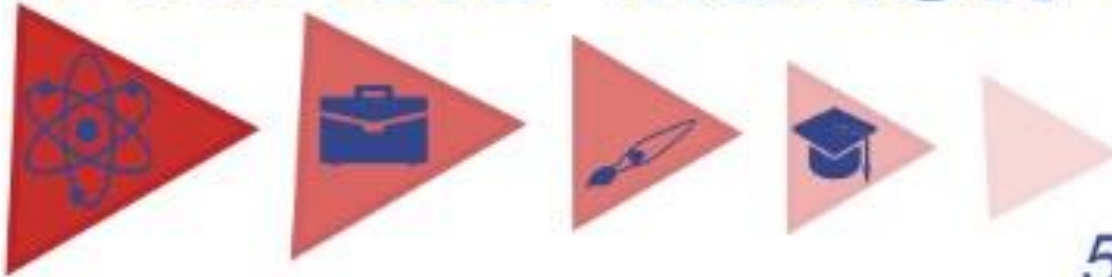


Francis Marion University



2018

*5th Annual Research
& Exhibition Day*

A celebration of student scholarship across disciplines

ABSTRACT BOOK

Tuesday, April 10, 2018

Lee Nursing Building

10:00am – 3:30pm

FMU RED, April 10, 2018, 10:00am-3:30pm

Presentation Time	Student Presenters	Project Title	Presentation Number	Abstract Book Page
10:00am - 10:30am	Emily Kaitlyn Piner	Use of ITS gene regions in a phylogeographic study of the Pine Barrens treefrog (<i>Hyla andersonii</i>) and related <i>Hyla</i> species	4	4
	Coen J. Hasenkamp	Acidification Kinetics of Kefir Fermentation in Dairy Milks	11	4
	James Holder	First memories, Emotion, and Substance Abuse: Using an Adult Clinical Sample to Assess College-Age Drinkers and Nondrinkers	12	5
	Jade Bellmon	Decreasing Stereotypy and Tantrum Behavior in an Adolescent with Autism Spectrum Disorder	14	5
10:30am - 11:00am	Sarah Christinna Deas	Pro-social Behavior in Sprague- Dawley Rats	2	6
	Ashley Ederer	Sleep Intervention	18	6
	Christen Ezekiel	Determination of the Caffeine Content in Mountain Dew and Mountain Dew Ice	26	7
	Matthew Binchik	Can you hear me now? Acoustic communication in Centrachids	28	7
11:00am - 11:30am	Todd Wilson	The Effects of the PATHS Curriculum Versus the Strong Kids Curriculum on Classroom Behavior	39	8
	Briana Savon Gordon	Specific Learning Disability Determination in South Carolina	40	8
	Heather Causey	Exploration of PBIS in Rural County School District	41	9
	Alexandria Lee Farthing	Threat Assessment and Risk Factors	42	9
11:30am – 12:00pm	Emily Dodd	Gender Discrepancy in Academic Help Seeking	10	10
	Jack Slade Evans, II	Probiotics and the Human Microbiome: An Analysis of the Microbial Composition of Kefir	21	10
	Amber Zonca	Survey of parasites infecting <i>Hexagenia</i> (Ephemeroptera: Ephemeridae) nymphs from western Lake Erie	30	11

Presentation Time	Student Presenters	Project Title	Presentation Number	Abstract Book Page
12:00pm – 12:30pm	Stacey Kersey	Symmetry Perception and Brain Waves	6	12
	Precious McLaughlin	Does Solitary Confinement Have an Adverse Effect On Recidivism?	31	12
	Nicholas Tomlinson	Student Development of Computational Physics Exercise Sets	38	13
	Emily Hicks	Isolation and Purification of Bacteriophages to Esherichia coli	43	13
12:30pm – 1:00pm	Nicholas Tomlinson	Laser Interferometry and Precision Measurements	3	14
	Linda Gasper	Effects of Music on the Brain	15	14
	Taylor Broach	The Analysis of p53 Mutation Associated with Cervical Cancer Susceptibility	23	15
	Anique Chantal Frazier	Fruit	24	15
	Javier Bustos Jaimes	Use Of Machine Learning For Understanding Work Instructions	33	15
1:00pm – 1:30pm	Caitlyn English	The Forensic Analysis of EDTA in Dried Bloodstains Using DRIFTS and ATR	8	16
	Kristen Harrell	Symmetry and Laterality	16	16
	Mercedes Smith	The Media and its Affect on People's Fear of Terrorism	17	17
	Matt Harrington	Patriot History Timeline	25	17
	Lindsey Coward	Increasing the Utilization of Patient Portals in a Rural Internal Medicine Practice	34	18
1:30pm – 2:00pm	Christopher Sousa	Solid Model Similarity Assessment with Triangle Congruency	20	19
	Ryan Holland	Investigating Karyotype Evolution in the Genus Sarracenia	22	19
	Lauren Gainey	Labor and Delivery Nurses Opinions about Surrogacy in South Carolina	29	20
	Zachary Greenwood	Elements Shaping Obesity in Children in Rural South Carolina	32	20
	Emily Boggs	Door opening behavior in Sprague-Dawley rats	35	21
2:00pm – 2:30pm	Joshua Smith	Evaluation of Effectiveness of Precision Teaching and Direct Instruction on Reading Fluency	1	21
	Corbin Witt	A discrete element method (DEM) study of particle clustering in a cylindrical vessel undergoing orbital motion	7	22
	Melayna Neupert	Diving into STEM	9	22

Presentation Time	Student Presenters	Project Title	Presentation Number	Abstract Book Page
2:30pm – 3:00pm	Rebecca Alexander	Computational Thinking...The Roman Way!	5	23
	Jedediah Daniel Hayes	Preparation of plasmids to evaluate acid ceramidase over-expression	13	23
	Jasmyn C Quillen	Social Comparison	36	24
3:00pm – 3:30pm	Cassidy Mahoney	Acoustic Monitoring and Geographic Analysis of Bat Populations in Florence, SC	19	24
	Johnathan K. Greene, Jr.	Musical Innovations Deriving From Poverty: The Origin of Jazz and the Blues	27	25
	Joshua Hayes	Analysis of brain regions involved in empathetic concern as measured by c-Fos	37	25

Congratulations to Chloe Shinn - the winner of the 2018 logo design contest!

