Biochemistry STEWART | Kevin Stewart & Allen Schoffstall

Poster 22 Synthesis of Triazole-based Pyridazinedione Derivatives for Use as Potential Neurological Drugs

Synthesis of 1,2-dihydropyridazine-3,6-diones containing a 1H-1,2,3-triazole ring was achieved starting with an organic azide and dimethyl acetylenedicarboxylate (DMAD), followed by reaction of the triazole diester with hydrazine hydrate, affording an aromatic cyclization between hydrazine and the diester substituents of the triazole to give a fused bicyclic structure. The products of the reaction with hydrazine were clean and required little to no purification. Molecules of such a structural base have been utilized in the treatment of neurological disorders, such as benzodiazepines and structurally related compounds.

Chemistry and

Biochemistry SWANSON | Louis Swanson & Allen Schoffstall

Poster 23 Triazole Derivatives From 2-bromomethyl-3-phenylpyrazine

Bromination of 2-methyl-3-phenylpyrazine afforded 2-bromomethyl-3-phenylpyrazine in good yield. The product was treated under two different sets of reaction conditions with terminal alkynes to yield 1H-1,2,3-triazole derivatives. Typically the desired products were obtained in acceptable yield along with minor side products. Purification was accomplished using flash chromatography. Purified products were characterized using NMR spectroscopy and FTIR spectroscopy.

Communications

MALZADA | Savian Malazada

Poster 31 Rising Scholars: Mending a Flawed System for Students in Public Education

More than ever before, colleges and universities are having to demonstrate their ability to ensure that students with big three labels achieve. Demographic trends indicate that the pool of prototypical college-ready students, recent high school graduates from high-performing schools whose parents have had a successful college experience is shrinking. The numbers as well as societal pressures have driven many schools to announce campaigns aimed at recruiting students of color.

However, the deficit framework on which many of our efforts are built hardly seems an appropriate foundation for strategies aimed at success. As long as being a person of color or of modest economic means, or the child of parents who did not go to college, is deemed to be, first and foremost, an indicator of potential failure, the integrity of our proclaimed expectation of success is undermined. Certainly, many of these students face challenges that require intentional and thoughtful support. Yet our overwhelming reliance on deficit-laden labels or, more recently, the painfully impersonal underrepresented minority to routinely describe these students is an indication that we do not portray them predominantly as being imminently successful or exceptionally attractive to us. If that is the case, our best efforts will be impaired. As an institution we need should put our best efforts into nourishing and grooming our future generation.

Department	PRESENTER Authors
Location	Title
	Abstract

Computer Science	FOSTER Xavier Foster
Poster 25	AMRDEC Data Research

This Big Data project used Aviation travel, speed, and positioning information (TSPI) Data from the Federal Aviation Administration (FAA) Automatic Dependent Surveillance Broadcast System (ADS-B) which is the modernization program for the Air Traffic Control System (ATC) to discern meaningful patterns within large aviation data sets. Project components included an implementation of Trajectory Data Mining techniques from rudimentary data scrubbing and cleaning, to ingesting data into a Hadoop cluster, to data cleansing, to basic physics calculations (velocity, acceleration, etc.) that were used for trajectory characterization, as well as other advanced techniques utilized in R-Studio. (visualization, clustering, prediction) This was done in a gradual fashion with ample direction in reference to Yu Zheng's Trajectory Data Mining paper.

Computer Science	O'HERN Paul O'Hern
Poster 46	VR Gesture Recognition using Artificial Neural Networks

This work will explore the accuracy of artificial neural networks on gesture classification within a "Dimensional virtual space. This type of classification can be correlated to 2"Dimensional MNIST classification for detecting hand drawn numbers and letters. The system to be implemented is a feed "forward artificial neural network (NN) which consists of an input of spatial positional data and an output prediction of a provided gesture. The hardware used to generate testing and training data is the HTC Vive virtual reality system; inclusive of a Head Mounted Display (HMD), two Infrared (IR) emitting sensors and two handheld VR motion controllers. The goal of this project is to create a NN system which uses positional data to classify gestures, requiring as little training examples as possible to produce accurate classification.

Education	BRACKEEN Elizabeth Brackeen & Scott Kupferman
Poster 27	Universally designed storytelling: Conceptual examples from music and art

Storytelling brings individuals, societies, and nations together. Each life is a piece of a larger picture. As people share stories, they form connections. It is a means of valuing individuals and encouraging listeners to gain insight, develop empathy, internalize what they have learned, and incorporate this into their own stories. Reflecting upon one's experiences brings meaning and understanding. As an essential component of everyday life, storytelling, through verbal and written expression, has some limitations in transmission. It is a highly demanding task consisting of linguistic, cognitive, perceptual, and communicative skills. In order to improve access to this process and in order to enhance the effectiveness of the social story through the universal design philosophy, we propose the use of multiple methods of storytelling as being a more accessible and engaging method. Specifically, the purpose of this poster presentation is to propose a universally designed storytelling conceptual framework for use within elementary education, particularly for students with disabilities.

