

APRIL 23-24 2019

28TH ANNUAL

STUDENT

ENGAGEMENT

FORUM

RADFORD UNIVERSITY

Student Engagement Forum Coordinators

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The following individuals and officers are acknowledged for their contributions:

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Zoe Millard, OURS Graduate Assistant

Samantha Doncaster, OURS Executive Student Assistant

Hunter Brandon, OURS Executive Student Assistant

About the Cover Art

The cover art is the creation of Marcus Reed, a third year Graphic Design major at Radford University

Artist Statement:

With more than 1,000 students that attend this university with hopes and dreams of showcasing their talents and knowledge, I had the pleasure of designing this cover art to express just that. Just as anyone else who gets to show theirs, I get to show mine in a different way. A way that will grasp the attention of all viewers who will hold this day in their memories. That is why I designed this cover with a more realistic theme to show that we all can be a part of something greater. Giving the color scheme mesh in this design I wanted the feeling of “We are all in this together.” With how ever long our college journey is we are in this together! Hope you all enjoy.

28th Annual Radford University Student Engagement Forum

SCHEDULE AT A GLANCE

Tuesday, April 23rd

Agida Manizade Keynote Address	HU AUD	11:30am 12:30 pm	pp 3
Digitizing History Digital Archives Showcase	Heth 014	9:30 am-11:00 am	pp 4
Art History Showcase: Censorship and the Arts	Heth 016	2:00 pm-3:30 pm	pp 4
Anthropological & Biological Sci. Primatology Oral Session	Heth 022	2:00 pm-4:00 pm	pp 5
History Oral Session: Soviet World War 2	Heth 044	2:30 pm-3:30 pm	pp 8
Biology Oral Session	CS M073	3:30 pm-4:50 pm	pp 9
Creative Writing Showcase	Heth 022	4:30 pm-5:30 pm	pp 11
Interdisciplinary Oral Session	Heth 043	4:30 pm-6:30 pm	pp 12
Chemistry Oral Session	CS M070	5:00 pm-6:20 pm	pp 15

Wednesday, April 24th

Innovations in Forensic Science Oral Session	Heth 022	8:00 am-12:00 pm	pp
Geospatial Poster Showcase	Kyle 340	2:30 pm-3:45 pm	pp
Interdisciplinary Poster Showcase	Kyle 340	2:30 pm-3:45 pm	pp
Visual Sociology Poster Showcase	Kyle 340	2:30 pm-3:45 pm	pp
Psychology Poster Showcase	Kyle 340	4:00 pm-5:15 pm	pp
Biology Poster Showcase	Kyle 340	5:30 pm-6:45 pm	pp
SciArt Showcase	Kyle 340	5:30 pm-6:45 pm	pp
Accelerated Research Opportunities Poster Showcase	Kyle 340	7:00 pm-8:15 pm	pp
Chemistry Poster Showcase	Kyle 340	7:00 pm-8:15 pm	pp
Highlander Research Rookie Poster Showcase	Kyle 340	7:00 pm-8:15 pm	pp
Nutrition and Dietetics Poster Showcase	Kyle 340	7:00 pm-8:15 pm	pp
Psychology Poster Showcase II	Kyle 340	7:00 pm-8:15 pm	pp
Honors College Capstone Showcase	CS M073 & Lobby	3:00 pm-9:00 pm	pp
Center for Gender Studies Keynote Presentation	Heth 022	3:30 pm 4:30 pm	pp
Center for Gender Studies Showcase	Heth Lobby	4:30 pm 5:30 pm	pp
CITL Digital Media Showcase	McConnell 4th Floor	4:00 pm-7:30 pm	pp
Production Technology Showcase	McGuffey 203	6:00 pm-8:00 pm	pp

Wednesday & Thursday, May 1st-2nd

Student Choreography Showcase	Peters Hall B112	7:30 pm-9:30 pm	pp
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Welcome

It is my great pleasure and privilege to welcome you to the 28th Annual Radford University Student Engagement Forum! The Student Engagement Forum (SEF) showcases the highest levels of academic achievement and creation of new knowledge at Radford University through our campus community's undergraduate and graduate students' creative works, scholarship, and research. The displayed work represents a tremendous undertaking, often involving teams of students and faculty, to make progress on answering important questions for society.

Although what you hear and see represents countless hours of work, it is only the tip of the iceberg. Everyone who has worked to create new knowledge knows it is a crooked path filled with dead ends and back-tracking before finally arriving at progress. This progress requires great perseverance, belief, and support. I want to publicly thank all the presenters for staying the course, everyone who sparked or encouraged the needed curiosity to get started, and everyone who said a supporting word or offered a shoulder to lean, or even cry on, when the inevitable challenges of conducting relevant research arose.

The "Forum" as so many refer to this event continues to adapt and grow to meet the needs of campus. It is exciting and humbling to see so many emerging projects and programs on campus represented here. The SciArt Exhibits is the result of the Realizing Inclusive Science Excellence (REALISE) team while the CITL Digital Media Showcase is piloting the university's digital media displays, which could usher in a whole new era of presentation types. President Hemphill's vision for the Highlander Research Rookies has become a reality and represents in a microcosm the innovative mindset being embraced by Radford University.

To support these emerging needs requires a team effort and the success of this year's SEF is due to the preparation and hard work put in by the OURS team. It is an honor for me to work with such a dedicated group whom believe in this event and supporting research in all its forms across campus. Karen Everett and Hunter Brandon have been excellent in managing the poster printing workflow. Zoe Millard jumps in as needed with projects, like the name badges. Alyssa Thompson for her tireless work in the department handling a wide variety of projects while making the office a warm, inviting, and interesting place to work. Dave Sallee has been amazing at keeping up with the myriad of microchanges that occur over the course of putting this event together and has added such a warm, calm, and down to earth touch to our occasional organized chaos. Sam Doncaster is the lone returning member of the team from last year and provides me great perspective on student researchers. Dr. Jeanne Mekolichick has continued to act as transformative mentor to me in this role and her leadership continues to be a driving force for student-faculty research on campus. She is the embodiment of high impact practices making a difference in the life of others. I can honestly say I enjoy coming to the office every day, it is full of intelligent, interesting, caring professionals who find a way to keep working with a smile and laugh even on the most stressful days. I am truly blessed to work with such a team.

Enjoy the celebration of new knowledge and I hope to see you all next year for the 29th version of the Student Engagement Forum!

Dr. Joe Wirgau

Director, Office of Undergraduate Research & Scholarship (OURS)

Student Engagement Forum Keynote Speaker
Dr. Agida Manizade
Being a Researcher in the 21st Century
Hurlburt Auditorium
11.30-12.30

Agida G. Manizade is a Professor in the Department of Mathematics and Statistics in the Artis College of Science and Technology at Radford University (RU) where she joined the faculty in 2009. Whether she delivers online graduate classes or in-person undergraduate classes, she enthusiastically engages students and helps them to comprehend mathematics and mathematics pedagogy through hands-on activities, visual examples, use of technology, and students' immersion in original research.

Dr. Manizade's major scholarly interests include research in mathematics teaching and teacher education, mathematics teachers' knowledge, and use of technology in the mathematics classroom. Award-winning faculty, the Editor-In-Chief of the Virginia Mathematics Teacher (VMT) journal, she received the 2018 Outstanding Publication Award from the National Council of Teachers of Mathematics for the journal, was recognized as a 2019 Outstanding Faculty Award Recipient by the State Council of Higher Education for Virginia, the Distinguished Creative Scholar by RU Foundation in 2017, received Million Dollar Circle award in 2014 and Artis Outstanding Faculty Award for Scholarship and Service in 2013, and was awarded more than \$2.5 million in external grant funding.

Dr. Manizade is widely published in national and international academic outlets including, but not limited to, Educational Studies in Mathematics, Zentralblatt für Didaktik der Mathematik (ZDM) The International Journal on Mathematics Education, Education Sciences, Mathematics Teacher, International Perspectives on the Teaching and Learning of Geometry in Secondary Schools, and International Perspectives on Teaching and Learning Mathematics with Virtual Manipulatives. She has published more than 25 articles and presented at more than 75 professional conferences.

In addition, Manizade served as a Founding Director and is currently a co-Director of the Secondary Mathematics Professional Development Center. She also served as a Founder and Board President for a non-profit corporation, Radford Child Development Inc., which develops and supports high-quality child development programs.

She received her bachelor's degree and master's degree in mathematics from Baku State University, second master's degree from The College of William and Mary, and doctorate degree from University of Virginia.

Digitizing History: Digital Archives Showcase

Student Author(s): Amanda Dean, Imani Rose, Trey Vaughan, Lindsey Builta
Cassidy Leonard, Amber McMillan, Clint Eaton, Pete Troia

Faculty Mentor(s): Sharon Roger Hepburn

9:45 am – 10:45 am

Heth 014

This project was completed for History 400: Digital Archives. Students worked directly with archival materials and digitized them, creating a website. By performing a transcription of the documents, students receive hands-on experience with historical documents, their handwriting and their language. This semester's compilation of transcribed documents includes a series of letters written by Mary Spink, widow of George Spink. The letters are located in the National Archives and Records Administration in Washington, D.C.. George Spink was a member of Company D, 2nd Rhode Island Infantry Regiment. These letters were written in an attempt to obtain a widow's pension. The Stonewall Brigade Museum, located in Verona, Virginia, holds a collection of materials for Frank Thomas Holt, Jr.. HIST 400: Digital Archives digitized this collection. Holt served in the 116th Infantry Virginia National Guard during World War I.

Art History Showcase: Censorship and the Arts

Censorship and the Arts

Student Author(s): Brandon Crawford

Xale Manhertz

Jasmine Rivera

Eddie Umana

Chayla Downer

Madeline Murchie-Beyma

Maya Smalls

Jordan Via

Austin Eva

Marcus Reed

Christian Torres-Cruz

Sonia Wu

Faculty Mentor(s): Roann Barris and Carlee Bradberry

2:30 pm – 3:30 pm

Heth 016

Is censorship an ethical issue? Not always. When is censorship an ethical issue? The students in ART/CORE202, Ethical Reasoning and the Visual Arts, will try to answer this question by looking at recent examples of censorship in the arts. Along the way, we will analyze your "ethical personality" so come and find out where you stand in the world of ethical reasoning. Some of the examples: a flag project at the University of Kansas; threatened removal of art from a gallery in Washington DC; a call for the removal of a painting of Emmett Till from a museum in NYC...and many more...

Anthropological and Biological Sciences Primatology Oral Session**Lemurs In the Rain****Student Author(s)** Alexandra Wilson, Justin Wood, Kyle Putman, Matthew Donathan**Faculty Mentor(s)** Cassady Urista**2:00 pm****Heth 022**

This paper examines and researches the amount of time captive Lemur Catta spend grooming or carrying out aggressive behaviors towards another. These behaviors can allow insights in to the behaviors and hierarchy of the lemurs. We spent six hours collecting data from the North Carolina Zoo, recording all occurrences of grooming and aggression between the three ring-tailed lemurs. Due to bad weather the recorded behaviors were not as we expected but still followed the social nature of these lemurs.

Dominance hierarchies and territorial boundaries between Lemur catta and Varecia rubra**Student Author(s)** Tyler Miller, Jack Williams, David Kleppinger**Faculty Mentor(s)** Cassady Urista**2:15 pm****Heth 022**

Interspecies interactions between Varecia rubra and Lemur catta are not typically seen in the wild, but the two species are commonly grouped together in captive settings. In order to investigate the interaction in this habitat, a study was done on a captive population of two Varecia rubra and three Lemur catta at the North Carolina Zoo, North Carolina, USA. The goal was to investigate the possibility of a dominance hierarchy between the groups as well as determine any possible territorial boundaries. To do this, an all occurrence sample was done for length of time occupying an area as well as aggressive behavior between two groups. Based on the data recorded, the red ruffed lemurs (Varecia rubra) were the dominant species, with their territory spanning the south-eastern and central parts of the enclosure. The red ruffed female was recorded as being the most dominant member of the five subjects based on aggressive interactions between individuals. The ring-tailed lemurs (Lemur catta) remained on the northern half of the island, and routinely fled from both red ruffed lemurs if competition for food arose. There was a clear delineation in territory and dominance between the two groups that effectively demonstrates the social relationship between the two species.

Grooming and Aggression in One Male Units of Hamadryas Baboons (Papio hamadryas) at the North Carolina Zoo**Student Author(s)** Katherine Harris, Aubree Marshall, Jessica Wollmann, Allanah Cross**Faculty Mentor(s)** Cassady Urista**2:30 pm****Heth 022**

Baboons are complex social creatures. They depend on affiliative and aggressive behavior to interact with those within and surrounding their group. Units are formed from a single dominant male that is surrounded by several reproductive females, and their juveniles. These units will then merge to form a band. By studying the affiliative and aggressive behaviors between members of a single unit and amongst a band, a picture of the social interactions will form. Two consecutive days of observations were taken of the baboon troop housed at the North Carolina Zoo, observing a single male unit for a set length of time then switching, to create 12 observation periods. All events of both grooming and aggression within the group were recorded. As a stress relief valve, grooming has developed as a means to restore potentially damaged relationships following a bout of aggression, by both males and females. The purpose of this study was to determine if grooming is a pre-aggression behavior as well.