Use of ITS gene regions in a phylogeographic study of the Pine Barrens treefrog (*Hyla andersonii*) and related *Hyla* species

Student Presenter: Emily Kaitlyn Piner

Faculty Mentor: Dr. Paul Zwiers

Presentation Type: Poster

Presentation number: 4

Presentation time: 10:00am – 10:30am

Abstract

The current range of the Pine Barrens treefrog (*Hyla andersonii*) is restricted to three isolated regions within a wide geographic range, New Jersey, North and South Carolina, and Alabama and the Florida panhandle. This taxon is found in acidic habitats and is particularly susceptible to changes in pH. It is therefore considered near threatened by the IUCN, and is a species of special concern in Florida and threatened in New Jersey. A comprehensive phylogeographic study would estimate the evolutionary relatedness, times of divergence, species status, and potential methods of isolation among these groups. Here we present results of our assessment of the ITS gene regions. Uniformity in the ITS1 has led to exploration of the ITS2 sequence and secondary structure in both regions. Data on secondary structure may help reconstruct past evolutionary events within the species, and aid in estimating relationships with other *Hyla* species.

Acidification Kinetics of Kefir Fermentation in Dairy Milks

Student Presenter: Coen J. Hasenkamp

Faculty Mentor: Dr. Jennifer K. Lyles

Presentation Type: Poster

Presentation number: 11

Presentation time: 10:00am – 10:30am

Abstract

Kefir, a probiotic milk beverage, was grown in various types of dairy milk. The resulting reduction in pH associated with the acidification of the milk as the Kefir grains ferment was analyzed for differences depending on the type of milk used as a growth medium. It was hypothesized that differences in milk nutritional composition (whole vs. skim), preparation (fresh vs. powdered), or bacterial load (pasteurized vs. raw) could result in differences in the rate at which the Kefir grains acidify the different kinds of milk. In addition to studying changes in pH, a novel method of using blood glucose monitors and lactase enzyme to measure remaining free lactose throughout the fermentation was used. This data, although only reliable at weakly acid pH values, supports the observation that lactose was metabolized as the Kefir fermented.

First memories, Emotion, and Substance Abuse: Using an Adult Clinical Sample to Assess College-Age Drinkers and Nondrinkers

Student Presenter: James Holder

Co-authors: Ruby C. Rhodes, Benjamin Buffington,
Joshua Chandler

Faculty Mentor: Dr. Teresa Herzog

Presentation Type: Poster

Presentation number: 12

Presentation time: 10:00am – 10:30am

Abstract

The current study is designed to examine relations between substance use and self-reported first memories, their positive and negative valence, as well as their content. Individuals who express higher levels of negativity may be more susceptible to engaging in risky behaviors in order to provide temporary relief from painful affective states. Because memories are not exact records of the past, but rather are constructed anew at the time of retrieval. Presumably, individuals who rely on behaviorally-dysregulated coping styles that involve risky substance use, will also be less able to effectively regulate their negative mood, leading to more salient negative emotion as they revisit their first memory. We administered the FACE Screening Measure (i.e. assessing first memories for negative emotion and content as risk factors for substance use) to both high and low “using” college students and compared their response to those of an alcohol-addicted sample of adults. We hypothesized that students with strong evidence of substance use problems (i.e., number and frequency of substances used as well as self-reported life disruption) would also show more

negative first memories, similar to the clinical group but significantly higher than their counterparts reporting moderate to little substance use.

Decreasing Stereotypy and Tantrum Behavior in an Adolescent with Autism Spectrum Disorder

Student Presenter: Jade Bellmon

Faculty Mentor: Dr. Traci Taber

Presentation Type: Poster

Presentation number: 14

Presentation time: 10:00am – 10:30am

Abstract

The purpose of the study is to evaluate the effect of a behaviorally-based intervention on inappropriate shredding/tearing and tantrum behavior. The participant is a thirteen-year-old boy diagnosed with Autism Spectrum Disorder. An intervention using choices and prompting was implemented by presenting the participant with more appropriate activities to prevent him from tearing and shredding clothes or engaging in tantrum behavior. The intervention was implemented each afternoon when the participant arrived home from school. Preliminary results suggest the intervention was effective in decreasing both the shredding/tearing behavior and tantrum behavior.

Pro-social Behavior in Sprague- Dawley Rats

Student Presenter: Sarah Christinna Deas

Faculty Mentor: Dr. Shayna Wrighten

Presentation Type: Poster

Presentation number: 2

Presentation time: 10:30am – 11:00am

Abstract

Pro-social behavior is defined as “voluntary actions that are intended to help or benefit another individual or group of individuals” (Eisenberg and Mussen, 1989). Pro-social behavior was thought to only be seen in humans, but studies have shown that some other animals, particularly rodents, can have pro-social behavior as well (Bartal et al., 2011; Sato et al., 2015). To conduct this experiment female Sprague- Dawley rats were used. We used a paradigm where one rat was in a restrainer with water and another rat in an arena to see if the rat in the arena will demonstrate pro-social behavior by opening the door for the rat that is in the restrainer with water. From this paradigm we recorded rat vocalizations using an acoustic wildlife recording system. Rats produce vocalizations to communicate with one another. It has been shown that adult rats emit a 22-kHz vocalization in anticipation of a situation that they cannot escape, which usually causes stress. We expect to see that the rats in our paradigm are vocalizing at around 22-kHz. If rats produce a 22-kHz vocalization in our paradigm this will suggest that one or both rats are stressed in this situation, and that those stress signals are being emitted via vocalizations.

Sleep Intervention

Student Presenter: Ashley Ederer

Faculty Mentor: Dr. Traci Taber

Presentation Type: Poster

Presentation number: 18

Presentation time: 10:30am – 11:00am

Abstract

The purpose of this study was to assist the parents in an intervention to get the child to sleep in his own bed using behavior principles and interventions. Caleb is a four-year-old boy who was diagnosed with autism spectrum disorder who lives with both parents in the Southeastern region of the US. The intervention was to set up a bedtime routine with a bed time schedule and that help the parents and Caleb to sleep in his own room and bed. Every night at the set bedtime the parents escorted Caleb to his room and stated, "This is your bed you sleep here" and then tucked him in and then returned to their room. In order for the parents to know that Caleb return back to the parent's room there was a system set up for whenever Caleb enters the room a noise will wake the parents up, then the parents got up and escorted Caleb to his bed and then stated again "this is your bed you sleep here" and the parents then returned back to their room. Results and future recommendations are discussed.

Determination of the Caffeine Content in Mountain Dew and Mountain Dew Ice

Student Presenter: Christen Ezekiel

Faculty Mentor: Dr. Kris Varazo

Presentation Type: Poster

Presentation number: 26

Presentation time: 10:30am – 11:00am

Abstract

Previously in instrumental analysis laboratory class the caffeine content of Mountain Dew was examined using spectrophotometry. The results from the least squares analysis showed that the caffeine content in Mountain Dew was higher than what was reported on the bottle. It was hypothesized that one of the dyes in Mountain Dew could interfere with the absorbance of caffeine. To explore the interference of the dye we examined Mountain Dew Ice which does not contain the dye. We will use constant volume standard addition to help minimize the contribution of the dye, which is a matrix effect. We will compare the result from both methods and both types of Mountain Dews.