Education	BUCHANAN Michelle Buchanan
Poster 28	Workplace Attitudes and Preparedness: An Explorative Mixed-Method Study of Generation-Z (Centennials)

Generation-Z, born between 1995 and 2012, is a scantily defined and scarcely studied cohort. As this generation matures, it is increasingly important to articulate its defining characteristics. This mixed-method pilot study explores traits potentially influencing corporate learning and development (L&D) instructional systems design (ISD), leadership expectations, and cross-generational workplace impacts summed up as workplace attitudes and readiness. Examining how Generation Z perceives themselves and is perceived by employers and educators will feed corporate organizational L&D centers as they look to evolve and develop new initiatives to train a new cohort of professionals as well as mentoring and development of future executives. An emergent trademark centers around an underlying technological Generation Z belief that rendering them a technology-expected and technology-transparent cohort. Implications for learning and professional development include shifting the focus from teaching professionals how to use technologies to using an existing technological foundation as an enabler to a larger developmental objective.

Electrical and Computer Engineering	ALOTAIBI Saif Alotaibi & Mark Wickert
Poster 29	Modeling individual Head-related transfer functions (HRTFs) based on the most important anthropometric features over the sound localization cues

The research will be addressed in two phases. First, finding the most influential and important features of the anthropometry which create the localization cues of the Head-related transfer function (HRTF). However, the exact influence of the human anthropometry on the HRTF is not clear yet. Second, design and validate a complete structural individual HRTF model of head, torso/shoulder, and pinna. By including all the most important reflection and diffraction paths into a cascading model of HRTF, the appropriate fit of the measured and the modeled HRTF will be obtained. The spectral cues, notches and peaks, of the modeled HRTF at the pinna will be traced and extracted as contours on a pinna picture of a human subject.

Department	PRESENTER Authors
Location	Title
	Abstract

Electrical and
Computer

Engineering PAULS | Aaron Pauls, M. Scott Trimboli, & Gregory Plett

Poster 30 Battery Management Using Passive Balancing

In electric vehicles, it is necessary to implement battery management systems (BMS) for safety purposes and performance optimization. This project implements passive (or dissipative) balancing using fixed value resistors to prevent overcharging battery cells. The design incorporates the ability to monitor between five and twelve battery cells per board. Additionally, a microcontroller is used to incorporate user input for cell monitoring. This capability allows for the BMS to work with different battery chemistries. The design also provides visual indication of the battery health, via a bank of LEDs. The project is to be implemented on an auxiliary high-voltage battery pack in an operational electric vehicle at UCCS.

Electrical and
Computer

Engineering SIDDAPPA | Chiranth Siddappa & Mark Wickert

Poster 24 Digital Signal Processing and Communications using scikit-dsp-comm

In this presentation, we provide an overview of the module capabilities of scikit-dsp-comm and how we see it being used in the signal processing and communication theory community (SP-COMM). Understand that signal processing by itself is relatively broad based when one also considers its connection to data science and machine learning. Specifically, attendees will learn to use an interface that can be used to teach students in a uniform fashion, providing easy to use wrappers around the functionality provided by existing scipy.signal functions. The package also includes much new capability not found elsewhere in the scipy stack. During teaching, block diagrams described in literature can be easily mimicked through code and can be resembled through plots and calculations output in the Jupyter notebook. Several modules incorporate subsystem models enabling rapid prototyping of larger systems for common signal impairments and disruptions encountered in real world SP-COMM systems. In teaching, the most interactive form for using these modules has been through lecturing in the Jupyter notebook with lecture material presented as live calculations. The presentation will provide a few detailed application examples to make clear the added value of using scikit-dsp-comm in modeling and simulating algorithm components and complete systems of interest to SP-COMM. We will also discuss what lies ahead for the documentation and further development of the package.