Anthropological and Biological Sciences Primatology Oral Session**Aggression and Group Dynamics in Captive Hamadryas Baboons (*Papio hamadryas*)****Student Author(s)** Sadie Friend, Caleb Kipps, Allyssa Ghans, Selena Angel, Julia Yoder**Faculty Mentor(s)** Cassady Urista**2:45 pm** **Heth 022**

The purpose of this study is to identify the frequency and classification of aggressive behaviors in intergroup vs intragroup interactions among a captive Hamadryas baboon population. It was conducted on the resident population at the North Carolina Zoological Park, using all occurrences sampling of aggression and recording aggressor, aggressed, life stage, sex, and classification. Based on previous studies, it is expected that there will be a higher number of male intergroup interactions and female intragroup interactions. In our study it was found that the majority of aggressive interactions involved the female baboons, as opposed to the background research, but this is largely due to the weather conditions encountered on the day of observation.

The Effects of Mother-Juvenile Relatedness on Interactions and Proximity**Student Author(s)** Kara Keesey, Alexa Stapleton, Josh Howard, Cheyenne McCleese**Faculty Mentor(s)** Cassady Urista**3:00 pm** **Heth 022**

Gorilla mothers have a large impact on not only the survival of their young, but also their behavioral growth and development. Mothers influence offspring through several different behaviors, such as grooming, weaning, and general time spent with their young. Female gorillas tend to be peripheral to the group, often doing no more than tolerating other females' offspring. In our study, we looked at the North Carolina Zoological Park's gorilla population. We studied their behavior to see if there was a difference in the interactions a mother has with her offspring, compared to the interactions with the juveniles that are not her own offspring. We recorded their proximity as well, in defined terms of Far, Nearby, and Close. Our hypothesis that mothers would spend more time with and around their related juveniles was proven false and the time spent and proximity was completely dependent on the individual mother.

Correlation Between Blackback Behavior and Group Interactions in Captivity**Student Author(s)** Margo Lobins, Camille Hamway, Bryce Kuehn, Sierra Bradley**Faculty Mentor(s)** Cassady Urista**3:15 pm** **Heth 022**

The present research describes an observational study involving gorillas at the North Carolina Zoo in Asheboro, North Carolina. Our research focuses on the group's single blackback male named Hadari. Hadari is in the unique position of being unrelated to all other group members, and unable leave the group now that he has reached adolescence as he would in the wild. We used focal animal sampling for a period of eight hours in order to determine which demographic of the group Hadari associates with most. This information allows us to draw conclusions about the unusual role he occupies in the gorilla social structure. We found that the vast majority of Hadari's time is spent with the silverback in the group, but they did not interact directly. He spent the second most amount of time with the younger juveniles and he had almost no interactions with the females of the group. This indicates that despite being unrelated to the group, Hadari may have taken on the role of an adult male, preparing to take over for the silverback, and only playing with the subadult group members as the adult male in wild groups would.

Anthropological and Biological Sciences Primatology Oral Session**Affiliative Social Interactions Between Adult & Juvenile Female Chimpanzees****Student Author(s) Amber McMillan, Miracle Davis, Bailey Mitchell, Jacob McCoy****Faculty Mentor(s) Cassady Urista****3:30 pm****Heth 022**

In this study, the social interactions of female chimpanzees were investigated; specifically, female-female and female-juvenile interactions. A team of four researchers observed a captive chimpanzee population living at the North Carolina Zoo in Asheboro, NC; two groups of two researchers apiece were each assigned to one female chimpanzee to observe for that day and collected six hours of diary-style focal animal samples on their respective primate. The two observed chimpanzees were a 20 year old adult female and a seven year old juvenile female. Following data collection, the focal animal samples were analyzed by the research team to determine what, if any, affiliative interactions took place between the observed individuals and other female chimpanzees, as well as the frequency of affiliative behaviors. Noted affiliative interactions included grooming, play behavior, and prolonged close proximity to another individual. The data suggested mostly asocial behavior from the adult chimpanzee, except for some grooming with a small group of individuals, which only included one other adult female. Observations of the juvenile showed a profound preference to spend time with her mother, and occasionally other individuals that she had seen her mother interact with beforehand. These findings suggest that adult female chimpanzees are quite indifferent in their social behaviors toward other females, but when they do socialize with each other there appears to be preferences for socializing with certain individuals. As for the juvenile, her behavior suggests that there is a very strong bond between mother and offspring, where the mother serves as the model of social behavior for the juvenile. There were some confounding variables that influenced the behavior of the observed chimpanzee population, so the study is imperfect, but its results may hold implications for the nature of female chimpanzee social behavior. This is particularly important because much less research has been conducted on female chimpanzee sociality than that of their male counterparts.

Adult and Juvenile Chimpanzee Activity in Arboreal and Terrestrial Environments**Student Author(s) Erin Dimino, Jasemine Brown, Bernice Adjaloko****Faculty Mentor(s) Cassady Urista****3:45 pm****Heth 022**

This study follows the activities of adult and juvenile chimpanzees at the North Carolina Zoo. The actions of the chimpanzees were monitored to determine whether they spent more time in arboreal or terrestrial environments and also if their age played a factor in that. Scan sampling was utilized in thirty second intervals to collect the data throughout the five hours. It was seen that chimpanzees spend more time in terrestrial environments. It was also seen that juvenile chimpanzees spent more time in arboreal environments, while adult chimpanzees spent more time in terrestrial environments. Although, the weather may have played a factor in the results collected for the day, due to the fact that it rained consistently during the entire study.

History Oral Session: Soviet World War 2

An Examination Of The Soviet Union During World War II

Student Author(s) Kaitlyn Partanen

Faculty Mentor(s) Suzanne Ament

2:30 pm – 2:50 pm

Heth 044

On the eve of World War II, the Soviet Government conducted a systematic purge of the Red Army. By 1940, over 22,000 military officers of various positions and ranks were deposed. This initial loss in man-power and leadership is often seen as the reason why Soviet casualties were so high during the beginning of the war. However, the Red Army was never a capable, professional military organization. It was plagued by poor leadership, inadequate training, and a critical shortage of provisions. More than anything else the Red Army was hampered by the Communist State's decisions from the early 1920s. Officers promoted during the Russian Civil War were often Bolshevik Party members who had no experience or proper training. Additionally, the Tsarist Military Specialists (voenspetsy) brought into the army were often viewed with suspicion, and the voenspetsy push for a modern military was met with great opposition by communist party members in the government. Stalin, and his followers caused many problems for the Red Army. While the military purges of 1937-1939, did influence the conditions in the Red Army, those effects are overstated. Many of the commanders purged in the first place had little battle experience and military training. Some of them would even return to serve during the second world war. By over stating the effects of the Military Purge, we are underselling the monumental obstacles that the Red Army had to overcome in order to defeat Nazi Germany.

The Battle of Kursk 1943: Turning the Tides on the Eastern Front

Student Author(s) Zachary Paul

Faculty Mentor(s) Suzanne Ament

2:50 pm – 3:10 pm

Heth 044

The Battle of Kursk involved more than seven thousand tanks, four thousand aircraft and nearly three million men pitted against one another on a plane of blood, fire, and steel. While this engagement has come to be known as the most colossal tank battle ever there remains a lack of recognition for how important Kursk really was. In the search for what truly turned the tide on the eastern front many historians have concluded over the years that the turning point of the war was the Battle of Stalingrad. While Stalingrad played a major role, it did not bring about the end of German offensive capabilities on the eastern front. Germany was in no way out of the war after Stalingrad, but in many cases proved to be a more potent threat in early 1943, after winning a few key counteroffensives and bolstering the size of its army. The battle of Kursk was the definitive economic, political, and military turning point on the eastern front, permanently ending any offensive capabilities of the Germans while thrusting the offensive initiative firmly in the hands of the Soviet Union. By analyzing the events from Stalingrad and the winter offensives of 1942-1943, to the planning and execution of the battle for Kursk with its immediate counter-offensives in the summer of 1943 it will be clear just how pivotal Kursk would become for the war effort on both sides.

Biology Oral Session

Perspectives and Pollutants: an Interdisciplinary Approach to examining EDCs Impact in Aquatic Environments

Student Author(s) Kristina Wade, Alex Atwood, Abbey Ouellette

Faculty Mentor(s) Christopher Monceaux and Sara O'Brien

3:30 pm - 3:50 pm

CS M073

Trenbolone (tren) is a synthetic steroid that is used in the United States as a growth promoter in beef cattle (Ankley et al., 2003). It is also known to occur and persist in the environment, often in agricultural runoff. Our lab has focused on exploring the effects of tren as an endocrine disrupting chemical in aquatic environments, specifically examining how it effects the morphological, behavioral, and breeding characteristics of mosquitofish (*Gambusia holbrooki*). Recen lab research has found that tren masculinizes female fish. My project has focused on the metabolization and degradation of tren in aqueous environments. Comparative techniques of LCMS and HPLC are used to optimize identification and quantification of tren in water and tissue samples. Our work will be used to apply these techniques to exploring field samples in the future as well as identifying and quantifying other environmental pollutants.

Neutrophil/Lymphocyte Ratio as a Measure of Immune Response in Humans Exposed to Novel Microbiomes

Student Author(s) Aubree Marshall, Haley Mullins

Faculty Mentor(s) Jason Davis and Cassady Urista

3:50 pm - 4:10 pm

CS M073

Much research has been done on the long-term adaptive consequences of migration; however, less attention has been focused on short-term health effects of human travel. When traveling, individuals may experience new environments and new microbiomes that impact their health. While this travel might be short-lived, there may be longer-term consequences. What happens to an individual's immune response when they are introduced to a new environment? How might this impact immigration patterns and spread of disease across native and immigrant populations? This research examined the physiological changes that a group of 16 North Americans in 2017 and 15 individuals in 2018 experienced while traveling in the Peruvian Amazon, as well as 9 individuals in 2019 while traveling to Patagonia, Chile. Specifically we examined weight, body temperature, and neutrophil/lymphocyte ratio. These variables were measured before the expedition, at the end of the expedition, and after their return to the United States. All collected data was analyzed using ANOVA and PCA. Initial results suggest an increase in immune response without any documented illness and potential negative correlations between immune activity and weight loss. This may suggest that the human body will initiate an immune response simply from exposure to a novel microbial environment, not solely in response to illness.

Biology Oral Session**Comparing Survey Methods to Maximize Allegheny Woodrat Occupancy Detection in Virginia, 2017-2018****Student Author(s)** Karissa Ellis**Faculty Mentor(s)** Karen Powers**4:10 pm - 4:30 pm****CS M073**

Allegheny woodrats, *Neotoma magister*, are a Tier IV species in the Virginia Wildlife Action Plan. A 1990-2000 study showed that Allegheny woodrat populations throughout western Virginia and West Virginia were in a steady decline. Woodrats are an elusive nocturnal species that have suffered population declines due to habitat fragmentation, genetic isolation and additional community-level stressors. To determine the most efficient method(s) of monitoring this species, we completed surveys at historically known or suspected to house Allegheny woodrats throughout western Virginia from late May through October, 2017 and 2018. We deployed paired camera traps and Tomahawk traps at 46 sites across the 2 years: 31 sites in 2017, and 15 new plus 22 revisited sites in 2018. We pooled data from both years to estimate probability of detection and site occupancy using package unmarked in Program R. The aim of this study was to assess the contemporary distribution of Allegheny woodrats in the Central Appalachians and to compare detection efficiency between trapping methods. Results showed wildlife cameras are best for determining occupancy at sites. Additionally, site conditions that influenced the probability of detection on our top occupancy model was low temperatures coupled with low rainfall. Past studies indicated occupancy was higher at sites nearest to other known occupied sites; however, our study indicated no relationship. If determining detection is the sole purpose, wildlife cameras are the most efficient. However, microhabitat conditions that influence trap method success and demographic studies will continue to require the use of live trapping.

Parental investment in nest defense varies by species and nest stage**Student Author(s):** Nolen Miller and Layne DiBuono**Faculty Mentor(s):** Sarah Foltz**4:30 pm - 4:50 pm****CS M073**

Life history traits act as a species' plan for survival and reproduction. Any traits or behaviors that increase a species reproductive capability will be selected for. This study aimed to understand parental investment of two cavity nesting species, eastern bluebirds (*Sialia sialis*) and tree swallows (*Iridoprocne bicolor*), across incubation and nestling stages. We hypothesized that tree swallow parents would be more aggressive over all, and that both species would be more aggressive in the nestling stage than in the incubation stage. We measured parental aggression by collecting data on the number of dives, alarm calls and beak clicks. The results are based off of two years of studying data from two populations of eastern bluebirds and tree swallows near Radford, Virginia. Our preliminary results showed that tree swallows are on average more aggressive than blue birds. Tree swallow aggression does not change significantly across nesting stages, but the aggression of eastern bluebirds increases during the nestling stage. This difference in aggression can may be explained by differences in the length of the breeding season between the two species. Bluebirds have a longer breeding season and can attempt multiple nests in the same season, while tree swallows have a shorter breeding season, allowing for only one nesting attempt in a given year. This difference in breeding season duration makes it so that tree swallows have more to lose if their nesting attempt fails.

Creative Writing Showcase**Elsewhere**

Student Author(s): Alexander Burnley, Abigail Bailey, Cassidy Shepherd
Karrah Davidson, Brandon Moore, Austin Lumpkin

Faculty Mentor(s): Rick Van Noy

4:30 pm – 5:30 pm

Heth 022

“Every man, every woman, carries in heart and mind the image of the ideal place, the right place, the one true home, known or unknown, actual or visionary.” For Edward Abbey, it was Moab, Utah. For us, it is elsewhere. There’s a term in climate change called downscaling. It’s basically taking climate models, global information, and bringing it down to the local level. We do that in a different kind of way, using narrative, personal experience, techniques of creative nonfiction. From another of our readings, *The View From Lazy Point* by Carl Safina, “Asking ‘what is the meaning of life?’ is the wrong question . . . The question is, ‘Where is the meaning of life?’” We ask where.