Can you hear me now? Acoustic communication in Centrarchids

Student Presenter: Matthew Binchik

Co-author: Michelle Gallo

Faculty Mentor: Dr. Jeff Steinmetz

Presentation Type: Poster

Presentation number: 28

Presentation time: 10:30am – 11:00am

Abstract

Acoustic monitoring of underwater fauna has almost exclusively focused on marine species. In contrast, very little is known about the acoustics of freshwater species and few sounds have been documented. A few studies have documented calling in Centrarchids. In freshwater bluegill (*Lepomis macrochirus*), for example, research has found that ‘drumming’ or ‘knocking’ sound patterns occur during the breeding season. Very little information has been documented about off-breeding season calls. Here we report acoustic communication in bluegill and redear sunfish (*Lepomis microlophus*). These trials consisted of three phases. First, field recordings were conducted at The Cheraw Fish Hatchery in Cheraw, SC. Acoustic signatures and call patterns for bluegill and redear sunfish were recorded for one week in August and one week in September 2016. A Wildlife Acoustic Song Meter SM3 equipped with a hydrophone recorded for 30 minutes every hour for both of those weeks. The calls that were recorded were typically low frequency “grunts” under 1KHz, in bursts of single, double, triple or multiple amplitudes. There were peak calling rates around 10:00 and 16:00 hours. Next, lab recordings were conducted both in 2016 and 2017 using samples of 8 and 12 adult bluegill respectively. During the course of laboratory testing, the adult bluegill were housed and tested in the Francis Marion University greenhouse in 50 gallon Rubbermaid cattle tanks. Laboratory results are currently being analyzed, but preliminary results show similar patterns to the field recordings. The third part of the project was conducting behavioral experiments on bluegill to try and understand why they were calling. Trials included: males by themselves, females by themselves, two males, two females and one male and one female. In addition, we also used an

underwater speaker to playback previously recorded sounds to both males and females in order to attempt to invoke behavioral responses. Hopes to build on this work in the future include: expanding the study to additional species, as well as more behavioral trials to further understand the function of calls during breeding and non-breeding seasons.

The Effects of the PATHS Curriculum Versus the Strong Kids Curriculum on Classroom Behavior

Student Presenter: Todd Wilson
Faculty Mentor: Dr. Crystal Hill-Chapman
Presentation Type: Poster

Presentation number: 39
Presentation time: 11:00am – 11:30am

Abstract

The purpose of this study was to evaluate the effects of the PATHS Curriculum versus the Strong Kids Curriculum on classroom behavior. The PATHS participants were a group of kindergarten students. A group of first grade students participated in the Strong Kids curriculum. Prior to beginning the study, student behaviors were rated by their teachers using the Strengths and Difficulties Questionnaire (SDQ). Both curricula were implemented twice weekly over a period of 6 weeks. The curricula promote social and emotional development through lessons, role-playing, stories, and activities. Data analysis is currently being conducted to observe any changes in classroom behavior during the implementation of the PATHS and Strong Kids curricula.

Specific Learning Disability Determination in South Carolina

Student Presenter: Briana Savon Gordon
Faculty Mentor: Dr. Crystal Hill-Chapman
Presentation Type: Poster

Presentation number: 40
Presentation time: 11:00am – 11:30am

Abstract

There is a growing number of students being served for special education under Specific Learning Disability (SLD), and this has become more of a concern throughout the years. There is a disagreement with the understanding and identification with SLD within the state of South Carolina. With the three models of SLD that can be used, including the Discrepancy model, Response to Intervention (RTI) model and Patterns of Strengths and Weaknesses (PSW) Model. Nine school psychologist, school psychologist interns or school psychologist graduate students around SC participated in this study. Participants were asked to review two case studies and indicated whether or not they would determine the students in the case eligible for SLD or not based on the model that they felt the most comfortable using. The results of this study concluded that more participants used the Discrepancy model to determine eligibility. There was a positive correlation of 0.7 with years of practicing and using the Discrepancy model. In conclusion, due the amount of participants that use the same model to determine eligibility, over 77% of the answers were similar for both case studies.

Exploration of PBIS in Rural County School District

Student Presenter: Heather Causey
Faculty Mentor: Dr. Crystal Hill-Chapman
Presentation Type: Poster

Presentation number: 41

Presentation time: 11:00am – 11:30am

Abstract

Research suggests that Positive Behavior Interventions and Supports (PBIS) within school systems are important for establishing expectations for appropriate behavior. PBIS is a program designed to prevent, reduce, and replace problem behaviors to create positive school environments. The purpose of this study was to examine the correlation between behavior and academics within the elementary schools of a rural county school district. Data was collected based on archival information from the 2017-2018 school year. A random selection of fifty students, in addition to students with discipline referrals and special education students, from each school were included in the study. The study also examined what systems of PBIS were currently in place within each school through a survey completed by teachers. Data analysis has not yet been completed.

Threat Assessment and Risk Factors

Student Presenter: Alexandria Lee Farthing
Faculty Mentor: Dr. Crystal Hill-Chapman
Presentation Type: Poster

Presentation number: 42

Presentation time: 11:00am – 11:30am

Abstract

Collected data from high risk assessments (suicide or harm to others) for Spartanburg District 6 for the past 3 years. Collected data on factors such as age, grade, race, previous risk assessments, whether or not the student had an IEP or 504, and free/reduced lunch. Created a checklist (pending) to compare to NASP's Prepare model. Implementing a mental health screener to be given to middle school 7-8th graders, the most at risk age group, to be given to students at the beginning of the year.

Gender Discrepancy in Academic Help Seeking

Student Presenter: Emily Dodd

Faculty Mentor: Dr. Teresa Herzog

Presentation Type: Poster

Presentation number: 10

Presentation time: 11:30am – 12:00pm

Abstract

Gender differences are observable in multiple areas of behavior, including cognitions and communication involving giving and receiving help. The current study examined gender in relation to academic help-seeking. Previous research has shown that female college students are readier to engage in asking for academic help than their male counterparts, and were more likely to report outside help as more irrelevant to school success, indicating a higher sense of self-control over academic outcomes (Ames & Lau, 1982). In the current study, approximately 100 FMU undergraduates are completing the Help-Relevant Attributions Scale (Ames & Lau, 1982; consisting of two Internal Attribution subscales of Ability, Effort, and two External Attribution subscales of Task Difficulty Excuse, and Interest Excuse); items assessing actual academic help-seeking (i.e., use of Writing Center, the Tutoring Center, friends and professors); and to estimate their GPA. We hypothesize that we will replicate the previous findings that: (1) men are less likely to engage in academic help seeking behaviors, (2) low GPA students will be more likely to seek help, and that (3) low GPA performers will seek help if they indicate higher ability. In addition to these confirmations, we posit that (4) men will be more likely to engage in external attributions

regarding academics than females, and that this will account for the lessened help-seeking of men relative to women.