English BIXLER/HOFFMAN | Andrew Bixler & Brittney Hoffmann

Poster 32 The Effect of Reading to Children on Literacy and Desire to Read Later in Life

Most of the research done on the effects of reading to children shows generally positive effect. According to studies done by Peter Fde Jong and Linda A. Meyer, reading aloud to children can improve their reading comprehension and overall vocabulary. However, very little of this research has addressed how being read to, or how the kinds of books that one is read can affect one's desire to read and literacy later in life. The purpose of this research project was to determine if reading to children, and the kinds of books that they are read, has an effect on their desire to read as they get older. We used an anonymous survey and selected interviews to question people on their memories, if any, of being read to as children, and how that has shaped their reading habits and literacy today. The surveys were taken by many people across many different age groups, and even many different countries. Our hope is that through this research we can show that reading to children can positively affect them in ways beyond their academics, and encourage parents and guardians to read to their children more often.

English DEARBORN | Joshua Dearborn, Emile Hagopian, Kara Stanfield, & Cheyenne Wilcox

Poster 33 Generational Differences in Writing: Exploring the Differing Perceptions and Quality of Writing Across Generations

Today's ever-expanding technological world has allowed us to hold the world itself at our fingertips. The online realm has presented us with incredible capabilities, the likes of which our species has never seen. But what about one of our oldest art forms: writing? Have the vast capabilities of the internet distracted us from our creative roots, therefore diminishing the quality of and care for writing? This pilot project aims to examine the generational differences amongst the old-fashioned art of writing. We will examine the differing perceptions of individuals ranging between the Baby Boomers generation and the Millennial generation. How do these individuals feel about/view writing, and what has caused the differences amongst their perceptions? Our methods included a series of oral interviews and online surveys.

Department	PRESENTER Authors
Location	Title
	Abstract

English	LILLER Daneal Liller
Poster 34	Relationship between Literacy and Life Satisfaction

In 1969, U.S. Commissioner of Education, James Allen, made adult literacy a topic of public concern (Mikulecky, 1990). Since then, researchers have proven time and again that those who acquire higher levels of reading capability perform better in the workplace and earn higher incomes than their lesser educated counterparts. Current research also identifies a relationship between reading skills and an individual's level of participation in his/her community. However, the International Adult Literacy Survey (IALS) revealed that nearly half of adults possess inadequate literacy levels to effectively contribute to and participate in their place of work and community.

Previous studies have shown that an individual's socio-economic status has the potential to influence individuals' life satisfaction, but researchers have not discovered a direct relationship between how much and what a person reads and his/her life satisfaction. In my study, I sought to find a positive and direct relationship between literacy and life satisfaction. Through an online survey and textual analysis of six blog posts by two authors, my study identified a strong positive relationship between type and amount of material individuals read and their perceived satisfaction with their lives.

English	MAZZAFERRI Curtis Mazzaferrri
Poster 35	Understanding Today's Nontraditional Undergraduate Students

Using the defining characteristics laid out in Choy's Nontraditional Undergraduates, undergraduate students who identify with these nontraditional criteria were interviewed in an attempt to provide a better understanding of the question, are undergraduate institutions adequately addressing the concerns of their nontraditional student populations? Participants were asked questions pertaining to their experiences on campus; their understanding of their status as a nontraditional student; and their interpretation of the impact that their nontraditional status has had on their academic pursuits. The intent of this study was to gain qualitative insight into this student population's perspective of how undergraduate institutions have adapted over the last several decades to better address their concerns and support their efforts as well as where they believe these institutions still fall short.

English	MEEK-MARTIN Kaci Meek-Martin
Poster 36	A Retrospective Ideology of the Literary Canon

With the evolving nature of the literary canon determining which classics remain influential as well as contemporary works being added throughout the passage of time, the question remains as to how the reading of classical novels affects individuals' outward perceptions of their everyday lives. Through a combination of interviews and survey results, this research sought to determine whether there was significance of literary canon classics within our modern society and the ways in which those classics have changed. Not long ago, classical novels were regarded as the basis by which comprehensive knowledge was obtained. However, as time passes and our society transforms, the research shows that while the reading of classics still has significant impact, the scope of written works influencing modern society is more expansive than ever before and as such, the influence of reading has been broadened beyond the literary canon.

English	OCHSNER Jacob Ochsner
Poster 37	Technology VS Classroom

The project covers the over or underuse of technology and how it effects students in the classroom in terms of focus and creativity. Interviews and online surveys were created to correlate the immersion of the digital world with the need for digital stimulation in real world settings. Scholarly journals of similar topics were gathered to gain information of previous studies of students exposed to an abundance of technology.