We propose readings from personal essays developed in English 454: Environmental Literature

Interdisciplinary Oral Session

FMS Scores Among Brazilian Jiu-Jitsu Athletes in Correlation with Rank and Time in Sport

Student Author(s) Matthew Brisendine

Faculty Mentor(s) Melissa Grim, Angela Mickle, David Sallee

4:30 pm – 4:50 pm

Heth 043

The sport of Brazilian Jiu-Jitsu (BJJ) demands unique fitness and mobility requirements, but can also lead to injuries due to the nature of the sport. It is expected that the scores of the FMS will improve in tandem with the advancement through the rankings. In addition it is also anticipated for there to be a noted asymmetry in the shoulder mobility test among all ranks above the White belt. The purpose of this study is to explore a possible relationship among the Functional Movement Screening (FMS) scores of BJJ athletes and their rank and time in sport. The study involves 25 BJJ Athletes ages 18-50 years old. The participants were grouped into five divisions based on the five belt rank colors in BJJ: White, Blue, Purple, Brown and Black. After recruitment the participants will be put through the seven movements of the FMS, and their individual movement scores and total composite score will be recorded. Data will be collected in March. With BJJ increasing in popularity over the years it will be useful to learn if FMS can be used to detect deficiencies and asymmetries that could be remedied to prevent injury in the sport.

Influence of Knowledge on Perceived Exertion with Blind Resistance Exercise

Student Author(s) Ian Niday

Faculty Mentor(s) Melissa Grim

4:50 pm – 5:10 pm

Heth 043

In physical therapy rehabilitation, many patients who are post-surgery are told by their healthcare provider to lift only a “light load” or “X” pounds to prevent them from injuring tissues that are in the process of healing. However, it is not clear if patients’ perceptions of weight are accurate in order to follow this advice. The purpose of this study is to determine if a person’s perception of weight is accurate. To test this question, 30 of college-aged men and women who exercise less than 3 days per week will first have their 4-8 repetition maximum on bench press recorded. As they build to their 4 to 8 rep maximum, their rate of perceived exertion on a 1-10 scale (RPE) will be recorded. On subsequent days, subjects will be asked to lift a weight that is calculated to be 40% of their 1 repetition maximum and then 60% on another day. They will be blinded to the weight they are lifting and asked to rate their RPE for both testing sessions. The results will be recorded and compared to what they stated was their RPE at 50% on day one. It is hoped that the results will help determine how accurate a person’s perception of weight lifted is. The data will be collected in March and will be presented in April.

The Effects of Climate Change on Tourism in the Mid-Atlantic

Student Author(s) Allison Brennan and Mary Kate Thornburg

Faculty Mentor(s) Joshua Carroll

5:10 pm – 5:30 pm

Heth 043

Climate change is having significant impacts to many facets of everyday life, and the commercial recreation and tourism fields are many times at the forefront of these impacts as consumers are faced with making difficult decisions with discretionary income. Understanding how these impacts are changing the way people engage in recreation and tourism activities is essential to maintaining successful business and providing satisfying opportunities for consumers. This presentation will provide information from surveys with over 20 commercial recreation and tourism providers across the mid-Atlantic region. Summary information will describe their perceptions of how climate change is: affecting their business; having significant impacts; affecting economic outcomes; changing visitor behaviors; and what future trends in the discipline can be expected as a result of climate change.

Interdisciplinary Oral Session

Roots with Wings

Student Author(s) Amanda Burroughs, Shaylee Hodges, Cora Bland, Sharmaine Ramirez

Faculty Mentor(s) Melinda Wagner

5:30 pm – 5:50 pm

Heth 043

The media portrays Appalachia as a poor, undesirable, drug infested region. Because of this, outsiders often wonder why Appalachian people stay. What they don't understand is that Appalachian people have an intense, generational sense of place. To get a better understanding of Floyd County residents' sense of place, the Floyd Story Center at the Old Church Gallery, Floyd County High School (FCHS), and Radford University's Center for Social and Cultural Research collaborate on a Place-Based Education Oral History Project called "Roots with Wings." The goal of this project is to preserve the social history of a misunderstood and underrepresented region. This semester, four Radford University students worked with four FCHS teachers with guidance from Dr. Melinda Wagner and Ms. Catherine Pauley. By participating in this project, RU students earned course credit in SOCY 493 - Practicum in Sociology, and FCHS teachers earned points toward their relicensure. Together, the team interviewed Floyd County residents about the history of their community and documented the interviews through audio recordings and professional transcriptions. The interviews will be archived at the Floyd Story Center at the Old Church Gallery in Floyd. The presenters will share their experiences of learning about the methodology in cultural anthropology, interacting with Appalachian elders, and working with FCHS teachers.

The Oversexualization and Desexualization of Appalachian Women

Student Author(s) Amanda Burroughs

Faculty Mentor(s) Aysha Bodenhamer

5:50 pm – 6:10 pm

Heth 043

While we have made improvements from years past, gender inequality is rampant in our society as is indicated by the gender pay gap, rape culture, and the denial of sexual abuse survivors. How, then, are women expected to behave, and what consequences do these expectations hold? The purpose of this paper is to explore the contradiction of the simultaneous oversexualization and desexualization of women in Appalachia. How are these messages created and disseminated? Furthermore, how do women internalize and grapple with these messages in their own gender expression? This paper uses a qualitative meta-analysis approach, combining evidence from multiple scholarly articles to describe and deconstruct this contradiction and analyze how popular media has contributed to and perpetuates the negative stereotypes with which Appalachian women contend. Findings suggest that women in Appalachia encounter a form of gendered stereotyping that is unique to their region. In their youth, they are often characterized as daft, scantily clad, busty blondes that only serve as sexual stimulation for their male counterparts. As they age, women are faced with the common "barefoot and pregnant" stereotype, and later, they lose their sexuality completely. These labels can have lifelong effects.

Interdisciplinary Oral Session**Movement Matters!****Student Author(s) Eliza Green, Jennifer Blake****Faculty Mentor(s) Stirling Barfield and Kevin Bowers****6:10 pm – 6:30 pm****Heth 043**

Movement Matters is a short documentary designed to help others understand the mind-body connection. Through interviews of professors, therapists, and Radford University students, Eliza Green (Psychology) in collaboration with Jennifer Blake (Media Studies) will highlight concepts of the mind-body connection to show its importance in the healing process. They will also look at movement and how it can be used as a tool in the therapeutic setting. They will talk to a certified Dance Therapist and give us a glimpse into this emerging field.

Chemistry Oral Session

Method Development of Phosphite Using Ion Chromatography

Student Author(s) Patrick Webb

Faculty Mentor(s) Cindy Burkhardt

5:00 pm – 5:20 pm

CS M070

The determination and separation of phosphate species is very important in a variety of samples such as fertilizers, food and plant materials. Phosphite is a species of phosphate used recently in fertilizers for plants to prevent fungal growth on plants. Little analysis has been done on the separation of phosphite from other phosphorus based compounds but ion chromatography offers a simple and sensitive method for this application. This paper presents the development of an analytical method based on ion chromatography with anion suppressed conductivity detection.

Developing A Stimuli Controlled Drug Delivery System For Breast Cancer

Student Author(s) Kayla Leatherman and Hannah Pierce

Faculty Mentor(s) Kristina Stefaniak

5:20 pm – 5:40 pm

CS M070

The development of a stimuli-controlled drug delivery system for breast cancer was investigated using a nanoparticle peptide system which releases mock drug cargo in the presence of Cathepsin B. Current cancer therapies attack fast-growing healthy cells such as skin, hair, intestines, and bone marrow.¹ The purpose of this research is to develop a system that releases drugs only in the presence of Cathepsin B to ensure that only carcinoma cells are targeted. Overexpression of Cathepsin B is correlated with invasive and metastatic phenotypes in cancer which corresponds to the studies that have been shown using Cathepsin B.² From a literature search, 63 amino acids were found and analyzed to determine Cathepsin B cleavable peptide sequences.^{3,4,5} A consensus sequence of the highest occurring amino acids at the cleavage site was determined and position P1 was changed to the next highest occurring amino acid to generate additional sequences for analysis. Solid phase peptide synthesis was utilized to create a library of peptide sequences when attached to a gold nanoparticle. The system will be analyzed in the presence of Cathepsin B in order to determine their affinity for the release of free chemotherapeutic drugs.

Preparation of a glycerol-based carbon/iron nanocomposite for the removal of contaminants in aqueous systems.

Student Author(s) Justin Daniels

Faculty Mentor(s) Francis Webster

5:40 pm – 6:00 pm

CS M070

With increases in population and industrialism in the last century, clean water sources have become increasingly scarce, a situation most drastically felt in third-world countries. There is an ever-increasing need for research into the development of new, sustainable, and inexpensive materials for use in water purification. In this study, we report the development of a novel magnetic carbon/Fe₃O₄ composite for the efficient removal of lead, cadmium and organic dyes. The simple acid dehydration of glycerol was first used to produce carbon nanoparticles which were then co-precipitated with Fe²⁺ and Fe³⁺ under basic conditions to produce a magnetic carbon nanocomposite. Composite samples were analyzed by several techniques including scanning electron microscopy (SEM), attenuated total reflectance infrared spectroscopy (ATR), and thermal gravimetric analysis (TGA). SEM analysis indicated that the magnetic composites were precipitated as micron-sized platelets covered with nano-sized spherical particles, with a diameter of less than 50nm. This material was found to be an effective adsorbent for Pb²⁺, Cd²⁺, methylene blue with maximum adsorption values of over 100 mg/g, 70 mg/g and 300 mg/g respectively. The adsorption was, however, found to be pH dependent with decreasing adsorption amounts in more acidic solutions. The kinetics of adsorption was investigated, and the adsorption found to very rapid for lead and cadmium and much slower for methylene blue. The contaminants could be desorbed, and the material recycled several times with the solid easily removed with a magnet.

Chemistry Oral Session

Investigation of an Active Dimeric form of Beta-glucuronidase

Student Author(s) Jacob Britton

Faculty Mentor(s) Kimberly Lane

6:00 pm – 6:20 pm

CS M070

Beta-glucuronidase is an enzyme found within many different species of the gut microflora. It consists of four separate but identical subunits which assemble into a fully functional tetramer. This enzyme is found extensively in gut microbiota and plays a role in gastrointestinal disturbances during certain chemotherapy regimens. Experimental evidence suggests that beta-glucuronidase may have other active forms besides the tetramer such as catalytically active octamers and a 16-mer. Current findings also suggest that a dimeric form of catalytically active beta-glucuronidase may exist. While there is substantial evidence pointing to an active dimer, little is known about what properties such a dimer would possess. With the aid of molecular modeling software, we investigated what conditions would give rise to such a structure as well as its appearance. A variety of tools including induced mutations, stability and binding calculations were carried out on a model of the *E. coli* form of the enzyme. From this, we were able to investigate whether modification to certain characteristics of the tetramer would result in an active dimeric form. Our current work involves truncation of the subunits on their C-terminus end losing around a 3-4 kDa peptide chain and the effects on the subsequent stability of the tetramer and possible formation of the dimers.

Innovations in Forensic Science Oral Session

A Validation Study of the huMANid Program for Estimating Ancestry and Sex of Unidentified Prehistoric and Historic Human Remains

Student Author(s) Ashley Dawson

Faculty Mentor(s) Donna Boyd

8.00 am

Heth 022

Prehistoric and historic human remains often suffer from poor preservation, with only jaws and teeth intact, making an assessment of the biological profile (e.g., sex, ancestry, age) for these individuals difficult. Berg (2015) has presented a discriminant function-based software program for estimation of the ancestry and sex of unidentified forensic (modern) remains from the mandible. His software also includes data for prehistoric and historic populations. However, this technique has not been fully tested on more ancient populations. The goal of the current research is the validation of Berg's mandibular technique on a sample of southwest and central Virginia prehistoric and historic human remains, respectively. Morphoscopic and metric variables are recorded from a statistically valid sample of mandibles from each of these populations. Ancestry and sex are tested through the use of Berg's mandibular software to validate its accuracy for use in poorly preserved prehistoric and historic populations.

The Effects of Diabetes Mellitus on Bone Fracture Susceptibility and Repair: Application to Forensic Abuse Case Evaluations

Student Author(s) Sadie Friend

Faculty Mentor(s) Donna Boyd

8.10 am

Heth 022

Previous research has shown that diabetes can result in deleterious effects upon the elderly skeleton, including impaired bone healing, increased risk of fracture, poor bone regeneration, and uneven distribution of bone mass similar to outcomes seen in osteoporosis. This study examines the effect of Diabetes mellitus (DM) on bone and its risk of fracture in both accidental and non-accidental (e.g., abusive) forensic contexts. The goals of this research are to identify the bony signatures of diabetes, determine whether they can be differentiated from those of osteoporosis, and evaluate whether they increase fracture risk in diabetics. To conduct this study, internal bone structure will be macroscopically and microscopically examined (with the aid of the RU Forensic Science Institute's (RUFISI) Keyence digital microscope at 5-200 magnification) from known skeletal collections containing diabetic individuals (including RUFISI casework and the UT Bass Collection). This research will aid in improving the forensic analysis of bone affected by DM, including fracture analysis and time since injury estimations, since diabetes may be one of the variables that complicate interpretations of trauma. This project is also significant for the field of forensic anthropology because the impact of DM on fracture risk and fracture manifestation in the elderly population (both abused and non-abused) has yet to be studied from a forensic anthropological perspective.