Probiotics and the Human Microbiome: An Analysis of the Microbial Composition of Kefir

Student Presenter: Jack Slade Evans, II

Co-author: Paulette Sarrazin

Faculty Mentor: Dr. Jennifer K. Lyles

Presentation Type: Poster

Presentation number: 21

Presentation time: 11:30am – 12:00pm

Abstract

The collection of microorganisms in the gastrointestinal tract, known as the gut microbiota, plays a critical role in overall health and wellbeing. Maintaining the appropriate balance of beneficial microbes in the gut has been shown to prevent and even treat certain disorders, such as type II diabetes and Chron's disease. One way to restore balance is by seeding the gut with probiotics, or beneficial microorganisms. Probiotics are commonly found in fermented foods and beverages, such as kefir—a fermented milk product. Prophylactic consumption of fermented products, like kefir, may contribute to increased health and disease prevention. However, the content of various types and brands of kefir may vary significantly. Therefore, specific strains of beneficial yeast and bacteria were identified and quantified from various sources of kefir, including homemade kefir and various brands of commercial kefir. Specifically, microorganisms from the kefir were cultured

and enumerated, and unique colonies were isolated for further analysis. These cultures were characterized based on colony morphology, cell morphology, and Gram stain reaction. Species identification was performed via molecular analysis—polymerase chain reaction and Sanger sequencing—followed by thorough bioinformatic analysis. Isolates from homemade kefir sources were predominantly yeast (80%), while isolates from commercial kefir sources were predominantly bacteria (92%). However, both homemade and commercial sources of kefir possessed comparable species diversity regarding probiotic content – six unique species from homemade kefir and eight unique species from commercial kefir. Preliminary data suggest that the microbial composition of various sources and brands of kefir varies significantly. Further investigation is required to clearly demonstrate the relationship between the probiotic content of kefir and overall health benefits and disease prevention.

Survey of parasites infecting *Hexagenia* (Ephemeroptera: Ephemeraidae) nymphs from western Lake Erie

Student Presenter: Amber Zonca

Faculty Mentor: Dr. David Malakauskas

Presentation Type: Poster

Presentation number: 30

Presentation time: 11:30am – 12:00pm

Abstract

Burrowing mayflies, *Hexagenia* spp. (Ephemeroptera: Ephemeraidae), are important biomonitoring indicators of mesotrophic water quality. However, little research has been done on parasites infecting *Hexagenia* spp. nymphs and what role parasites may play in *Hexagenia* population dynamics. Therefore, the aim of our study is to catalog parasites of a population of burrowing mayfly nymphs from western Lake Erie, Michigan and to describe basic ecological information such as infection prevalence, parasite loads, host specificity, parasite distribution, and host-parasite population dynamics. Burrowing mayfly specimens were collected as part of ongoing biomonitoring studies and examined for parasites microscopically. Based on tentative morphological identifications, *Hexagenia* nymphs are infected with trematodes in the genus *Crepidostomum*, protists of the genera *Vorticella* and *Epistylis*, and an as-yet-unidentified nematode. Parasites will be molecularly characterized by sequencing appropriate genes. Results from the genomic analysis of burrowing mayfly nymphs show two species present in the samples: *Hexagenia limbata* (n=36; 78%) and *Hexagenia rigida* (n=10; 22%). We present current progress on molecular and ecological work.

Symmetry Perception and Brain Waves

Student Presenter: Stacey Kersey

Co-author: Eric Henderson

Faculty Mentor: Dr. Jesse Sargent

Presentation Type: Poster

Presentation number: 6

Presentation time: 12:00pm – 12:30pm

Abstract

This study examined visuo-spatial short-term (working) memory. Memory for locations on a computer screen is better when the pattern of locations is symmetrical (symmetry effect). The purpose of this study was to examine the neural correlates of the symmetry effect using electroencephalography (EEG). Electrophysiological activity was recorded from 16 electrode sites while participants completed 120 trials of a visuo-spatial working memory task. Each trial began with the presentation of a pattern of squares, either random or symmetrical, displayed on a 6x6 grid. Immediately after presentation, participants recalled the location of the squares via mouse clicks. Differences in the neural response (as measured by EEG) to symmetrical and random patterns was examined, as was the relationship between this difference and memory performance.

Does Solitary Confinement Have an Adverse Effect On Recidivism?

Student Presenter: Precious McLaughlin

Faculty Mentor: Dr. Will Daniel

Presentation Type: Poster

Presentation number: 31

Presentation time: 12:00pm – 12:30pm

Abstract

The United States' population is a mere five percent of the world's population, yet it holds twenty-five percent of the world's prisoners. In the "land of the free," over 2.3 million people are without their freedom. One of the most important goals of the criminal justice system is rehabilitation, but with a sixty- eight percent recidivism rate, the United States' penal system appears ineffective. The question of what causes these prisoners to reoffend must be answered in order to provide policy solutions that will remedy the effectiveness of the penal system. I examine the prison condition of solitary confinement to determine whether it has an adverse effect on recidivism. Long term isolation and sensory deprivation leaves inmates socially and mentally handicapped, causing them to be predisposed to reoffending. In solitary confinement offenders lack essential rehabilitation, which leaves them embittered and more likely to reoffend when released back into the community. In order to address this question, I analyze data from existing sources from criminology and psychology studies as well as accounts from those who have undergone long-term solitary confinement. The purpose of this research is to expose weaknesses in the criminal justice system, so that political policy steps can be taken to improve its efficacy.

Student Development of Computational Physics Exercise Sets

Student Presenter: Nicholas Tomlinson

Faculty Mentor: Dr. Larry Engelhardt

Presentation Type: Poster

Presentation number: 38

Presentation time: 12:00pm – 12:30pm

Abstract

The goal of this project is for students to develop computational exercise sets for the PICUP* collection. Specifically, we are adapting exercises from a Java-based textbook** into other programming languages. Our exercise sets include introductory mechanical and electrical systems, as well as more advanced concepts such as resonance and phase space.

*Partnership for Integration of Computation into Undergraduate Physics (<https://www.compadre.org/PICUP/>)

**An Introduction to Computer Simulation Methods by H. Gould, J. Tobochnik, and W. Christian

Isolation and Purification of Bacteriophages to *Escherichia coli*

Student Presenter: Emily Hicks

Faculty Mentor: Dr. Timothy E. Shannon

Presentation Type: Poster

Presentation number: 43

Presentation time: 12:00pm – 12:30pm

Abstract

Bacteriophages that infect *E. coli* were taken from a sample taken at the Francis Marion University pond. These phages were isolated through serial dilutions that were comprised of bacteria, pond water, and phage buffer. These dilutions were mixed with agar and poured on top of LB agar plates which were then left to incubate at 37°C overnight so that bacteria could grow. After the initial dilution, pond water was exchanged with bacteriophage samples picked from cultured plates. This was continued until the phage was purified, showing up as concise, transparent, circular or oval cultures. Analysis will construct of restriction digestion of viral DNA which will then be sequenced. The results of the analysis will be submitted to the bacteriophage database.