English	RICHBERGER Amber Richberger
Poster 38	Young Adult Fiction and Adolescent Literacy

Young adult fiction has become a literary phenomenon over the last fifteen years. Novels written by John Green, Suzanne Collins, and Ellen Hopkins "along with many others" have created a resurgence in adolescent literature and have created a growing interest in teens. The research provided will concentrate on realistic young adult fiction and its effect on adolescent literacy. In this pilot study, I worked to bridge gaps among the young adult author, the teen reader, and the high school teacher. By looking at young adult literature from three different perspectives, I hope to establish a greater understanding of how teens are impacted by young adult literature. Through the use of an interview with Ellen Hopkins (the best-selling author who wrote the Crank trilogy), data collection from a poll of 100 participants, and a look at various secondary sources, this study will explore the potential impact young adult fiction has on adolescent literacy and how the novels in the genre may be taught in the classroom.

Department	PRESENTER Authors
Location	Title
	Abstract

English	SCUDDER Phillip Scudder
Poster 39	Expert Vs Novice: Literacy Rates and Study Habits in Chess Players
	<p>Previous research has shown that novices, when compared to experts, fail to exhibit deep-level thinking/processing. That's not to say they are not thinking, rather, the type of thinking experts exhibit is different, and more refined in what they thinking about and how they apply their knowledge. The literature is very straight forward in what known about the difference between novices and experts. However, I want to find out the 'Why?' behind the differences between expert and novices and see if reading literature contributes to that different type of thinking. I will be analyzing expert chess players and novice chess players, and be focusing on how often they read and study and how much of a factor this reading/studying has had on their rating/skill/improvement. Using survey and interview data, my study has exhibited that novices don't understand what deep-level is, much less how to apply it to their understanding of chess. My research has also shown that how long someone has been playing chess does not correlate to their strength.</p>

English	SMITH Shayleen Smith
Poster 40	Education Majors' Unmet Expectations About Their First-Year Teaching
	<p>Current education majors seem to have romanticized their first year of teaching; it will be full of excitement, joy and ease. These expectations, whether given to education majors by their professors or their own perception of teaching, set students up for failure during their first year of teaching, when a majority of teachers experience immense difficulty during this time. I've gathered information about how current education majors perceive their first year through surveys, and how current teachers actually experienced their first year through interviews. This data suggests that pre-service teachers have an unrealistic view of what their first year will be like, which sets themselves up for disappointment during their first year. This disappointment causes emotional storms that if not handled well, can be devastating and discouraging.</p>

English	VALVO Jessica Valvo
Poster 41	Exploring Faculty Beliefs about Student Writing and Student Learning
	<p>In college, there are a lot of factors that contribute to success. We often hear about how teachers can create a strong learning environment for students using various techniques and activities. What is often missed in discussions is how teachers' own beliefs and perceptions about learning and academic tasks like writing may influence their instructional decisions. This research examines how faculty beliefs may influence the way they create their writing assignments and their expectations about student writing. Through interviews with two university faculty members, this study explores the links between faculty perceptions about students' writing and their instructional design decisions.</p>

Geography and Environmental Studies	HAWLEY Austen Hawley
Poster 42	Crop Production Changes in Vietnam: Influences of Agricultural Policy on Crop Production
	<p>Increasing development and national policy changes in Vietnam, have resulted in long term farm holders in the Mekong Delta migrating to cities. This migration pattern is accompanied by changes in rainfall patterns associated with climate change, and result in land use changes such as shifts in crop production. Given that Vietnam is the bread bowl for Southeast Asian and the Mekong Delta provides the majority of agricultural production, these land use changes can impact food security. In my project I am using satellite imagery and census data to measure the land use changes and identify their potential negative implications. The measurements are based on observations of crop production, specifically rice, sweet potatoes, shrimp, maize, and fish. These crops are the major agricultural products for local consumption and export, and are the most likely to be impacted by changes in national policy. Preliminary analysis of data from 1995 to 2015 shows large increases in agricultural production around the mid 2000s. Without measuring these changes the Vietnamese government is not able to develop policy designed to mitigate changes in agricultural production and address food insecurity. The methodology I am using relies on freely available data and therefore can be utilized by governments in the developing world.</p>

Department	PRESENTER Authors
Location	Title
	Abstract

Geography and
Environmental

Studies PARSONS | Caitlin Parsons

Poster 43 Fire Management Strategies in Central America: Observing Spatial Patterns & Assessing Plan Efficacy

Fires are widely used in Central America to clear land for agriculture. This cultural practice can have negative implications for forest conservation when fires escape and cause natural forests to burn. Forest fires in tropical regions produce 2.1 billion tons of carbon dioxide every year, which contributes to climate change. This work aims to identify category IV and V protected areas (habitat/species management areas and protected landscapes/seascapes respectively), as defined by the IUCN, that have been affected by fire between the years of 2000 and 2015. After identifying these fires, a comparative analysis of fire management plans implemented by Central American governments seeks to explain spatial patterns of burned protected areas. This work relies upon freely available data, which makes it accessible for use by governments of developing nations. This information may allow policy makers to improve fire management plans in Central America, which could result in improved forest conservation and climate change mitigation.