Innovations in Forensic Science Oral Session

Effect of Repetitive Saw Use on Identifying Tool Mark Characteristics in Bone

Student Author(s) Tyler Miller

Faculty Mentor(s) Donna Boyd

8.20 am

Heth 022

Recovery of forensic human remains in outdoor crime scenes can be problematic, particularly if the remains are fragmentary and field conditions are not optimal. Saraldahab and Christensen (2015) have explored the initial use of an Alternate Light Source (ALS) to aid in recovery of human remains. The amino acids tyrosine and tryptophan are found in bone and cause fluorescence when exposed to an ALS. However, these chemicals degrade with exposure to UV light and therefore may affect the use of ALS on bone that has been exposed to the UV rays of the sun for long periods of time. The current research tests the relationship between fluorescence and time, with the hypothesis that fluorescence will decrease with increasing exposure time. Two heat lamps will expose two sets of 30 porcine ribs to UV light. One lamp will emit only UV radiation; the other will emit both radiation and heat. Rib samples will be exposed to ALS at 450nm wavelength and examined in weekly intervals. Photographs will be taken of the ribs in a dark room and the resulting fluorescence converted to a number on the RGB scale. Results will test the efficacy of this method for identifying human remains undergoing long term UV exposure.

Sexual Dimorphism of the Supra-orbital Foramen

Student Author(s) Pearl Moore

Faculty Mentor(s) Donna Boyd

8.30 am

Heth 022

An important goal of Forensic Anthropology is the estimation of a biological profile for a human decedent. The determination of a biological profile requires knowledge of sexually dimorphic differences between males and females, and the many features that can be seen on the human skeleton that differ in males and females. While prior studies have explored the many different sexually dimorphic features between the sexes, the variation of the supra-orbital foramen of the frontal bone between males and females has not been explored. The goal of this study is to determine if there are sexually dimorphic differences in the shape and position of the supra-orbital foramen. It is hypothesized that there will be variation of the supra-orbital foramen between males and females because of the robusticity of the superciliary arches seen in males, as well as the varying position of the supra-orbital nerve bundles. Independent estimation of sex of the frontal bones used will be determined using the superciliary arches and supra-orbital margins of the frontal bones, along with various other standard estimation methods if available. The supraorbital foramen of the frontal bones of males and females will be measured with sliding calipers for maximum height, width, and distance from the supra-orbital margins of the eye orbits. Each measurement will be placed into different tables, divided by sex, and analyzed using the SPSS statistics program. Important insight into the estimation of sex from highly fragmentary crania is offered through this research.

Innovations in Forensic Science Oral Session

The Influence of Fabric on Sharp Force Trauma Signatures on Bone

Student Author(s) Amy Rogers

Faculty Mentor(s) Donna Boyd

8.40 am

Heth 022

The research is focused on the effect of fabric on cut marks left on bone. Sharp force penetrative trauma often must travel through an intermediary target (e.g. clothing) before it reaches bone. The effects of this intermediary target on sharp force trauma signatures on bone are not known. The goal of this research is to examine the effect of different kinds of fabrics (e.g., denim) on sharp force trauma cut marks in bone. It is hypothesized that the more dense the fabric, the more obscure the cut mark will be. A statistically valid sample of porcine ribs will undergo sharp force trauma at a standardized location via a constructed drop force mechanism (utilized to keep the force consistent). Resultant sharp force cutmarks will be labeled, measured (length, width, and depth measurements) and compared across all fabrics as well as the control (a rib tested without fabric). This research will assist forensic anthropologists in their trauma interpretation by providing a clearer understanding of the effect of fabric on sharp force trauma and will be helpful with clinical cases that involve sharp force trauma.

Metric Assessment of the Patella for Sex Estimation of Unidentified Decedents

Student Author(s) Victoria Cristwell

Faculty Mentor(s) Donna Boyd

8.50 am

Heth 022

Forensic identification of unknown decedents can be difficult in the absence of preserved crania and innominate elements. The patella offers an alternative method for estimating the biological profile of an unknown decedent. The patella forms within the tendon of the quadriceps muscle; therefore, it possesses sexually dimorphic traits observable through metric assessment. Sexual dimorphism for the patella relates to differential cartilage volume and articular surface areas of the femur and tibia across males and females. Early and recent studies formulated methodological approaches for estimating sex from the patella using Discriminant Function Analysis (DFA). The goal of the current research is to validate these methodological approaches and assess their accuracy for estimating sex. Eight unfractured and non-pathological left and right patellae from the Hogue Native American prehistoric burial site in Southwest Virginia and the Robinson historic African American slave burial site in central Virginia comprise the sample. Patellar measurements reflecting body weight, body height, and other patellar dimensions are taken with the use of sliding calipers. Statistical comparison of these patellar measurements via DFA produces quantitative results estimating sex for individuals from each of these populations. This research further validates the function of the patella beyond simply a protector of our knee joint and lever of the quadriceps femoris muscle. The patella produces a useful application aiding forensic anthropologists during forensic case analysis of the biological profile of unknown human remains in a forensic setting.

Innovations in Forensic Science Oral Session

The Effect of Soil Acidity on the Rate of Bone Decomposition

Student Author(s) Cristian Torres-Cruz

Faculty Mentor(s) Donna Boyd

9.00 am

Heth 022

This project examines the relationship between soil acidity and the rate of bone degradation. Although temperature is often noted as the most important variable influencing human decomposition, other environmental variables play a significant role. Soil acidity has been noted as important factor that can affect decomposition of a human body (U.S. Department of Agriculture 2012; Trovillo 2015); however, the amount of time for this pH-related degradation to occur is unknown. The current study will focus on the effect that soil acidity has on bone deterioration. Soil acidity will be measured by soil pH level. The question being asked is simply at what pH level does bone start to degrade the most? The hypothesis being tested is that more rapid deterioration of remains will occur in more acidic soils. A large sample of porcine ribs will be buried under varying levels of soil pH and monitored over a period of five weeks. These ribs will be scored for their degree of deterioration and correlated with their pH environment. Results of this experiment will provide forensic anthropologists with a clearer understanding of the effect of soil pH on decomposition rate of bone.

Legibility of Handwriting Based on Robusticity

Student Author(s) Jessica O'Connor

Faculty Mentor(s) Donna Boyd

9.10 am

Heth 022

Hand robusticity is believed to affect handwriting legibility; however, forensic questioned document examination research has not yet validated this correlation. The current research explores this correlation and has the following hypothesis: as hand robusticity increases, legibility of handwriting decreases. A total of 30 measurements from 60 male subjects' dominant hand will be collected to reflect overall robusticity of their hands. A six-question survey will be administered to these same subjects; two sentences will be requested to be written in their everyday handwriting. These sentences will then be analyzed by five students, allowing for more than one analysis of handwriting to be provided, scaled for the legibility of the handwriting on a scale of one to five, then analyzed statistically to calculate the probability of more robust hands having lower legibility rates. Error rates will be calculated to ensure the validity of the results. This research is important for the forensic field because it offers insight into a possible correlation of handwriting legibility with hand robusticity, allowing for a more detailed profile of an unknown criminal profile.

Innovations in Forensic Science Oral Session

Assessment of Handedness From Measures of Hand Robusticity

Student Author(s) Jessica O'Connor

Faculty Mentor(s) Donna Boyd

9.20 am

Heth 022

Approximately 5% of the U.S. population is left-handed. Determination of handedness, particularly in decedents who were left-handed, can aid in identification of these unknown individuals in a medicolegal setting. Prior research has suggested that hand bone robusticity reflects a person's handedness. The question being researched for this study is if it is possible to determine if a person is left or right handed through statistical analyses of the robusticity of his or her hands. It is hypothesized that the predominant hand used (e.g., in handwriting) will display indicators of greater robusticity compared to the less dominant hand. A sample size of a minimum of 60 participants will have both their left and right hand measured; these individuals will be asked six survey questions regarding self-identification of handedness. A total of 30 measurements will be taken of each hand after the survey questions are answered. Statistical comparison of these measurements and survey responses will allow testing of the relationship between hand robusticity and handedness. This research can offer important information and insight for the anthropological and forensic sciences by allowing the bones of the hand to be used to aid the identification process of missing individuals.

Vegetation Associated with Covert Grave Sites in the Humid Subtropical Climate of Southwest Virginia

Student Author(s) Jack Williams

Faculty Mentor(s) Donna Boyd

9.30 am

Heth 022

Botanical evidence has the potential to help identify covert grave sites and determine the post-mortem interval (PMI). Prior research has shown that pH level of the soil and vegetation growth are influenced by the presence of human decomposition. These changes can be theoretically utilized to locate and identify covert graves. This research will focus on what types of vegetation grow in association with covert graves and when they appear to more reliably identify covert graves and estimate PMI. A statistically valid sample of animal carcasses will be interred in the humid subtropical climate of southwest Virginia, which is the climate seen in most southern regions of the United States. These burials will be monitored at standardized intervals. Dominant botanical species associated with the covert graves will be documented and their times of appearance noted. An independent observer, with no knowledge of the location of the covert graves, will attempt to locate the graves and determine the PMI based on the initial botanical results. This research will assess the utility of gravesite botanical forensic evidence in locating covert graves and determining PMI.

Innovations in Forensic Science Oral Session

Detection of Covert Human Remains Through Vegetation and Soil Analysis in a Forensic Setting

Student Author(s) Jack Williams

Faculty Mentor(s) Donna Boyd

9.40 am

Heth 022

Forensic Taphonomy and Forensic Botany have often focused upon the impact of human decomposition upon local soils and vegetation growth. Pokines and Baker (2014) report that initial body decomposition results in a rapid influx of organic acids, followed by a decrease due to base ions. Nutrient recycling eventually leads to a return to acidic conditions and a postponement of acidic soil corrosion; however, the exact timing of this reaction is unknown. The current research will analyze changes in soil pH and vegetation growth rates with the introduction of decomposing remains. Animal carcasses will be interred under plants in a controlled environment (such as a greenhouse). Vegetation growth will be recorded, as will pH levels on the soil, and compared to a control. This research will assist in detection of covert human remains and lead to a more accurate determination of a post-mortem interval (PMI) in death investigations, using only flora.

Rib Fracture Patterns in Decedents Undergoing High Velocity Blunt Force Impact

Student Author(s) Alexandra Wilson

Faculty Mentor(s) Donna Boyd

9.50 am

Heth 022

Although much research in forensic anthropology has focused on the effects of blunt force trauma (BFT) upon bone, the majority of this research has centered upon slow-loading BFT. There has been little attention paid to high velocity BFT and its trauma signatures. The current study is conducted to aid in the identification of rib fracture patterns in cases of high speed impacts. This will allow for crash investigators to better reconstruct crash details and aid in the determination of the main impact point in the rib cage. In this study, a statistically valid sample of porcine ribs is used as a model for human ribs and tested with the force equal to that of a high speed car crash. The research design imitates a crash where the airbag did not inflate, causing impact with the dashboard or other solid impact without a chest restraint. Results of this research will aid in the identification and interpretation of high velocity Blunt Force Trauma in a medico-legal setting.

Survivability of Fingerprints when Submerged in Fresh Water and Bleach

Student Author(s) Erin Dimino

Faculty Mentor(s) Donna Boyd

10.00 am

Heth 022

In forensic science, fingerprints are used to identify individuals that may have been involved in a crime. Many people are under the impression that fingerprints can be destroyed by simply submerging them in a liquid. The objective of this research is to determine how long fingerprints will survive if they are submerged in fresh water and bleach. Over the span of this research project, 30 tools knives will be imprinted with fingerprints and submerged in in fresh water or bleach. Sample 1 consists of 15 samples with fingerprints submerged in fresh water. Sample 2 consists of 15 samples with fingerprints submerged in bleach. Fingerprints will be lifted every 4 days until the fingerprints are no longer visible. This investigation will provide investigators with a time interval for fingerprint survivability after recovery from different aqueous environments.

Innovations in Forensic Science Oral Session

The Use of an Alternate Light Source in the Detection and Recovery of Forensic Human Remains

Student Author(s) Tyler Miller

Faculty Mentor(s) Donna Boyd

10.10 am

Heth 022

Recovery of forensic human remains in outdoor crime scenes can be problematic, particularly if the remains are fragmentary and field conditions are not optimal. Saraldahab and Christensen (2015) have explored the initial use of an Alternate Light Source (ALS) to aid in recovery of human remains. The amino acids tyrosine and tryptophan are found in bone and cause fluorescence when exposed to an ALS. However, these chemicals degrade with exposure to UV light and therefore may affect the use of ALS on bone that has been exposed to the UV rays of the sun for long periods of time. The current research tests the relationship between fluorescence and time, with the hypothesis that fluorescence will decrease with increasing exposure time. Two heat lamps will expose two sets of 30 porcine ribs to UV light. One lamp will emit only UV radiation; the other will emit both radiation and heat. Rib samples will be exposed to ALS at 450nm wavelength and examined in weekly intervals. Photographs will be taken of the ribs in a dark room and the resulting fluorescence converted to a number on the RGB scale. Results will test the efficacy of this method for identifying human remains undergoing long term UV exposure.

Quantification of Nicotine in e-Cigarette Cartridges

Student Author(s): Leslie Molina-Arana

Faculty Mentor(s): Kristina Roth Stefaniak and Donna Boyd

10.20 am

Heth 022

From 2011 to 2017, the number of high school students who participated in vaping increased from 1.5% to 11.7%.¹ Vaping is the act of inhaling and exhaling the aerosol produced by a designated device like an e-cigarette. These devices can contain a higher amount of nicotine by volume of liquid than traditional cigarettes. The higher amount of nicotine can cause nicotine poisoning, especially for unexperienced smokers. For example, someone who is not use to smoking cigarettes and gets the wrong “dosage” can end up with nicotine poisoning which can lead to death. The purpose of this study is to quantify the amount of nicotine in vaping liquids and compare the results to advertised values. Different brands may contain different amounts of nicotine due to different propylene glycol to vegetable glycerin ratios that can alter the nicotine content. The reasoning behind this study is to verify that the advertised values correspond with the actual values. The Gas Chromatography Mass Spectrometer (GCMS) is used to quantify the nicotine in two different brands of vaping liquid. A standard curve is created with nicotine standards within the range of 50 ppm to 1000 ppm. This is used to quantify the nicotine content in the different brands of nicotine fluid. This study will increase public awareness of the hazards of vaping consumption and the need for regulation of and accountability for vaping ingredients by manufacturers.