Laser Interferometry and Precision Measurements

Student Presenter: Nicholas Tomlinson

Faculty Mentor: Dr. Seth Smith

Presentation Type: Poster

Presentation number: 3

Presentation time: 12:30pm – 1:00pm

Abstract

A basic Michelson Interferometer was built using a 633 nanometer Helium-Neon Laser along with mirrors, a beam-splitter and a photodiode detector placed on the optical breadboard of a Newtonian Labs Laser Interferometry apparatus. One of the mirrors contains a Piezoelectric Transducer that is used to move the mirror with an applied voltage. Electronic signals output from the apparatus were analyzed using a Tektronix TBS 1052B 50 MHz 1GS/s Dual Channel Digital Oscilloscope. Various methods were utilized to determine the minimum displacement that the interferometer could measure. Results on the order of a picometer were obtained.

Effects of Music on the Brain

Student Presenter: Linda Gasper

Faculty Mentor: Dr. Fran Coleman

Presentation Type: Poster

Presentation number: 15

Presentation time: 12:30pm – 1:00pm

Abstract

It is proven in studies that music improves brain health and function in many ways. Music can reduce stress, improve mood, increase productivity, and inspire creativity. Music can also make one feel more hopeful, powerful and more in control of their life. There is evidence that proves music can enhance cognitive skills as well as improving accuracy. In fact, studies have shown that surgeons who listen to music while operating were less stressed, were able to work faster and with more accuracy - especially if they were able to choose the music themselves. In summary, music has been proven to improve brain function. Therefore, more people should listen to music and participate in musical ensembles to help make their minds more creative and productive. (In addition to my speech, I would like the University choir to perform - in which I participate.)

**The Analysis of p53 Mutation Associated with Cervical Cancer
Susceptibility**

Student Presenter: Taylor Broach

Co-author: Jessica McNeill

Faculty Mentor: Dr. Erin Eaton

Presentation Type: Poster

Presentation number: 23

Presentation time: 12:30pm – 1:00pm

Abstract

The aim is to analyze the association between p53 polymorphism and cancer susceptibility, more specifically its association with cervical cancer. This experiment will focus on the polymorphism in codon 72, which has an Arg/Pro allele, of p53. The polymorphism efficiently degrades the Arg-type gene product of p53 by the human papillomavirus E6 oncoprotein. It is important to know that our results will not show causation, but only focus on susceptibility. We will analyze samples of DNA from a wide range of participants to determine the polymorphism of codon 72 and its association to cervical cancer. Using the Hardy-Weinberg equation, we will also examine if the polymorphism shows a correlation between age, family background and ethnicity.

Fruit

Student Presenter: Anique Chantal Frazier

Faculty Mentor: Mr. Steven F. Gately

Presentation Type: Exhibit

Presentation number: 24

Presentation time: 12:30pm – 1:00pm

Abstract

My art work is of a model that contained a handful of fruit, a bottle, and some drapes. In class we were working on using cool colors and value with light.

Use Of Machine Learning For Understanding Work Instructions

Student Presenter: Javier Bustos Jaimés

Faculty Mentor: Dr. Rahul S. Renu

Presentation Type: Poster

Presentation number: 33

Presentation time: 12:30pm – 1:00pm

Abstract

The objective of this research is understanding what structure or guidelines people use to author technical documents. Technical documents from three different industries were analyzed to find relationships using unsupervised machine learning. These relationships were analyzed to understand what current guidelines the industries possessed. The relationships were also compared to pre-existing literature guidelines of what technical documentation guidelines should consist of. The analysis concluded a disconnected between pre-existing guidelines and the current guidelines industries use. Concluding with the possible need of guidelines specific to each industry.

The Forensic Analysis of EDTA in Dried Bloodstains Using DRIFTS and ATR

Student Presenter: Caitlyn English
Faculty Mentor: Dr. Jessica McCutcheon
Presentation Type: Poster

Presentation number: 8

Presentation time: 1:00pm – 1:30pm

Abstract

Blood evidence can often be the basis for an entire investigation. Therefore, it is important to maintain the credibility of any blood evidence that may be collected from a crime scene. The presence of the preservative ethylenediaminetetraacetic acid (EDTA) in a blood sample usually indicates that the blood was stored in a vacutainer tube for some period. If EDTA is found at a crime scene, it raises concerns about the credibility of the blood source. Thus, it is necessary to develop non-destructive methods of detecting EDTA in blood samples. Infrared spectroscopy provides characteristic quantitative and qualitative spectra and is virtually non-destructive to the samples. In this regard, Diffuse Reflectance Infrared Fourier Transform Spectroscopy (DRIFTS) and Attenuated Total Reflectance (ATR), were used to analyze a series of blood samples. The goal of this research project has been to use DRIFTS and ATR to differentiate between neat blood and blood that has been doped with EDTA. The default comparison algorithm found on the Perkin Elmer spectroscopy software was used as a preliminary comparison between the neat blood with the EDTA doped blood. At this level of statistical analysis, there is no discernable difference between the two. Further chemometrics

were conducted using principal component analysis (PCA) in MATLAB. With PCA it was possible to differentiate between neat and doped blood diluted to as low as 0.18ppm. Preprocessing techniques, such as Savitzky-Golay smoothing and standard normal variate transformation, are being utilized to maximize the PCA leave-one-out cross-validation classification accuracies.

Symmetry and Laterality

Student Presenter: Kristen Harrell
Faculty Mentor: Dr. Jesse Sargent
Presentation Type: Poster

Presentation number: 16

Presentation time: 1:00pm – 1:30pm

Abstract

Participants are shown patterns on a computer screen and responded to whether the pattern was symmetrical or not. The purpose of this study was to see which hemisphere of the brain reacted fastest to symmetrical patterns.