History STEPHEN | Michael Stephen & Devin Moeller

Poster 44 The Chinese in Silver City, Idaho: Public History Challenges at a National Historic Place

Silver City was a former mining town in the mountainous region of Owyhee County in southwest Idaho. Through the town's two main "boom and bust" periods from 1863 to approximately 1910, there was a prominent population of Chinese. Silver City at the present time is a National Historic Place as several buildings dating back to the 19th century still remain. Silver City is presented to tourists, through the visual spectacle of abandoned buildings, as a ghost town. And it was this very myth of the American West that was used as justification for NRHP nomination in 1972. This presentation, via aerial images and ArcGIS, will present the challenges set forth within the contemporary period of the on-site historic interpretation of the Silver City Chinese. The ghost town architectural aesthetic provided points of interest for automobile tourists since the Great Depression but limits through the present time an inclusive picture within public history of the story of the Chinese who lived in Silver City.

History VILGIATE | Timothy Vilgiate

Poster 45 Migrant and Local Narratives of Development on the Lower Amazon

Between 1951 and 1980, the city of Santarm, an important trading hub on the lower Amazon, was designated as crucial for Brazilian government efforts to develop, modernize, and secure control over the Amazon basin. In order to encourage the regions development, large numbers of Northerners were relocated to agricultural colonies near the city and elsewhere in the Amazon. By examining oral histories of both migrants and natives through the lens of government documents and social psychology, I analyze the meanings that development took on for both migrants to Santarm and natives of the city.

Mechanical and
Aerospace

Engineering VOUGHT | Dustin Voigt

Poster 26 Tensile Testing of Plant Matter

This report describes a system designed and constructed to accurately measure the mechanical properties of petioles. The elastic modulus is required to develop mathematical models that characterize induced vibrations due to wind and rain. The primary purpose of the experimental system is to measure the elastic modulus. After initial research it was determined that the best method required a tensile testing machine small enough to measure the properties of petioles. To develop the machine a set of seven design constraints were established. The final product adheres to all of the design constraints developed. The constructed tensile testing machine successfully collects and records the required data to generate stress strain curves that are accurately representative in shape to known characteristics. The preliminary data collection identified points where further research and development was required; specifically to develop a method to grip the petioles without harming its properties. It was determined that a bushing needs to be designed with a volume to assure that the elastic properties of the bushing are not effecting the displacement measurements. Accurate measurements of the elastic properties of silver maple petioles demonstrate the effectiveness of this design.

Department	PRESENTER Authors
Location	Title
	Abstract

Nursing PRUE-OWENS/KENNY | Kathy Prue-Owens, Anne Lambert-Kerzner, Deborah Kenny, Jenna Ermold, Maryam Yazdanfar, & Lori L. Trego

Poster 47 Stereotype Threat among Women Veterans Eligible for Care in the Veterans Health Administration (VHA)

Background:
 Medical treatment regimens can be complex, resulting in patients struggling to understand their medical condition and the recommended therapies. Patients may lack the confidence to obtain the information needed, especially if patients experience stereotype threat, resulting from feeling negatively judged by those caring for them. Stereotype threat is a psychological state that occurs when a person anticipates being judged on the basis of negative stereotypes such as being female, older, member of minority groups, those with low socio-economic status, or obese.
 The number of Women Veterans is at its highest point in the history of the military. A number of barriers within the VHA such as the perception of personal safety and comfort in inpatient, outpatient and behavioral health facilities have been identified. Therefore, to assess the status of Women Veterans experience with stereotype threat, we report on an innovative design to investigate Women Veterans' perceptions of stereotype threat in relation to their experiences with the VHA.
 Methods:
 This qualitative study will use a Grounded Theory analytical strategy aimed at discovering theory to identify the role of stereotype threat in Women Veterans healthcare. Focus groups will be used to collect Women Veterans data along the Front Range, eligible for care within the VHA.
 Future Directions: This study will lay the foundation for future research to improve the care provided to Women Veterans. The resulting theory will be used to further identify factors to address stereotype threat within this population and lead to empower Women Veterans to obtain better healthcare.