Innovations in Forensic Science Oral Session

Location Accuracy of Bluetooth Apple Watch Devices

Student Author(s) Alexandra Wilson

Faculty Mentor(s) Donna Boyd

10.30 am

Heth 022

The widespread use of personal digital wearables like Fitbits and smart watches has increased their potential application to the field of Digital Forensics--victims as well as perpetrators of crime have the potential to be located through their wearable devices. However, the accuracy of this technology has been questioned. In order for data derived from these devices to be admitted in court, Federal Rules of Evidence 702 requires that they must be shown to be based on solid science (Vinez 2017). The current study is conducted to test the location accuracy of the bluetooth location services in Apple watch devices, while on and off, to aid in missing persons investigations. If an individual's phone is retrieved, can the location taken from the Apple watch lead to accurate location while normally functioning and after the device has been powered down? A large sample of trials involving locating known individuals wearing Apple Watches will be used to test the accuracy of location findings of the Apple watch and determine the possible average distance in which the location was inaccurate.

A Macroscopic and Microscopic Forensic Atlas of Sharp Force Trauma Defects in Decedents Undergoing Fatal Stabbing

Student Author(s) Tana Vance

Faculty Mentor(s) Donna Boyd

10.40 am

Heth 022

Examination of decedents undergoing fatal stabbing through Sharp Force Trauma (SFT) in a Medical Examiner setting is often complicated by questions regarding the weapon used. Sharp Force Trauma (SFT) is characterized as forensic trauma caused by a tool with a small surface area. When SFT occurs, it often leaves signature markings on bone, including striae, which may result in a distinctive kerf (floor and walls of the incision). However, it is not known if these kerf characteristics are distinctive for individual tools—prior research has failed to document this, primarily due to an absence of comparative tool documentation. The goal of the current research is to investigate the distinctiveness of these striae across a variety of different tools which created them. The research hypothesis is that different tools create signature SFT defects. A collection of distinctive knives will be used to inflict SFT defects in a statistical sample of porcine ribs. Kerf striae will then be analyzed macroscopically and microscopically and a digital atlas of each tool mark SFT defect produced. This research is important for offering an avenue for potential identification of SFT defects in decedents undergoing fatal stabbing.

Innovations in Forensic Science Oral Session

The Effect Chemicals Can Have On Decomposition

Student Author(s) Rachel Parker

Faculty Mentor(s) Donna Boyd

10.50 am

Heth 022

Readily-available chemicals are often applied to human remains in a forensic context in an attempt by a perpetrator to enhance body disposal and evidence destruction. This research will examine the effect of chemicals found in household cleaners on the rate of decomposition in the soft tissues of living organisms. The hypothesis is that the more toxic the chemical, the greater the destruction of bone and soft tissue. More toxic chemicals should advance soft tissue breakdown and help to degrade the proteins and enzymes that hold the tissues together in the organism. Nine different chemicals, ranked in terms of their toxicity, will be applied to 30 different porcine specimens divided into ten groups (with each of these groups having three specimens). One group of three will be the control group and will have no chemicals added to them in order to have a comparison between the normal rate of decomposition and the rate of decomposition when chemicals are added to the tissues. The rate of decomposition, assessed through Megeyes et al.'s (2005) decomposition scoring system, will be observed every two days in order to look at the rate at which each sample is decaying. This research will assist forensic scientists by providing an assessment of the use of chemicals in body disposal and differential element retrieval and a timetable for this potential destruction.

The Effects of Arson-induced Thermal Damage on Fingerprint Evidence

Student Author(s) Samantha Gibson

Faculty Mentor(s) Donna Boyd and Todd Jones

11.00 am

Heth 022

Fingerprint evidence can be difficult to obtain in arson investigations (O'Hagan and Banham 2018; Dominick et al. 2011); fingerprints may be damaged due to their exposure to elevated temperatures as well as other variables. This research examines the possibility of recovering fingerprint evidence from arson crime scenes with significant thermal damage. A statistically-valid sample of fingerprints placed on glass, plastic, and metal objects will be placed in a controlled fire and recovered after the scene has been secured. A soot removal process will take place to obtain the evidence and fingerprint extraction will be utilized through the brushing technique. Recovered fingerprint evidence will then be analyzed to determine the degree of thermal damage and fingerprint viability. This research is conducted to increase our understanding of the effect of thermal processes on fingerprint survivability and ultimately assist in fingerprint evidence recovery in arson investigations.

The Relationship Between Childhood Trauma And Criminal Behavior

Student Author(s) Kara Johnson

Faculty Mentor(s) Donna Boyd

11.10 am

Heth 022

Previous research has shown that experiences of childhood trauma are high among prisoners; in addition to that, many traumatic childhood experiences are known as contributors to mental and emotional disorders. The purpose of this research is to assess the degree to which high rates of psychological and physical trauma experienced throughout an individual's life are related to criminal behavior. In a small community sample of individuals who have been incarcerated at the Bland Correctional Center, 30 participants will be evaluated using a Childhood Trauma Questionnaire that focuses on emotional abuse, physical abuse, sexual abuse, emotional neglect and physical neglect. The questionnaire given to the participants will also be anonymous, ask them about the history and motives of their criminal background, and if they suffer from any emotional disorders due to past experiences. The relationship between childhood trauma and criminal offending suggests that scores will support the possibility that childhood trauma is a factor in aggressive prisoners.

Innovations in Forensic Science Oral Session

The Effects of Crime Scene Fluids and Other Substances on Forensic Hair Analysis

Student Author(s) Brenna Lowe

Faculty Mentor(s) Donna Boyd

11.20 am

Heth 022

Hair evidence is commonly retrieved from crime scenes and is used for victim and perpetrator identification as well as drug testing. However, hair analysis is an area in criminalistics which requires much training and experience and its methods have not been fully validated. Although there has been little research on the effect of taphonomic (postmortem) environmental variables on hair quality and integrity, initial studies suggest that these effects can be significant (Hartnett et al. 2011). The current study will utilize liquid substances often found at crime scenes, including blood, paint, mud, and bleach, and test their effect upon hair morphological analysis. Thirty samples of hair from willing subjects will be collected and immersed in each of the above substances. One set of 30 hair samples will serve as a control and undergo no immersion. Samples will be observed macroscopically and microscopically (via the RU Forensic Science Institute's polarized light comparison scope) for signs of destruction or alteration after 48 hours of immersion. This study has important implications for validation of hair analyses when contaminated by environmental alteration.

Causes of Death in Fatal Cases of Child Abuse

Student Author(s) Reneisha Leeper

Faculty Mentor(s) Donna Boyd

11.30 am

Heth 022

When juvenile decedents are suspected of undergoing child abuse, many procedures are considered by the forensic pathologists. Understanding of whether crush injuries, contusions or any other known injuries that may have caused the death is crucial in examination. This paper will explore the most common causes of death in non-accidental pediatric deaths and their mechanisms. This will include cranial and retinal hemorrhage and organ laceration. Signature non-accidental injuries in suspicious child deaths are reviewed and interpreted. This review will enhance adjudication of forensic pediatric child investigations in a medicolegal setting.

Geospatial Science Poster Showcase

Spatial Patterns of Cancer Rates and Radio Frequency Towers

Student Author(s): Nathan Blankenship

Faculty Mentor(s): Andrew Foy

2:30 pm - 3:45 pm

Kyle Hall 340

People are more connected than ever before via radio waves that enable transmission of data. Is it possible that these wavelengths are creating problems to human health? The goal of this research is to review past literature on cancer and radio frequency (RF) waves, and to use geographic information systems to analyze the spatial relationship between the two. The information gained from this research can give insight for possible research dealing with high density communication towers and their link to cancer. Cancer rate data for counties in the U.S. was downloaded from the CDC (Center for Disease Control and Prevention) website, and multiple radio frequency base station tower data was downloaded from HIFLD (Homeland Infrastructure Foundation-Level Data). The data was used in a regression analysis in ArcGIS to determine if variables such as density and frequency could predict cancer rates.

Modeling Red Spruce Habitat in the Southern Appalachian Region

Student Author(s): Thomas Callahan

Faculty Mentor(s): Richard Roth and R. Stockton Maxwell

2:30 pm - 3:45 pm

Kyle Hall 340

Red Spruce is a sensitive species, especially in its southern extent. Populations in Tennessee, North Carolina and southwest Virginia are limited to high elevations and provide habitat for reliant species such as the White-Winged Crossbill and endangered Carolina Northern Flying Squirrel. The goal of this research was to model Red Spruce habitat using several factors needed for proper growth and using ground validation using field collected data to assess the accuracy of the estimated habitat. This model can be used for future research on Red Spruce and to provide reference areas that could be used in restoring the species to areas where it has been extirpated. A GIS-based (geographic information system) model uses elevation, slope aspect, soil classification and climatic conditions to determine potential habitat in southwestern Virginia. With continued climate change and anthropogenic pollution, this species will need help in maintaining and increasing populations in its southern range.

An Analysis Comparing Didactic Teaching and Virtual Reality Learning in Physical Geography

Student Author(s): Christopher Carter

Faculty Mentor(s): Andrew Foy

2:30 pm - 3:45 pm

Kyle Hall 340

The purpose of this study is (1) to design and implement an immersive virtual reality (VR) learning environment using Unity3D, and (2) compare the instructional efficacy of this immersive VR learning environment to more traditional methods of learning such as a desktop slideshow accompanied with a verbal lecture for teaching a lesson pertaining to physical geography. As technology advances, so does the need for our ability to convey information to individuals in the most efficient and effective way possible. Based on constructivist learning theory, it is predicted that students who will engage with an immersive VR learning environment will be exposed to a more active and constructive learning process based on personal experiences to allow each individual to form a different interpretation and process of knowledge, suggesting that these students will perform significantly better than the students who will be exposed only to the desktop slideshow and lecture on a final, post lesson exam. Non-traditional learning methods such as VR learning environments are an important aspect of our expanding educational process. Students can learn new content in exciting and interesting ways to not only provide understanding but as well as advance their learning.

Geospatial Science Poster Showcase

Sea Level Rise Impact On Wetlands In Virginia Beach

Student Author(s): Zachary Coverstone

Faculty Mentor(s): Rick Roth and Andrew Foy

2:30 pm - 3:45 pm

Kyle Hall 340

Sea level rise (SLR) from global warming is an increasing risk to coastal wetlands around the world. Mapping the potential areas of wetland inundation can help identify the wetlands at risk and indicate potential solutions. The goal of this research is to identify the areas of wetlands that will be lost in the City of Virginia Beach at different levels of SLR by using Geographic Information Systems (GIS) and remotely sensed geodata including high resolution digital elevation data. The results of this research will compare the percent of wetland loss in Virginia Beach at one foot intervals of SLR to provide insight on what areas are at risk and to determine whether there is a “tipping point” of SLR with respect to wetlands loss. Detailed examination of wetlands within selected area of the city will provide information on obstacles to inland migration of tidal wetlands. Results can be used to inform actions that can be taken to mitigate wetlands loss.

A Comparison of Risk Terrain Modeling and Deep Learning in Crime Prediction

Student Author(s): Matt Crichton

Faculty Mentor(s): Andrew Foy and Caleb Bradberry

2:30 pm - 3:45 pm

Kyle Hall 340

With the exponential growth of data and processing capabilities, law enforcement specialists have embraced information analytics to allow for better policing. However, there are many techniques available for crime prediction so determining the best can be difficult. Although there is an abundance of research in crime prediction, not much has been done to compare risk terrain models (RTM) with deep learning neural networks. This research generated a RTM and compared it with a well-trained neural network. Tools used in this research included ArcGIS Pro and Keras, a high-level Python API built on top of TensorFlow. The results will allow law enforcement agencies to better allocate their resources and minimize crime hot spot outbreaks.

Ocean Acidification and Analysis of Coral Reef Bleaching

Student Author(s): Alden Dunn

Faculty Mentor(s): Richard Roth

2:30 pm - 3:45 pm

Kyle Hall 340

The purpose of this study was to analyze the effects of ocean water pH on coral reefs and the coral bleaching process. Corals serve as shelter and habitat to thousands of plant and animal species in shallow waters. The main threat to coral reefs is bleaching, a key factor of which is increasingly acidic ocean pH, which results from increased dissolved carbon dioxide in the ocean waters. For the purposes of this study, data was collected from ecological data archives and statistical tests were run in ArcGIS and JMP, including t-tests to find a correlation between pH levels and coral bleaching decay. The results showed that pH is one of the leading factors in coral stress and bleaching. For future ecological conservation efforts, researching and seeding corals which prove most adaptable to changing pH and ocean chemistry will be key to preserving coral reef habitats.