The Media and its Affect on People's Fear of Terrorism

Student Presenter: Mercedes Smith

Faculty Mentor: Dr. Will Daniel

Presentation Type: Poster

Presentation number: 17

Presentation time: 1:00pm – 1:30pm

Abstract

The media has become a powerful instrument that terrorists can use to promote themselves and spread fear worldwide. The publicity that the media gives terrorist groups is what gets these terrorists' agendas out to the public, thus creating a sense of fear within the public. Social media and media in general has become deeply ingrained in today's society. This provides easy access to information, both, positive and negative. Terrorists use what was created with the intent of making everyone aware of what is going around them, to broadcast terror attacks, recruit members, and disrupt the "pleasant" lives of millions with fear. The mass media promotes terrorism by stressing fear and an uncertain future, thus taking on a key role in the spread of awareness and fear of terrorism. Terrorists have become able to exploit and manipulate the media and the media has fallen for it and continuously allows it to happen. The media helps terrorists in several ways, two being: communication and fear spreading. Because I believe the fear of terrorism increases due to the media and that the media has become a great part of some people's lives, this leads to three hypotheses that I have formed: 1. The media exacerbates the fear of terrorism; 2. The media awakens an already underlying, yet unknown fear of terrorism; and 3. Terrorist attacks that receive

more media exposure cause more fear. I plan to do research and review literature surrounding this topic in order to support or reject my hypotheses.

Patriot History Timeline

Student Presenter: Matt Harrington

Co-author: Garris Moseley

Faculty Mentor: Dr. Kenneth Araujo

Presentation Type: Poster

Presentation number: 25

Presentation time: 1:00pm – 1:30pm

Abstract

We are creating a history timeline in collaboration with the FMU History Department. Upon completion, the timeline will display different events in history in chronological order, pulling from a database. The timeline is being created using a "web-based" method, which means it will be accessible through the internet.

Increasing the Utilization of Patient Portals in a Rural Internal Medicine Practice

Student Presenter: Lindsey Coward

Faculty Mentor: Ms. J. Marty Hucks

Presentation Type: Poster

Presentation number: 34

Presentation time: 1:00pm – 1:30pm

Abstract

Introduction:

Health literacy is the extent to which patients are able to understand health-related information, and there is a correlation between low health literacy and health disparities (Centers for Disease Control and Prevention, 2016). Florence County, South Carolina is a rural area, with 16.4% of residents affected by diabetes mellitus and 47.1% by hypertension (South Carolina Department of Health and Environmental Control, 2013). The use of personal health records may aid in disease prevention and health promotion (Rief et al., 2017). A primary measure for patient engagement is the patient portal. However, patients with low health literacy often have decreased confidence in utilizing patient portals (Izarry et al., 2017).

Purpose:

The purpose of this project was to increase the use of a patient portal through an educational intervention.

Methods:

A quality improvement project was completed assessing the impact of a personal health record (PHR) demonstration during office visits with a family nurse practitioner to examine the

frequency of patient-generated medication refill request and messages sent through the PHR system. The project used a convenient, non-randomized sample of 27 patients over age 18 from an internal medicine practice in Florence, South Carolina. In this population, many patients have a reading level below the fifth grade and have multiple chronic illnesses. A one-on-one PHR demonstration was performed with each patient, and questions were answered. The PHR activity was obtained four-weeks prior to the intervention, while the second audit captured PHR activity during the interventional period.

Results:

There was an increase in the frequency of patient-generated refill requests (25%), patient log-ins (33%), and password reset requests (800%) following the educational intervention.

Discussion/Implications:

Individual patient education sessions may increase the use of patient portals, which can lead to improved patient engagement and better management of chronic diseases. Additional research is needed on this topic.

Solid Model Similarity Assessment with Triangle Congruency

Student Presenter: Christopher Sousa

Faculty Mentor: Dr. Rahul Renu

Presentation Type: Poster

Presentation number: 20

Presentation time: 1:30pm – 2:00pm

Abstract

The possibility of a method that evaluates solid model similarity could have beneficial implications in a manufacturing environment. These benefits may have a positive impact on production through the assistance of product design as well as the identification of trends in quality concerns, regarding specific part geometries. The research outlined in this project seeks to evaluate triangle congruency as a viable method to achieve this goal. The method to compare solid model triangle congruency is currently under development. Next steps include extensive testing of the program and comparing the results of this method to those acquired from literature.

Investigating Karyotype Evolution in the Genus *Sarracenia*

Student Presenter: Ryan Holland

Faculty Mentor: Dr. Jeremy Rentsch

Presentation Type: Poster

Presentation number: 22

Presentation time: 1:30pm – 2:00pm

Abstract

Terrestrial pitcher plants of the southeastern United States have evolved to live in low nutrient soils by virtue of their ability to capture and digest prey in their modified leaves. Recent work analyzing the transcriptomes of *S. psittacina* and *S. purpurea* seem to suggest a whole genome duplication event relatively recently in the genus. Given that these species are quite closely related, it remains unclear whether this event occurred in the ancestor of the genus or occurred more recently in the common ancestor of *S. psittacina* and *S. purpurea*. Further, it is quite common for polyploid plants to undergo large-scale genome reorganization and return to a state of being effectively diploid. Previous reports on *Sarracenia* karyotypes produced relatively simple drawings of chromosomes, and lacked the necessary information (e.g. banding patterns) that would allow us to identify interspecific homologies. These studies do, however, show a strong bias in favor of somatic cells in *Sarracenia* having 26 chromosomes; however multiple authors report a haploid chromosome count at only 12. Here, we investigate the karyotype evolution within the genus *Sarracenia*. We will karyotype a number of *Sarracenia* species (and subspecies) including: *S. alata*, *S. flava*, *S. leucophylla*, *S. psittacina*, *S. purpurea* subsp. *purpurea*, *S. purpurea* subsp. *venosa*, and *S. rubra*. We will apply a Giemsa stain to produce a G-banding pattern, which will help us identify interspecific homologies. These data should help us elucidate the timing of the whole genome duplication even in *Sarracenia* and the extent to which the group has returned to a functional state of diploidy.

Labor and Delivery Nurses Opinions about Surrogacy in South Carolina

Student Presenter: Lauren Gainey
Faculty Mentor: Dr. Deborah Hopla
Presentation Type: Poster

Presentation number: 29
Presentation time: 1:30pm – 2:00pm

Abstract

Surrogacy can be used as a treatment/birthing option for infertility. Infertility is defined as the failure to conceive after twelve months of regular sexual intercourse without the use of sexual contraception. The surrogacy option uses a fertile woman of the couples' choice who will carry a child for the couple and once the child is born, the couple will adopt the child. This process can be useful for various couples that struggle with infertility. Although surrogacy provides treatment for infertility, there are psychological issues that can be experienced by both parties, the surrogate and the family who chose surrogacy. This study examines how labor & delivery (L&D) nurses approach the concept of surrogacy across the state of South Carolina. L&D nurses play an important role in how the child is born and the experience a woman receives during the birth process.