Nursing PINA-THOMAS | Deborah Pina-Thomas, Susan L. Garrett, Kerry A. Peterson, & Melissa J. Benton

Poster 48 Participation in Vigorous Activities and Walking Determine Overall Physical Activity Levels Among Baccalaureate Nursing Students

Background and Significance: Physical activity has health and academic benefits for college students but tends to decline with age.
 Purpose: To evaluate physical activity among baccalaureate nursing students prior to graduation.
 Methods: At the beginning and end (weeks 1-2 and 15-16) of the three semesters prior to graduation, baccalaureate students, 20-25 years of age, completed the International Physical Activity Questionnaire (IPAQ) and body mass index (BMI) was calculated based on height and current weight. Based on the IPAQ, physical activity was calculated as MET-minutes per week of vigorous, moderate, and walking activities, using metabolic equivalents of 8.0 METS for vigorous, 4.0 METS for moderate, and 3.3 METS for walking.
 Results: Fifty-two students (92% females) completed the study with 98% adherence. At baseline, students were 21.3Å±1.4 years old with a BMI of 23.5Å±2.9 kg/m². Over time, BMI increased and by the beginning of the last semester (measurement 5), BMI was significantly greater than at any previous time point (23.9Å±3.1 kg/m², p<0.05). Thereafter, BMI remained stable through the end of the semester (measurement 6) before graduation. Over the course of the study, distinct physical activity patterns were noted. Although overall physical activity and moderate activity did not change statistically, vigorous activity decreased sharply over the first three measurement periods (p<0.05), increased for the fourth period, and then decreased again over the last two periods (p<0.05 compared to baseline). By comparison, walking demonstrated an opposite pattern in which it increased sharply over the first three measurements (p<0.05) and then decreased again (p<0.05). When students were grouped by physical activity level (low/moderate vs. high), there were significant between-group differences (p<0.05) in vigorous activity and walking. At baseline and end of study, the low/moderate activity group participated in 58% and 49% less vigorous activity, and 83% and 45% less walking than the high activity group. Finally, throughout the study overall activity level demonstrated strong correlations with vigorous activity (r=0.6-0.7, p<0.01) and walking (r=0.6-0.8, p<0.01), but not with age or BMI.
 Discussion: In this group of baccalaureate nursing students, overall physical activity did not decline with time and was primarily influenced by participation in vigorous activity and walking. However, it had no influence on BMI and did not appear to be influenced by student age. Although nursing students typically engage in walking during clinical experiences, they should be encouraged to also participate in more vigorous activities in order to increase their overall physical activity level.

Department	PRESENTER Authors
Location	Title
	Abstract

Nursing	YAMBO Teresa W. Yambo, Phd, MSN Ed, RN
Poster 49	Academic Progression in Nursing Education: Advancing Seamless Educational Mobility

The Illinois Healthcare Action Coalition's education workgroup selected a gap analysis project to identify inconsistencies in articulation agreements between Associate Degree Nursing and Baccalaureate Degree Nursing programs. The goal of the coalition was to determine the current status of agreements compared to set criteria of curriculum for nursing students from 134 schools. Findings from the gap analysis revealed inconsistencies in curricula and competency frameworks. One recommendation was to tailor articulation agreements to meet the diverse needs of Associate Degree Nursing and Baccalaureate Degree Nursing students to smooth educational mobility between nursing programs. Additionally, a recommendation was made to create collaborative alliances between Associate and Baccalaureate Degree schools of nursing to develop set criteria for nursing students that bridge seamless educational mobility.

Physics and Energy	
Science	HARTMAN Jewell Anne Lee Hartman & Marek Grabowski
Poster 50	Investigation of Edge States in a Model of DNA using Tight Binding (TB) Method

The tight binding (TB) method is used to describe electrons in a 1D lattice with alternating hopping amplitudes, consisting of N unit cells of 2 atoms each. Two systems were studied: a 1D polymer chain and a simple ladder model of DNA. Single and double bonds are represented by different hopping amplitudes. For a 1D polymer, there are two different dimerized states. Defects are introduced through the on-site energy or the hopping amplitudes. The energy spectrum and wavefunctions were calculated from the Hamiltonian. Moving away from fully dimerized limits, edge states exist, and their energies remain very close to zero energy. These edge states are even and odd superpositions of states located on the left and right ends. By introducing defects in the model, the edge states were studied. Second, the simple ladder model of DNA consists of two chains interacting with weak coupling between them. We seek to investigate the edge states to understand topologically protected soliton defects that are free to move along the polymer chain or DNA ladder.