Geospatial Science Poster Showcase

A Comparison Of Indoor 3D Modeling Techniques

Student Author(s): John Edmond

Faculty Mentor(s): Andrew Foy and R. Stockton Maxwell

2:30 pm - 3:45 pm

Kyle Hall 340

Accurately modeling outdoor spaces has been feasible for some time, however interior spaces have not been modeled to the extent of the outdoor world. Recently, several researchers have delved into the world of indoor geographic information systems (GIS). They are trying to determine best practices in developing models and techniques to get indoor GIS to the level of accuracy and productivity of outdoor GIS. There are several applications for indoor GIS ranging from keeping track of inventory to military operations. The goal of this research is to determine the most accurate and efficient way to measure a room and represent it in a digital 3D model. This project represents a small facet of indoor GIS but it is an important step in creating a baseline in any indoor GIS. LiDAR, a laser range finder, and an infrared 3D scanner was tested in three different rooms and compared to true measurements gathered via a measuring tape to determine accuracy. The results of this research provide insight into the best methods to model indoor space in a GIS.

Solar Power Adoption by Institutions of Higher Education in Virginia

Student Author(s): Megan Flint

Faculty Mentor(s): Richard Roth

2:30 pm - 3:45 pm

Kyle Hall 340

Colleges and Universities require a significant amount of electricity and have a responsibility to obtain it in a way that minimizes the environmental impacts of electricity production and consumption. One way they can do that is by switching from fossil fuels to renewable energy. This research investigated the extent to which higher learning institutions in Virginia have moved towards renewable energy, specifically solar, and their reasoning for, or against, such actions. Information on solar purchases and installations were collected through a survey of the responsible officials for the 231 Virginia colleges and universities campuses. The data from those that responded to the survey were then compiled and analyzed. The results allowed for a more targeted approach for those advocating for adoption of solar power by colleges and universities, and improved our understanding of the spread of solar at Virginia colleges and universities, as well as of factors influencing decisions to adopt solar or not at those institutions.

How Distance is Determined Impacts Classification of Food Desert Status

Student Author(s): Megan Flint

Faculty Mentor(s): Richard Roth

2:30 pm - 3:45 pm

Kyle Hall 340

A major factor in staying healthy is access to healthy and nutritious foods like fresh fruits and vegetables. Not everyone has easy access to such food, however, and areas in which many people do not have access are termed food deserts. Obstacles to access include transportation, cost, and availability. While food deserts and their causes and characteristics have been thoroughly researched in urban areas, rural ones tend to be overlooked. This research analyzed data on the factors that limit food access, specifically for the Southwest Virginia Coalfield Counties of Wise, Dickenson, and Buchanan, and identified areas that qualify as food deserts. Census information, store location, and accessibility were analyzed using functions of ArcMap such as merge, buffer, and network analysis, to identify at-risk areas in the studied counties. Then a t-test was run between the as-the-crow-flies analysis and the network analysis to determine if there is significant differences between the two methods. The results provided insight into how research methods impact food desert identification, as well as how differences in mapping analysis impact constituents.

Geospatial Science Poster Session**Crime Analysis In Roanoke, VA****Student Author(s): Colton Grant****Faculty Mentor(s): Richard Roth****2:30 pm - 3:45 pm****Kyle Hall 340**

With geographic information systems (GIS) and georeferenced crime data, it is possible to better our understanding of why crime occurs in certain locations. Previous studies have shown increased crime rates near places serving alcoholic beverages. Several studies have demonstrated a spatial relationship between places serving alcohol beverages and crime occurrence. If such a relationship can be shown in Roanoke, VA, it could help local authorities to better deploy their resources, ultimately making for a safer city. The purpose of this research is to show whether there is a spatial correlation between places serving alcohol beverages and crime events. Analysis will be done by using ArcGIS tools and more specifically the Near analysis tool, kernel density, point density, and hot spot analysis tool (Getis-Ord Gi) to show spatial correlation. These tool will show the visual spatial representation between places serving alcohol beverages and crime rates. Each of these tools will show the significance in different visual ways to get accurate results. Also, Significance of results will be tested using the SPSS program to run tools such as a T-Test and ANOVA. Maps and graphs will be produced to visually represent the spatial correlation. The results from the research are expected to show that places serving alcohol beverages are associated with increased incidence of crime. The data will also show the hot spots on a map identifying where the highest crime rates are occurring compared to the lower crime rates in the city. If data are available, the type of crime associated with proximity to places that serve alcoholic beverages will be investigated as well.

Back Bay's Declining Submerged Aquatic Grasses: A 30 Year Timeline Using Remote Sensing**Student Author(s): Conner Knight****Faculty Mentor(s): Andrew Foy****2:30 pm - 3:45 pm****Kyle Hall 340**

In less than five years, Back Bay, a large, freshwater wilderness tucked behind Virginia Beach, has faded from the best bass fishing and waterfowl hunting spot in the state to a nearly barren watery desert. Everyone from fish camp operators to scientists seem to blame the decline on the sudden decline in rooted aquatic vegetation. The goals of this research are to review recent studies regarding declining submerged aquatic vegetation, to get insight from others studying near Virginia Beach, and to determine the extent of Back Bay's decline in grasses over a 30 year period using remote sensing. The data was collected from Glovis on the USGS website. Landsat images were obtained from decades since 1975. The results that I intend to show are a report describing how much grass remains throughout Back Bay's waterway and to produce a map displaying where these grasses are still located using different spectral bands to show submerged vegetation. To conclude my research, once I have experimented with the Landsat images chosen for my area of study, I hope to show this change in vegetation. If the images are processed correctly, then a decadal timeline shall be created showing the decline of Back Bay's grasses. Graphs and charts will be used to show how many square miles of grass now exist in this watershed.

Geospatial Science Poster Showcase

Using satellite imagery to assess forest fragmentation throughout Giles County caused by construction of the Mountain Valley Pipeline

Student Author(s): Andrew Kopjanski

Faculty Mentor(s): Rick Roth and Andrew Foy

2:30 pm - 3:45 pm

Kyle Hall 340

The damage caused by creating right of ways for natural gas pipelines has significant impacts on surrounding forest health and ecological stability through both conversion and fragmentation. Hundreds of acres of forest were cleared in order to create a one hundred and twenty five foot corridor, called a Limit of Disturbance (LOD), for the construction of the Mountain Valley Pipeline. A permanent Right of Way (ROW) of approximately fifty feet wide remains after construction and LOD areas were replanted. The purpose of this project is to use remotely sensed data and geographic information systems (GIS) to detect change and assess forest loss and fragmentation caused by pipeline construction. The study area is Giles County, Virginia. The acreage of forest converted to non-forest land cover was quantified using Fragstats. A t-test was used to determine whether there was a significant difference between the number, shape and size of forest polygons throughout Giles County before and after construction. The study addressed whether large intact forest cores were disturbed. Results show that large areas of forest were converted in the process of creating the pipeline corridor and that the construction increased forest fragmentation as well. This information is needed to assess the need for mitigation, and to identify appropriate locations where forest cores could be reconnected.

Analyzing Contamination Plume of Local Brownfield Cleanup Site Over 5 Year Interval

Student Author(s): Olivia Ligon

Faculty Mentor(s): Andrew Foy and Richard Roth

2:30 pm - 3:45 pm

Kyle Hall 340

The creation of the Brownfield Cleanup Program by the Environmental Protection Agency has provided a means for recycling and reusing property that has been contaminated by hazardous waste, but there is still doubt as to whether this program is efficient and effective. The goals of this research are to document a contamination plume of total Volatile Organic Compounds (total VOCs) using monitoring wells at a Brownfield site located in Galax, Virginia over a five year period, and to analyze the size of the plume over the five year period using plume modeling within ArcMap. The results from this research help to assess the effectiveness of the Brownfield monitoring program in regards to the Environmental Protection Agency's (EPA) Resource Conservation and Recovery Act (RCRA) that defines how hazardous waste, in this case total VOCs, should be handled. This monitoring process of total VOCs is important because if a contaminate plume increases in size, it has the potential to infiltrate private wells or public use groundwater, which easily turns the monitoring process into a public safety issue. The results of this research will help link the use of geospatial programs to identify and assess environmental programs and visually represent the data, so it is easier to investigate the progress of environmental monitoring programs.

Geospatial Science Poster Showcase

Macroinvertebrates in First-Order Streams in Peru and Southwest Virginia: A Comparison

Student Author(s): Austin Lumpkin

Faculty Mentor(s): Richard Roth, Jamie Lau, Stockton Maxwell

2:30 pm - 3:45 pm

Kyle Hall 340

Macroinvertebrates are important in their own right as a part of aquatic food webs, and their diversity and numbers can also indicate the relative health of streams and other aquatic systems. Macroinvertebrates are animals without backbones that are too big to pass through a 0.2 to 0.5 mm sieve. In aquatic systems, they include representatives of several major groups including insects, mollusks, annelids, and crustaceans. A number of methods for assessing stream health by using macroinvertebrate metrics have been developed for different bioregional settings. The purpose of this study is to use one such method, the Virginia Stream Condition Index (VSCI), to compare the abundance and diversity of macroinvertebrates in first-order streams in two very different ecoregional settings: the Madre de Dios region of Peru and the Appalachian mountains of southwest Virginia. To collect the samples in both regions a dip net was used to collect them so they could be placed in jars for sorting later. After sorting, identifying, and calculating the VSCI a T-Test was run to determine whether the samples were significantly different. Results are expected to reflect significant bioregional differences.

Comparing Climate-Growth Relationships in Eastern Hemlock Before and After a Climate Regime Shift

Student Author(s): Brittany Rinaldi

Faculty Mentor(s): Richard Roth and Stockton Maxwell

2:30 pm - 3:45 pm

Kyle Hall 340

Dendrochronology is the study of tree rings to understand past environmental conditions in an area or region. The objective of this study is to analyze tree rings from Eastern Hemlock (*Tsuga canadensis*) to determine the impacts of climate regime shifts on the climate-tree growth response for this species by examining the response before and after climate regime shifts. Regime shift detection is a new research method tool used to identify rapid shifts in climate data. Climate data for the geographic range of Eastern Hemlock was gathered from the PRISM Climate Group and Eastern Hemlock chronologies were collected from the International Tree Ring Database (ITRDB). The climate data were analyzed in a regime detection software in Excel to determine years that a climate shift occurred. The Eastern Hemlock chronologies were standardized in RStudio and the program DENDROCLIM2002 was run with the climate data to determine climate-tree growth relationships. The results indicate that a regime shift in Palmer Drought Severity Index (PDSI) occurred in the early 1970's, moving towards conditions containing above average moisture conditions. The climate-tree growth relationship indicates a negative correlation between prior summer temperatures and Eastern Hemlock growth, which could be a result of increasing temperatures limiting tree growth. A positive correlation exists between PDSI and tree growth for every month, which could be a result of the regime shift toward above average moisture. Examining the effects of climate regime shifts on Eastern Hemlock growth is crucial because this is a foundation species for eastern North American forests.

Geospatial Science Poster Showcase

Predicting the Potential Future Spread of *Lythrum salicaria* Using GIS and Remote Sensing in the Allegheny Highlands, Virginia

Student Author(s): Robert Slusser

Faculty Mentor(s): Andrew Foy and Richard Roth

2:30 pm - 3:45 pm

Kyle Hall 340

The Allegheny Highlands are known for their breathtaking natural Virginian countryside, which is home to a broad watercourse which collectively drain south into the James River in northern Botetourt County. In recent decades, an invasive wetland perennial known as the Purple Loosestrife (*Lythrum salicaria*) has made its appearance in close proximity to the waterways which flow directly into the James. This violet-flowered noxious weed threatens indigenous biodiversity of a top tier ecosystem primarily due to lack of natural enemies on the North American continent. The purpose of this research is to estimate the most vulnerable wetlands in the area of study. Geographic information systems (GIS) and remote sensing technologies were used to find the location of ongoing stands of *L. salicaria*. Data was also collected from accredited sources that were used to analyze the vulnerability of non-infected wetland areas. Suitability modeling techniques were used to create a predictive modeling of the spatial distribution of Purple Loosestrife. This is a new approach to understand the spread of invasive and exotic vegetation.

Using Satellite Imagery from Landsat 8 to Record the Percentage of Land Cover Change at Mountain Top Mining Sites in Eastern Kentucky, near the Daniel Boone National Forest

Student Author(s): Olivia Swientisky

Faculty Mentor(s): Andrew Foy and Charles Manyara

2:30 pm - 3:45 pm

Kyle Hall 340

There has been a strong presence of Mountain top removal in the Central Appalachian region of the United States for decades with a significant increase since the 1970s. Researchers have quantified significant negative health, environmental and ecosystem impacts resulting from mining. The goal of this research is to use remote sensing and geographic information systems (GIS) to analyze the changes to the landscape after a mining site has been reclaimed. 34 mining sites from start of deconstruction to 2018 in eight counties were chosen for study surrounding the Daniel Boone National Forest, Redbird District in Kentucky. The land cover change recorded focused on healthy vegetation, bare ground and regrowth at reclamation sites. Landsat 5-8 satellite imagery was downloaded from GLOVIS and analyzed in ERDAS Imagine in order to assess changes in terrain over time. The Moisture Stress Index was used to determine vegetation health and regrowth. The Normalized difference vegetation index (NDVI) was used to determine the percentage of live vegetation on reclamation sites. DEMs of each site were analyzed to determine if reclamations sites were put back to their original pre-mining contour. Additionally, the data was used to analyze land cover change trends over a temporal scale. This research provides insight into the severe negative ecological and environmental impacts of mountain top mining and the effectiveness of reclamation.