Elements Shaping Obesity in Children in Rural South Carolina

Student Presenter: Zachary Greenwood
Faculty Mentor: Dr. Dorie Weaver
Presentation Type: Poster

Presentation number: 32
Presentation time: 1:30pm – 2:00pm

Abstract

Background: The growing prevalence of childhood obesity is a concern both globally and in the United States (U.S.). In 2016, the Centers for Disease Control and Prevention (CDC) reported that more than one-third of U.S. adults are obese and that childhood obesity is being diagnosed at earlier ages (8.9% for ages 2-5 years, 17.5% for ages 6-11 years, and 20.5% for ages 12-19 years). The increased incidence of childhood obesity and associated poor health outcomes warrant an investigation into factors contributing to the development of the disease.

Research Aim: To determine factors influencing childhood obesity in a population of rural southeastern U.S. school-aged children using a cross-sectional study.

Methods: Collection of survey information, as well as anthropometric measurements provided data to determine if overweight or obese children reported decreased levels of exercise, greater amounts of electronics time, and different demographic characteristics and nutritional habits than children classified as non-obese. Logistic regression was conducted to determine whether demographic, nutritional, exercise, or screen time variables were predictive for obesity.

Results: African American children had greater odds of obesity relative to White children (OR=6, p=0.007). Children who spent more than three hours per week exercising had greater odds of healthy weight (OR=3.3 [1/0/3], p=0.07) relative to children who spent less than one-hour exercising.

Conclusion: African American children were classified as obese more often than children from other races. Exercise was predictive of healthy weight, with non-obese children frequently reporting more than three hours per week of exercise.

Door opening behavior in Sprague-Dawley rats

Student Presenter: Emily Boggs
Faculty Mentor: Dr. Shayna Wrighten
Presentation Type: Poster

Presentation number: 35

Presentation time: 1:30pm – 2:00pm

Abstract

Pro-social behavior has been thought to only be demonstrated in humans and non-human primates. However, recent research has found support for pro-social door opening behavior in rats. Sprague-Dawley rats were used for this study. One rat was placed in a closed restrainer inside of a larger arena, and its cage mate was placed free within the arena. Opening of the restrainer door from the outside by the free rat was used as a measure of prosocial behavior. Condition 1 consisted of a larger restrainer and arena than Condition 2 and had no water. The Condition 2 paradigm consisted of a smaller restrainer with water inside of it and an arena. We found that the rats from Condition 1 had a significantly slower latency to open the restrainer door than the rats of Condition 2. The rats from Condition 1 also had significantly more rears (an indirect measure of activity) which increased over time, and a longer duration of time spent in the restrainer (an indirect measure of how stressful the restrainer is to the animal) than the

rats of Condition 2. These results suggest that the increased stress due to the reduced size of the restrainer and water presence of Condition 2 may have increased the stress of the caged rat enough to elicit a stronger and more frequent door opening response from the free rat.

Evaluation of Effectiveness of Precision Teaching and Direct Instruction on Reading Fluency

Student Presenter: Joshua Smith
Co-authors: Mary Carter, Nidhi Patel, and Gregory Pilot
Faculty Mentor: Dr. Traci Taber
Presentation Type: Poster

Presentation number: 1

Presentation time: 2:00pm – 2:30pm

Abstract

The purpose of this study was to evaluate the effects of a treatment package that included precision teaching (PT), direct instruction, and behavior management techniques founded in applied behavior analysis on reading fluency. Participants were twelve 3rd – 5th graders attending a public elementary school located in the Southeastern region of the United States. Outcomes were measured using fluency timings across multiple pre-reading and reading tasks and charted using standard celeration charts through Chartlytics. Visual analysis of graphed data demonstrated increased fluency for early literacy components that generalized to improved reading fluency determined by curriculum based measures (CBM)

**A discrete element method (DEM) study of particle clustering in
a cylindrical vessel undergoing orbital motion**

Student Presenter: Corbin Witt

Faculty Mentor: Dr. Jessica McCutcheon

Presentation Type: Poster

Presentation number: 7

Presentation time: 2:00pm – 2:30pm

Abstract

The use of computational modeling has become increasingly common in a wide array of fields and industries, therefore it is beneficial to create and test new computational software as it is being developed. In an attempt to do just that, a new modeling software is designed to encompass all related laws of physics to create the most accurate representation of the situation that is being modeled. If a piece of software proves to be more robust than its competitors, it will be more commercially viable. Throughout this study, a complex series of particles were experimentally found to exhibit new clustering phenomena that had not previously been observed. This particle clustering was observed in a cylindrical vessel undergoing orbital motion. The simulation that was processed utilized discrete element method (DEM) to generate the models. The goal of the simulations was to most clearly reflect the clustering effect that was observed by the original team that ran the experimental trials.

Diving into STEM

Student Presenter: Melayna Neupert

Co-author: Rian Avin

Faculty Mentor: Dr. Daljit Kaur

Presentation Type: Exhibit

Presentation number: 9

Presentation time: 2:00pm – 2:30pm

Abstract

“Diving into STEM” provides an example of STEM integration into Early Childhood Education using Makerspace. Makerspace is an area where students have the opportunity to create and design apparatuses that help with understanding. The Makerspace provides an outlet for kinesthetic students to showcase their tactile learning skills of accuracy. There will be a Makerspace set up for spectators to solve the problem. The objective is to create a catapult that accurately launches a projectile (a goldfish cracker) into the desired pirate ship.

Computational Thinking...The Roman Way!

Student Presenter: Rebecca Alexander

Co-author: Benjamin Taylor

Faculty Mentor: Dr. Daljit Kaur

Presentation Type: Exhibit

Presentation number: 5

Presentation time: 2:30pm – 3:00pm

Abstract

Computational thinking is a way of solving problems by creating a physical or digital model that aids in the understanding of a topic. It incorporates STEM (science, technology, engineering and mathematics) learning by crossing over different subjects to obtain a higher learning aspect. In our example activity, the students will be given the topic of Roman architecture and asked to create different aspects of a Roman city like an aqueduct, temple, or a road system. Using 3D software, they will design the structure of their city and how each aspect plays a role in that city. When the students present this model, they will have to include facts about each structure that they built on the software.

Our presentation will include a virtual 3D model of a Roman city that spectators can “tour” virtually. We will be presenting this 3D model to serve as an example of how a teacher could integrate computational thinking into his or her classroom.

We will have access to two laptops, but we will need at least one table to display our virtual model. We will also need an outlet to plug in our laptops if needed.

Preparation of plasmids to evaluate acid ceramidase over-expression

Student Presenter: Jedediah Daniel Hayes

Faculty Mentor: Dr. Lorianne S. Turner

Presentation Type: Poster

Presentation number: 13

Presentation time: 2:30pm – 3:00pm

Abstract

Over-expression of the enzyme acid ceramidase (AC) has been observed in some cancer cell lines and primary tumors. The consequence of AC over-expression is the ability to convert ceramide, which is often produced as a pro-apoptotic response to stress, to sphingosine, which can then be converted to the pro-survival molecule sphingosine-1-phosphate, therefore contributing to resistance to chemotherapy and radiation. Cortisol is a steroid stress hormone produced by adrenal cells in response to adrenocorticotropic hormone (ACTH) released by the pituitary gland. Published studies have shown that ACTH can also alter acid ceramidase expression, suggesting a relationship between a stress pathway and cancer. In order to assess the effects of increased AC expression in H295R cells, expression plasmid including AC under the transcriptional control of the EF-1 α promoter will be constructed. Upon completion and confirmation of the plasmid, H295R cells will be transfected with the plasmid and characterized.