Physics and Energy	
Science	JENKINS Nicholas Jenkins & Anatoliy Pinchuk
Poster 51	Noble Metal Nanoparticle Deposition

The fascinating mechanism behind a novel technique in which lasers can be used as a pen that can write lines made of metals, such as silver or gold on a substrate is investigated through numerical methods. The substrate can be glass, plastic, or other suitable materials. These metal structures, called plasmonic structured substrates can be used to substantially enhance inelastic scattering of light that can detect small amounts of chemicals and biologically relevant microorganisms, such as microbes in biofilms. To fabricate plasmonic metal substrates that can enhance scattered light with the highest possible efficiency we need to understand the exact physical-chemical mechanism of the writing process. In practice, the deposition process consists of dropping a solution of silver nitrate on a glass slide and then tracing a focused UV laser across the surface of the glass. The laser-induced deposition process is believed to be initiated by the photo reduction of silver ions to silver nanoparticles. Then, induced interactions between particles and the glass surface drive the silver nanoparticles onto the substrate leading to a permanent attachment. To examine the large scale behavior of the depositing nanoparticle, a numerical method known as extended random sequential adsorption (XRSA) was utilized. Through the results obtained through XRSA, experimental data is better explained and a clearer picture of the laser-induced deposition is developed.

Psychology	BOHLEN Adrienne Bohlen, Leilani Feliciano, & Hasker Davis
Poster 52	Executive Function in Older Adults with Type 2 Diabetes

Diabetes mellitus is a wide spread chronic illness whose incidence and prevalence increases with age. Currently, over 30.3 million adults aged 45 and older have a diagnosis of Type 2 diabetes (T2DM; ADA, 2015; McDonald, 2009) while another 41 million adults aged 40 to 74 have a condition that increases risk for developing T2DM, referred to as pre-diabetes (PDM; Duyff, 2006; ADA, 2016). Without adequate assessment and treatment, T2DM contributes to physical complications such as peripheral neuropathy, blindness, kidney disease, and psychological complications such as depression and cognitive decline. Together, these conditions affect the quality of life for a staggering number of Americans making the assessment and management of T2DM and PDM critical areas of study.

The current study focuses on one such complication of diabetes, cognition decline, particularly in the domain of executive function. Thirty-four adults (14 with T2DM or PDM and 20 controls) aged 53 to 83 years of age ($M = 71.15$, $SD = 7.14$) were recruited from several sources including: a large federally qualified health center, a local Senior Center, a registry of over 900 adults who have consented to be contacted for research, jury pools, and through word of mouth (i.e., snowball method). Participants were tested on several executive function tests including working memory, decision making, problem solving, and reasoning. In general, it was hypothesized that those with T2DM and PDM will have a greater decline in executive function compared to controls. No significant results were indicated by any of the assessments.