Geospatial Science Poster Showcase

Human Detection Software in Comparison to Human Analyst Object Detection Ability with Orthorectified Mosaic Imagery in RGB and IR Spectral Images

Student Author(s): Albert Walters III

Faculty Mentor(s): Andrew Foy

2:30 pm - 3:45 pm

Kyle Hall 340

There is a strong presence of object detection in the remote sensing applications. Object detection of humans is becoming more prevalent with UAV's, and is an increasingly relied on technology. There is some uncertainty to this technology's accuracy, because of the inconsistencies that these software's are generating from their object detection classification schema. The purpose of this research is to collect and compile orthorectified mosaic digital images in the visible and IR spectrum, and test the accuracy of a human detection software, with comparison to the accuracy to a human analyst's human detection ability on the same images. The objective of this research is to determine if the object detection software is better than a human analyst's ability to count humans in aerial photography. Accuracy and time was compared using t-tests. It was hypothesized that human identification software would be faster, but the human analyst would be more accurate. This research is important, because of accessibility that UAV's offer in combination with object detection software; this combined technology will help be able to offer a new visual perspective and detection to any situation that might arise. Furthermore, in an exacerbated situation, this combined technology would help detect humans or other objects in areas, which would provide difficulty for the human eye to detect all of the phenomena in a scene. The results of this research will provide insight into determining if this type of technology should be relied on at this point in time for determining a human count in an orthorectified mosaic image.

Interdisciplinary Poster Showcase

Testing the Use of Unmanned Aerial Systems (UAS) to Extract Geologic Structure Data from Unstable Rock Slopes in Southwest Virginia for VDOT Studies

Student Author(s): Samantha Farmer, Amanda Thomason, Courtney Wilson

Faculty Mentor(s): Chester Watts and George Stephenson

2:30 pm - 3:45 pm

Kyle Hall 340

Small unmanned aerial systems (sUAS) have revolutionized the collection of geologic structure data for evaluating the safety and stability of rock slopes when stability is controlled by the orientations of discontinuities in a rock mass. Prior to the use of sUAS, engineering geologists collected structure data manually, often by rappelling down cliff faces, taking hundreds of orientation readings for plotting on stereonets. In this study for the Virginia Department of Transportation (VDOT), sUAS missions were flown along active quarry faces at the Acco Quarry, owned by Salem Stone Corporation, near the VDOT Smart Road in Blacksburg, Virginia. Dense point clouds were generated using structure from motion (SfM) software, and the discontinuity orientations were extracted using CloudCompare and Split-FX software. The data were plotted on stereonets and used to evaluate overall stability of the quarry walls. The smartphone application Pix4D Capture was used to create, plan, and execute flight missions for a DJI Mavic Pro. Pictures were taken during missions using the aircraft's stock camera. The images were processed using the programs Pix4D and Agisoft PhotoScan. Orthophotomosaics, 3D digital models, and contour maps were created and imported into ArcMap. Strike, dip, and dip direction measurements were determined as described above. This undergraduate research project focuses on exploring the use of sUAS to create and plan autonomous flights using mission planning software, and analyzing the results using several different computer applications. A separate complementary research project will evaluate the use of change detection software for identifying areas of rockfall based on sUAS flights and point clouds generated over time.

Mapping the West View Cemetery in Radford, Virginia and Identifying Potential Unmarked Graves Using Unmanned Aerial Systems (UASs)

Student Author(s): James Young and Michaela May

Faculty Mentor(s): Jake Fox, Chester Watts, Andrew Foy

2:30 pm - 3:45 pm

Kyle Hall 340

The West View Cemetery located in Radford, Virginia, contains approximately 4,000 graves and is spread over 14.5 acres. West View Cemetery has been in use since the early 1800's. It is home to the historical monument and grave of Mary Draper Ingles (1732-1815). At the time of this abstract, the website "Find a Grave" reports a majority of the gravestones have been photographed by volunteers. However, there is not a system to geographically represent this data. An orthophotomosaic map of the cemetery was created using Unmanned Aerial Vehicles (UAVs). Geographic data, photographs, demographic information of the deceased, and the headstone material were recorded through advanced GPS systems. This data was used to create an interactive web-based geographic information system (GIS) for further research of burial practices of Appalachian peoples from the 1800's to today. LiDAR was used to identify patterns in ground deformation to identify potential unmarked gravesites within the West View Cemetery and others. The goal of this project was to create a GIS-based database to create a more accurate and intuitive method of cataloging cemeteries as well as performing advanced demographical analysis. This study could help guide the development of best practices for both cemetery management and cemetery cataloging.

Interdisciplinary Poster Showcase

Anti-Bullying Programs are Ineffective

Student Author(s): Adrian Ghee

Faculty Mentor(s): Michele Ren and Mikaela Kelley

2:30 pm - 3:45 pm

Kyle Hall 340

In my research and on my poster, I present the statistics of bullying in schools and how bullying is tied to discrimination. Many schools across America have different bullying programs. Each program is made for each school or school district and based on support and funding. Many states have passed acts to help stop bullying but students are still scared to tell someone when they become victims. Bullying has always been around, and it will always be around, but we need to help students understand they have the power and help to stop it with anti-bullying programs. As a country, we need to enforce anti-bullying across the nation. And, every time a student feels bullied, we need to follow through.

From Pressroom to Classroom: The Path of a Secondary Social Studies Textbook in Virginia

Student Author(s): Alyssa Thompson

Faculty Mentor(s): Kristan Morrison

Around 2010, a 4th grade VA social studies textbook made the news circuit for blatant inaccuracies and poor content research (Sheriff, 2012). This controversy highlighted some problems with the textbook adoption process in the commonwealth and prompted the VA Board of Education, in 2011, to institute some new procedures. Article VIII § 5 (d) gives the Virginia Board of Education (VBOE) the authority to approve textbooks, instructional aids, and materials for use in the public schools of the Commonwealth (Constitution of Virginia, 1990). The Virginia Board of Education then empowers local school boards to select books either from this approved list or other books, not expressly approved by them, provided the school district follow guidelines set for this action. Are parents, educators, and students aware of the procedures and guidelines regulating how their schools chose the textbooks currently in use? Is the information about this easily accessible? Because textbooks are often the primary learning resource used in many social studies classrooms, their accuracy, content, and adoption process should be of vital concern to students, parents, instructors, and administrators. Yet, there is minimal research and information available on the textbook adoption process in much of the United States. This study will seek to enlighten stakeholders on how secondary social studies textbooks are written and selected in the Commonwealth of Virginia as well as detail the positives and negatives of the current process. The researcher attempt to illuminate this process by tracing the path to adoption of one secondary social studies textbook currently in use in Giles County Public Schools. This case study will hopefully educate more people on the procedure as well as detail opportunities for advocacy and improvements to the textbook approval process.

Visual Sociology Poster Showcase

Restart- Sociology Club

Student Author(s): Russel Alvarez

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm

Kyle Hall 340

This poster is to present an exploration into, and example of, visual sociology. As a qualitative research methodology which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will introduce visual sociology to the viewer, and illustrate visual sociology with a research project I have conducted this semester. My project focuses on the Sociology Club at Radford University and the new direction which it is taking. There are currently no active members that have been affiliated with the organization before this semester, which has opened doors for a new direction and structure for the Sociology Club. This poster attempts to display different aspects of group interaction, development of character through time, and the ways and reasons in which the current hierarchy has come to be. Behavioral patterns are subtle given the small environment in which the meetings take place. The Sociology Club reaches out for membership beyond Sociology majors to welcome students from all across Radford University.

An Amusing Perspective

Student Author(s): Cora Bland

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm

Kyle Hall 340

This poster is to present an exploration into, and example of, visual sociology. As a qualitative research methodology which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will introduce visual sociology to the viewer, and illustrate visual sociology with a research project I have conducted this semester. This project is specific to Muse Lawn and how the grounds and surrounding area are utilized by those on campus. It will explore activity in the area outside of the Muse residence hall, and document its uses to those who inhabit it. The subject is a cultural and academic center for Radford University and its high traffic of students and non-students yields much to be examined. Through the use of visual sociology the photography will showcase both what is clear to the viewer as well as what is less obvious in the meanings, and allow for a representative understanding of Muse Lawn.

A Photo Ethnography Of The Tartan

Student Author(s): Chad Boxley

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm

Kyle Hall 340

This poster is to present an exploration into, and example of, visual sociology. As a qualitative research methodology which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will introduce visual sociology to the viewer, and illustrate visual sociology with a research paper I have conducted this semester. My project is focused on The Tartan, Radford University's student-run newspaper. The Tartan is a diverse, unique team of Radford University students that for more than 40 years has pushed important content out to the university campus. The Tartan offers a fast-paced atmosphere that is constantly changing, while making learning something new a pleasing daily task. This research will investigate the culture of The Tartan—including its experiences, social roles, and the opportunities it offers.

Visual Sociology Poster Showcase

Men's Club Lacrosse: A Cultural Description

Student Author(s): Ke'Von Brooks

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm

Kyle Hall 340

This poster is to present an exploration into, and an example of, visual sociology. As a qualitative research methodology which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will present visual sociology to the viewer, and illustrate visual sociology with a research project I have conducted this semester. My project is an ethnography of a social group or organization. The goal for this approach is to capture what made the group distinct from other groups. This team has had a lot of ups and downs, but has been having a turnaround lately. While some may think strictly of business when they think of professional and college athletics, the social aspect of the club plays a major role in its culture.

The Day Cycle of Quickway

Student Author(s): Haley Courtney

Faculty Mentor(s): Edwin Page

2:30 pm - 3:45 pm

Kyle Hall 340

This poster is to present an exploration into, and example of, visual sociology. As a qualitative research methodology, which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will introduce visual sociology to the viewer, and illustrate visual sociology with a research project I have conducted this semester. For my project I will be visually studying and displaying a day's cycle of the Quick Way convenient store in Radford. This store is a very popular place for Radford University students. They sell hot food, snacks, drinks, alcohol, tobacco products, and other things. Quick Way is a key factor when thinking of the organization and culture of the neighborhood. Some refer to the store as "central" because it is in the middle of what many refer to as the "light side" community. I believe this day's cycle will be representative of the neighborhood and will give an inside look at part of the social life of Radford University students and others who live nearby. This will be exemplary of the community especially on the weekends when people are having parties and get-togethers and many customers are stopping by the store.

Behind Closed Doors.

Student Author(s): Timothy James

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm

Kyle Hall 340

This poster is to present an exploration into, and example of, visual sociology. As a qualitative research methodology, which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will introduce visual sociology to the viewer, and illustrate visual sociology with a research project I have conducted this semester. My project is a behind-the-scenes look at the daily cycle that takes place in a professional kitchen. The project has more emphasis on the people involved in preparing food than the physical environment in which it is prepared or the food itself. The goal of this project is to capture the moments of creation. To show the detail and creative stages of food from its raw form to the creation of exquisite art that it is. The body language and postures of chefs are explanatory and can be a detailed description of how one takes pride in their work. People in the restaurant industry have a culture of their own and this project is to explain the uniqueness of the group that customers do not often see.

Visual Sociology Poster Showcase

Hoard House

Student Author(s): Molly Mattox

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm

Kyle Hall 340

This poster is to present an exploration into, and an example of, visual sociology. As a qualitative research methodology which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will introduce visual sociology to the viewer and illustrate visual sociology with a research project I have conducted this semester. My project is a case study which uses photography to illustrate and connect a deeper meaning through a conversation of sorts with the viewer. The images produced present a broad photo story—what I like to call the “story of myself”—which depicts my identity, culture, and environment through various photographs constructed through a sociological lens. Specifically, I aim to demonstrate my culture through an investigation into my own environment, which is composed of descriptive and repetitive elements, symbols, and ideas. The poster will reveal personal areas of my family home through numerous photographs to provide an interesting perspective and deeper exploration of my life. Each of the images can stand alone, yet together, the details transform into a cohesive and unified representation and embodiment of my environment, identity, and my individual culture. The project is entitled “Hoard House” due to the very cluttered, and almost chaotic, nature of my environment.

A Case Study On The Radford University Student's Daily Life

Student Author(s): Casey McClelland

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm

Kyle Hall 340

This poster is to present an exploration into, and example of, visual sociology. As a qualitative research methodology which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will introduce visual sociology to the viewer, and illustrate visual sociology with a research project I have conducted this semester. The individual project is a case study focusing on one student, a fourth-year geospatial science major. The project is a collection of photographs that helps explain visually the activities of a college student. The goal was to create a visual biography that helps portray the student in their various life rolls including school, work, and at home. This case study highlighting one student's life at Radford University was meant to both convey an understanding of one specific student and their identity, while also examining and being representative of the general routine and daily life of other college students.

The Legendary Gaming Association

Student Author(s): TyJuan Moulden

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm

Kyle Hall 340

This poster is to present an exploration into, and example of, visual sociology. As a qualitative research methodology which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will introduce visual sociology to the viewer, and illustrate visual sociology with a research project I have conducted this semester. My project is an in-depth investigation on the culture of gaming. I am taking an ethnographic approach to study what it truly means to be a gamer. I will go to a local game store where customers can play and buy games. Through a variety of images I will present a representative display of the essence of gaming culture. Themes to be addressed will likely include the unity that gamers showcase across racial and ethnic barriers, and a spirit of joyfulness that is apparent in gaming culture.

Visual Sociology Poster Showcase

Ordinary or Significant?

Student Author(s): Sharmaine Ramirez

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm **Kyle Hall 340**

This project is a case study using the photographic methods of visual sociology to depict the various events which occur in the life of the project's main focus: Loren Jones. Implementing the method of visual sociology allows for a more qualitative perspective and understanding of the subject's life and what molds him to be the person he is today. Throughout the many captured moments taken within the span of this work, one may visualize the day-to-day happenings and gather an idea of who Loren Jones is and identify what is most important in his life. Each photograph depicts various events and people, along with the corresponding emotions Loren shows for them. By interpreting these emotions the character of Loren may then become clearer to the viewer, allowing the viewer to better grasp the significance one may find in an ordinary person.