Social Comparison

Student Presenter: Jasmyn C Quillen

Faculty Mentor: Dr. Teresa Herzog

Presentation Type: Poster

Presentation number: 36

Presentation time: 2:30pm – 3:00pm

Abstract

Social comparison is our cognitive means of evaluating ourselves in relation to others (Gong & Sanfey, 2017), facilitating improved performance, such as academic motivation and achievement (Lapan & Boseovski, 2017). However, social comparison can also lead to negative self-evaluation (Alderson & Katz-Gerro, 2016). Our study asked children to make self-comparisons on the Raven's Test to either a large or small social group on the Raven's Matrices, A Culture-Fair Intelligence Test. Children ages 7-9 from three local schools completed a social comparison task and three cognitive tasks. We hypothesize that the children who have a smaller reference group for a comparison will estimate their own performance as superior to those who have a larger reference group.

Acoustic Monitoring and Geographic Analysis of Bat Populations in Florence, SC

Student Presenter: Cassidy Mahoney

Co-author: Aaron Robinson

Faculty Mentor: Dr. Jeffrey Steinmetz

Presentation Type: Poster

Presentation number: 19

Presentation time: 3:00pm – 3:30pm

Abstract

In this study, bat populations in Florence County were monitored over a period of thirty-three months and geographically analyzed by species. This population data was collected using a bioacoustics monitoring system. The Wildlife Acoustics Echo Meter Touch provides spectrograms and auto-identification of bat calls from different species. For the Pee Dee region of SC, the Echo Meter Touch auto-identifies fourteen species of bats. Based on the bat calls recorded, twelve species were collected. Activity along a twenty mile route was measured approximately every two weeks at the peak time of activity. The numbers of recordings collected in the study were higher in the summer and fall compared to the winter. The route was chosen to include different habitat types, including residential, commercial, industrial, agricultural, and forest. Once habitats were determined on the map, species calls were separated based on location. This data was then analyzed to determine whether certain species preferred certain habitats.

**Musical Innovations Deriving From Poverty: The Origin of Jazz
and the Blues**

Student Presenter: Johnathan K. Greene, Jr.

Faculty Mentor: Dr. Brandon Goff

Presentation Type: Exhibit

Presentation number: 27

Presentation time: 3:00pm – 3:30pm

Abstract

Blues music and Jazz were the two of the most substantial musical contributions of the first half of the 20th century. This essay will discuss the historical origins of these two art forms and how their creation was influenced by the socioeconomic status of their creators. Like many other innovations, Jazz and Blues music arose out of poverty, as people found refuge in the music to get away from their sorrows. Many of the instruments used were things they found lying around the house that they could make sounds with, and those sounds became some of the trade mark sounds of the music. Though the late 19th and early 20th century produced some challenging times for African Americans, it also gave us some of the most well known African American innovators of American Art. This essay will explore the influence of poverty and racism on these two American art forms.

**Analysis of brain regions involved in empathetic
concern as measured by c-Fos**

Student Presenter: Joshua Hayes

Faculty Mentor: Dr. Shayna Wrighten

Presentation Type: Poster

Presentation number: 37

Presentation time: 3:00pm – 3:30pm

Abstract

Prosocial behavior in both non-primates, non-human primates and humans has increasingly become an area of interest over several recent years. While there is a great deal of evidence supporting the ability of rats to engage in prosocial behavior, questions as to how rats are capable of this behavior still remain. A particular area of interest is understanding which regions of the brain are associated with this behavior. In this study, empathetic behavior was observed in female Sprague Dawley rats in a paradigm containing two rats in an arena, one restrained and the other free. Empathetic behavior, defined as spending time in the inner portion of the arena close to the restrainer with the trapped rat, was then compared with levels of c-Fos (an indicator of neural activity) in regions of the insula, amygdala, frontal cortex and cingulate cortex. This experiment is currently ongoing. However, we expect that free rats who spend more time in the inner portion of the arena (suggesting increased empathetic concern) will have a higher number of c-Fos positive cells in the insula, frontal cortex and cingulate cortex and a lower number of c-Fos positive cells in the amygdala than rats who spend more time in the designated outer portion of the arena (suggesting decreased empathetic concern). Successful completion of this study would provide useful evidence as to which regions of rodent brains are associated with empathetic concern. This information can provide a basis for future studies examining brain regions associated with empathetic behavior in rats and further decipher which selective cognitive processes are necessary for empathetic behavior.

FMU RED 2018 Student Presenters and Co-Authors

Alexander, Rebecca.....	23	Hayes, Jedediah Daniel	23
Avin, Rian	22	Hayes, Joshua	25
Bellmon, Jade	5	Henderson, Eric	12
Binchik, Matthew	7	Hicks, Emily	13
Boggs, Emily	21	Holder, James.....	5
Broach, Taylor	15	Holland, Ryan	19
Buffington, Benjamin	5	Kersey, Stacey	12
Bustos Jaimes, Javier.....	15	Mahoney, Cassidy	24
Carter, Mary.....	21	McLaughlin, Precious	12
Causey, Heather	9	McNeill, Jessica	15
Chandler, Joshua	5	Moseley, Garris	17
Coward, Lindsey	18	Neupert, Melayna	22
Deas, Sarah Christinna	6	Patel, Nidhi	21
Dodd, Emily	10	Pilot, Gregory	21
Ederer, Ashley	6	Piner, Emily Kaitlyn	4
English, Caitlyn	16	Quillen, Jasmyn C.	24
Evans, Jack Slade II	10	Rhodes, Ruby C.	5
Ezekiel, Christen	7	Robinson, Aaron.....	24
Farthing, Alexandria Lee	9	Sarrazin, Paulette	10
Frazier, Anique Chantal.....	15	Smith, Joshua	21
Gainey, Lauren	20	Smith, Mercedes	17
Gallo, Michelle	7	Sousa, Christopher	19
Gasper, Linda	14	Taylor, Benjamin	23
Gordon, Briana Savon	8	Tomlinson, Nicholas	13, 14
Greene, Johnathan K. Jr.	25	Wilson, Todd	8
Greenwood, Zachary.....	20	Witt, Corbin.....	22
Harell, Kristen.....	16	Zonca, Amber	11
Harrington, Matt	17		
Hasenkamp, Coen J.	4		