Department	PRESENTER Authors
Location	Title
	Abstract
Psychology	FELICIANO Leilani Feliciano, PhD, Michele Okun, PhD, Katherine Johanson, BA, Lauren M. Schneider, BS, & Kathy Prue-Owens, PhD, CCRN, RN
Poster 53	Role of Insomnia and T2DM on Cardiometabolic Indices in Menopause: An Investigation
	Cardiovascular disease (CVD) refers to a group of diseases and conditions related to the heart and blood vessels. Previously identified as a disease chiefly affecting men and the elderly, however we now know CVD causes more deaths in women than any other major chronic condition including cancer and accidents. Despite medical and treatment advances, the mortality rate for women with CVD has climbed dramatically. The incidence of CVD is ubiquitous including all women especially those of lower socioeconomic and educational background, including female veterans. Mid-life may confer different risk factors for women than men, including higher risks for insomnia, diabetes, stress, depression, and menopause. As CVD among women continues to escalate as a major health issue, we contend that the methodology used to identify cardiovascular risk factors needs to address this complexity. Hence, we propose that a Biopsychosocial Behavioral Approach to understand CVD risk is particularly pertinent to women as it allows for the consideration of female specific events such as menopause, and emerging disorders such as insomnia and diabetes. This study presents pilot data on the assessment of biopsychosocial risk factors for CVD in women with and without diabetes.
Psychology	FIALA/MANSOUR Jacob Fiala, Salwa Mansour, & Shannon E. Matlock
Poster 54	Political Affiliation and Campaign Video Effects on Presidential Personality Ratings
	The short-form of the Coolidge Axis II Inventory was used to measure prominent features of 14 personality disorders (according to the criteria in the Diagnostic and Statistical Manual of Mental Disorders) of Donald Trump and Hillary Clinton shortly after the election. Participants who had voted for a major party candidate election were recruited from Amazon Mechanical Turk and asked to identify themselves as Conservative or Liberal. After data screening, 219 adults (M age = 38.20 years, range = 18 to 79 years) were randomly assigned to view a positive or negative compilation of official campaign videos depicting Trump or Clinton, and then completed the SCATI. The general hypothesis was supported: respondent's political affiliation affected personality perceptions (although campaign video compilations did not). Participants who supported a candidate viewed his/her personality as less dysfunctional. However, overall Trump was perceived as more pathological than Clinton and similar to dictatorial world leaders.
Psychology	LIN Shayne Lin, Allison Walden, Abbey Sokol, Jennifer Roberts, & Andrew Lac
Poster 55	Ageism: Characteristics of Age Birthday Cards
	Ageism is a pervasive stereotype that is expressed in a variety of ways. Paper birthday cards are one way in which ageist messages are perpetuated and reinforced. One hundred fifty-three birthday cards indicating a decade age (30 to 100 years old and 21 years old as a baseline comparison) were acquired from seven retail stores in Colorado Springs, CO. Four raters individually coded the birthday cards according to a pre-developed codebook. Interrater reliabilities for variables ranged from fair to excellent. The ratings were consistent among raters. Common negative themes observed on birthday cards of older ages included mocking physical and cognitive decline whereas positive themes included celebrating birthday as a milestone. A content analysis showed that ageism was significantly higher in birthday cards intended for people between the ages of 30 and 60 than at other ages, and that ageist messages were conveyed through humor. Moreover, birthday cards of older ages focused more on the past. In summation, consumers need to learn to evaluate these ageist messages in birthday cards to reduce the perpetuation of damaging stereotypes.
Psychology	SAUNDERS Tamara Saunders & Lori James
Poster 56	Grief and Language Production
	This study tests the impact of priming feelings of grief on the production of words and novel non-words. It extends the quasi-experimental paradigm predominant in grief research to include younger adult, non-bereaved participants. Results elucidate whether eliciting the emotion of grief impairs language production compared to neutral testing conditions.
Psychology	SHIRLAN Katie Shirran & Elizabeth Daniels
Poster 57	Opinions of Social Media Users
	This research will be investigating young adults' attitudes toward mock social media profile users. Specifically, we are investigating the role of race in attitudes toward sexualized vs. non-sexualized social media users. Using an experimental design, participants will see 4 mock social media profiles of women in one of two experimental conditions. In condition A, profiles will have a sexualized profile photo. In condition B, profiles will have a non-sexualized profile photo. The women depicted in the photos will be the same across the conditions (although the pose will be either sexualized or not depending on experimental condition) and all other information in the profile (e.g., hometown, schooling) will be the same for each woman across conditions. Two of the four profiles will depict African-American women and two will depict White women. After viewing the profiles, participants will answer a series of questions about the profile owners. We expect that sexualization will negatively impact viewers' attitudes toward the profile owners.

Department	PRESENTER Authors
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	Abstract

Public Affairs	GRISWOLD Anna Kosloski & Zach Griswold
Poster 58	Human Trafficking in the World Series

Human Trafficking is the act of recruitment, transportation, and harboring of individuals for the purpose of sexual, labor, or organ exploitation through force, fraud, or coercion. This study focuses in particular on sex trafficking and sexual exploitation and the methods, individuals, and effects that may be correlated with professional sports games, specifically with the 2016 World Series. Since the start of the 2016 World Series on October 25th, 2016, ads from backpage.com were recorded and analyzed. Analysis of the ads includes assessing language, terminology, frequency, and advertising methodologies used in the commercial sex industry. The data was collected for all 7 games played in Chicago, Illinois and in Cleveland, Ohio. Implications for understanding the frequency, content, and connection of online commercial sex ads to sporting events are discussed.

Public Affairs	HAMMACK/KOSLOSKI Anjelika Hammack & Anna Kosloski
Poster 59	Human Trafficking: Legislative Changes and Prosecution Rates

The current research attempts to fill a gap in human trafficking literature by examining the changes in federal and state legislation, the sanctions imposed for the crime of human trafficking, and the resultant prosecution and conviction rates. The primary goal was not only to identify the changes in legislation and to examine the parallel between these changes and the changing prosecution rates, but also to examine if the manner of prosecution is changing in concordance with the changes in legislation.

To accomplish this, a compilation of state legislations was collected, and corresponding arrest and conviction data requested. Three states were chosen for preliminary comparison and this presentation will present findings on at least one of three states originally chosen for analysis.

Visual and Performing Arts	LATONA Katherine Latona
Poster 60	Monuments and Cultural Identity: Ancient Precedents, Modern Controversies

Memorials are powerful means for perpetuating memory and constructing a national myth: a monument is a node around which notions of who we are coalesce. For millennia societies have altered or destroyed one another's, and even their own, most potent symbols. I will provide an understanding of the historical context for contemporary and contentious treatment of monuments, as in Charlottesville, VA, and Durham, NC. In the current, dangerously polarized political culture, matters of national identity are brought to the forefront with minimal academic examination. I seek to fill that void with a balanced, scholarly view of the issue.

NOTES



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