Social Engagement in the Night Life

Student Author(s): Shaniah Stephens

Faculty Mentor(s): Edwin Roby Page

2:30 pm - 3:45 pm **Kyle Hall 340**

This poster is to present an exploration into, and example of, visual sociology. As a qualitative research methodology which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will introduce visual sociology to the viewer and illustrate visual sociology with a research project I have conducted this semester. This presentation is to focus on social interaction and engagement between certain Radford University students who participate in a party culture during their night life. Some students' night life consists of inviting friends over, dancing, music, alcoholic beverages, and going to bars or clubs. These students may choose to participate in social gatherings that can contribute to eliminating stressors of attending college, allow them to express themselves and communicate in different ways. This qualitative research examines how certain students relax, enjoy their free time, and even enhance their college experience.

Who is Mike Blevins?

Student Author(s): Spencer Thompson

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm **Kyle Hall 340**

This poster is to present an exploration into, and example of, visual sociology. As a qualitative research methodology which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will introduce visual sociology to the viewer and illustrate visual sociology within a research project I have conducted this semester. My project is an examination into the daily life of a Radford University college student studying media production and technology. The photographs will examine many parts of his daily life including social groups, hobbies, his clothing, and how he spends his time outside of class. The main sociological topic that I have presented within this project concerns how deviance is acquired at an individual level based on the socialization of the individual.

Visual Sociology Poster Showcase

The Life of a Future Mechanical Engineer

Student Author(s): Danielle Vogt

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm

Kyle Hall 340

This poster is to present an exploration into, and an example of, visual sociology. As a qualitative research methodology which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociology investigation. This poster will introduce visual sociology to the viewer, and illustrate visual sociology with a research project I have conducted this semester. My project is a case study on a freshman at Virginia Tech, majoring in Mechanical Engineering. He has always had a love for tinkering with machines and engines, while also pursuing his other passions for football, friends, and family. I will explore his different hobbies and how they intertwine with both his aggressive and sensitive personality traits. This project will explore how he spends his time at school, at home, and on his hobbies. I hope to achieve an understanding of how he expresses his traits, from the sensitivity evident in his caring and tending to other things and people, to his more aggressive side which is revealed as he does the things he enjoys most.

Visual Sociology

Student Author(s): Montrell Waters

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm

Kyle Hall 340

This poster is to present an exploration into, and example of, visual sociology. As a qualitative research methodology which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will introduce visual sociology to the viewer and illustrate visual sociology with a research project I have conducted this semester. In this project I will be documenting a person's day-to-day routine. I will use visual sociology to create a sociological and cultural understanding of an individual student's life. While photographing different moments throughout the individual's routines and interactions, this work will give an artistic and scientific view of both the subject's backstage, private life and her on-stage social life.

Life At Starbucks

Student Author(s): Jasmine Zepeda-Argueta

Faculty Mentor(s): Roby Page

2:30 pm - 3:45 pm

Kyle Hall 340

This poster is to present an exploration into, and an example of, visual sociology. As a qualitative research methodology which includes the use of still photography, visual sociology is a relatively uncommon style of practicing sociological investigation. This poster will introduce visual sociology to the viewers and illustrate visual sociology with a research project I have conducted this semester. This project focuses on the Starbucks located in the College of Humanities and Behavioral Sciences at Radford University. There are so many students, professors, staff, and visitors coming in and out of Starbucks every day. I will use photography to show the patterns of activity at different times and on different days. What would be expected to be seen in these pictures would be students either doing their homework or just hanging out, employees doing their jobs and making the drinks for the customers. In this study I will also analyze demographic patterns among the customers.

Psychology Poster Showcase

NFL Fantasy Selection Using Machine Learning Techniques

Student Author(s): Hau Tuang, Robert Wellman, Mitchell Camerano

Faculty Mentor(s): Benjamin Biermeier-Hanson

4:00 pm - 5:15 pm

Kyle Hall 340

The current study used NFL and college data to predict fantasy performance. Machine learning algorithms were used to determine what variables predict performance. The study found different algorithms provided differential variance explained and in the relative importance of the predictors identified. This study provides evidence that advanced data analytic techniques can have applications for fantasy football participants. These techniques also have applicability for identifying predictors for other measures of performance in organizational settings.

Effects of Social Housing Conditions on Hippocampal Neurogenesis in Male Long-Evans Rats

Student Author(s): Carline Bien-Aime, Gabriel Medley, Camille Hamway, Eilish Bailey

Faculty Mentor(s): Dayna Hayes

4:00 pm - 5:15 pm

Kyle Hall 340

As social animals, it is ideal to house rats in conditions that provide ample opportunity for social interaction. However, for some experimental parameters, such as necessity of individual sample collection, single housing may be more optimal. Therefore, the development of a housing scenario that provides both social interaction and access to individualized sample collection is crucial. Previous evidence suggests that singular housing conditions facilitate negative experiences such as increased stress, altered food intake, and sleep disturbances (Gonder & Laber, 2007; Wongwitdecha & Marsden, 1995). Additionally, these negative states have been shown to inhibit adult neurogenesis in the hippocampus, a region associated with learning and memory. Neurogenesis is the process of neuronal cell birth (proliferation), differentiation, migration, and eventual integration into existing circuitry throughout the lifespan. Thus, 48 male, Long-Evans rats were semi-randomly housed in one of the four following conditions: social (2 rats, no barrier), separated (2 rats, divided by barrier), solitary (1 rat, barrier), or solitary-wire (1 rat, no barrier, wire-mesh floor). After a series of behavioral testing, the rats were sacrificed in order to collect brain tissue. Currently, using immunohistochemistry techniques that stain for Ki67 antigens, tissue is being quantified for levels of cell proliferation in the hippocampal dentate gyrus. It is hypothesized that there will be a significant reduction in cell proliferation in the solitary animals as compared to the group-housed (separate and socially-housed) animals. Nevertheless, the current study has significant implications for all animal research in that housing conditions are likely an overlooked confound variable for most studies.

Psychology Poster Showcase

Tropomyosin Receptor Kinase B and Attentional Deficits

Student Author(s): Lauren Buynack

Faculty Mentor(s): Catherine Middlebrooks

4:00 pm - 5:15 pm

Kyle Hall 340

Several neurodegenerative disorders including Alzheimer's disease and other forms of dementia correlate with irregular levels of brain-derived neurotrophic factor (BDNF). BDNF is a protein found in neurons in the brain that aids in synaptic plasticity allowing for neurons to create stronger synaptic connections and prune away synaptic connections no longer needed in the brain. Additionally, mental health disorders such as schizophrenia and depression, and trauma induced brain abnormalities such as concussions correlate with lowered levels of BDNF. All the previously mention dementias, disorders, and trauma exhibit different types of attentional deficits. Tropomyosin receptor kinase B (TrkB) is expressed in areas of the brain important for attention and modulates the release of BDNF. The goal of the hypothetical study is to determine if administration of a noncompetitive TrkB antagonist, ANA-12, during a critical developmental period in female rats' lives would directly affect performance on a divided attention task. The divided attention task aims to mimic the construct humans think of as multitasking in the animal model. The divided attention task consists of two different tasks; a target task the animal is monitored for completing correctly and a distractor task. Female rats would be treated with either a vehicle control or ANA-12 (1mg/kg) from day 34 to day 48 of life. Female rats treated with ANA-12 are expected to perform significantly poorer on the target task and will exhibit increased distractibility for the distractor task. The expected results would suggest that TrkB modulation of BDNF in female rats may play a role in promoting attentional behaviors.

Thinstagram: Instagram Usage, Body Satisfaction, and Disordered Eating Attitudes

Student Author(s): Mandy DeCarlo

Faculty Mentor(s): Catherine Middlebrooks

4:00 pm - 5:15 pm

Kyle Hall 340

College students who regularly use Instagram to follow appearance-focused accounts may have different internal experiences than those who interact with the app in other ways. In the proposed study, undergraduate college students at Radford University would be given access to a phone pre-loaded with the Instagram app and instructed to spend either 5 or 15 minutes viewing a mock profile. Participants would be randomly assigned to view one of two profiles: a neutral profile or an appearance-focused profile. Afterwards, participants would complete a survey assessing their eating attitudes and body satisfaction. It is hypothesized that participants who view the appearance-based account will have significantly lower body satisfaction ratings as well as more disordered eating attitudes than those who view the neutral account. It is also expected that participants in the appearance-focused condition who spend more time viewing the profile will have lower ratings of body satisfaction and greater disordered eating attitudes. Findings of the proposed study will expand our understanding of how allocation of time spent on social media can affect users' well-being, as well as how much viewing time is needed to have an effect.

Psychology Poster Showcase

Identification with Fictional Characters

Student Author(s): Salena Diaz

Faculty Mentor(s): Nicole Iannone

4:00 pm - 5:15 pm Kyle Hall 340

The Intergroup Contact Hypothesis posits that interacting with minority group members is one of the most effective ways of reducing prejudicial attitudes toward their group (Allport, 1954). The Parasocial Contact Hypothesis posits that parasocial relationships, or one-sided relationships with a media presence that simulate relationships with people known personally but require no actual physical interaction, are sufficient in serving the same purpose (Schiappa, Gregg, & Hewes, 2005). These effects have been shown to be most prominent when participants identify with the protagonist or disidentify with the antagonist (Vezzali, Stathi, Giovannini, Capozza, & Trifiletti, 2015). Our research seeks to examine whether identification with characters and enjoyment of *Black Panther*, a film with a competent and diverse cast is related to lower levels of prejudicial attitudes than identification with characters and enjoyment of *Ant-Man and the Wasp*, a film with a primarily White cast. We will examine this by asking questions related to viewing habits of these films, enjoyment of these films, and identification with the characters in the films, as well as questions regarding social distance toward different outgroups (Bogardus, 1933; Dion, 1985; Esses & Dovidio, 2002). This research examines whether current films highlighting diverse cultures are related to lower levels of prejudice than current films highlighting the majority culture, and whether this is related to levels of identification to the protagonist or antagonist.

Effects of Monoracial Media on Biracial Individuals

Student Author(s): Salena Diaz

Faculty Mentor(s): Catherine Middlebrooks

4:00 pm - 5:15 pm Kyle Hall 340

According to social identity theory, once individuals belong to a valued ingroup, they begin to find conflict with the outgroup (Hornsey, 2008). While there is an obvious distinction for monoracial individuals, biracial individuals face greater social identity complexity (Miller, Brewer, & Arbuckle, 2009). According to the ecological approach of multiracial identity, how multiracial individuals choose to racially identify may vary across situations (Roquemore, Brunsma, & Delgado, 2009). Many multiracial individuals have reported social rejection and identity denial from both sides of their racial heritage (Shih & Sanchez, 2005), which relate to decreased feelings of belonging (Albuja, Sanchez, & Gaither, 2019). The sensitivity to one's stigmatized status is called stigma consciousness (Pinel, 1999), and has been shown to decrease feelings of belonging in situations where outgroup members serve as identity threatening cues (Pietri, Johnson, & Ozgumus, 2018). To analyze whether double rejection has led to biracial individuals viewing monoracial individuals as identity threatening cues, the proposed research will show monoracial White, monoracial Hispanic, and biracial White/Hispanic participants clips of a White sitcom family and a Hispanic sitcom family. It is hypothesized that biracial participants high in stigma consciousness will report lower self-esteem, identification, and belonging within the families than monoracial participants.

Psychology Poster Showcase

On Cognitive Bias, The Basis of Mental Heuristics

Student Author(s): Tyler Grossheim

Faculty Mentor(s): Ruth Riding-Malon

4:00 pm - 5:15 pm

Kyle Hall 340

Humans, by our nature, are cognitive creatures. We rely on numerous and complex mental processes to effectively navigate our world. These systems are not without their oddities, however. Our brains may take several mental shortcuts, known as heuristics, to maximize efficiency at the cost of accuracy. These biases can manifest in a variety of negative ways that can lead to faulty reasoning. Heuristics such as the confirmation bias, for example, can lead to us accepting false narratives with little mental investment. The goal of this presentation is to highlight several of these major biases, present their research history (covering scholars such as Leon Festinger and Peter Cathcart Wason), and give examples of ways they manifest from both a historical context and within modern life. The heuristics and biases covered will be confirmation bias, the availability heuristic, the fundamental attribution error, and hindsight bias. Cognitive dissonance will also be touched on, due to its role in our reasoning processes.

The Effects of Office Layout and Employee Ranking on Job Satisfaction

Student Author(s): Charlotte Lackey

Faculty Mentor(s): Catherine Middlebrooks

4:00 pm - 5:15 pm

Kyle Hall 340

This study examines the effects of office layout and employees' ranking in the organization on employee satisfaction. Past literature supports that when organizations change their office layout from an individual structure to an open structure, their employees' job satisfaction decreases. Employee rank has also been linked to employees' job satisfaction. The research question being examined is: what are the effects of different office layouts on employees' job satisfaction, and is this affected by employees' ranking in an organization? Participants in this study will be gathered from the same organization and will be compensated with a free meal. Participants will experience three different office layouts (collaborative, mixed, and cubical) and categorized into one of three categories based on their current employment (manager, general employee, and secretary). Participants will experience each office layout condition for three months. Participants will rate different aspects of job satisfaction on a survey and they will take this before the office layout changes, the first day the office layout changes, at the beginning of every month, and at the end of the three months. A 3x2 repeated-measures ANOVA will be done on analyze job satisfaction rating with regards to the different office layouts and then a Pearson r will be ran to analyze the relationship of job satisfaction, office layout, and job ranking. I expect that employees will have the highest rating of job satisfaction in the mixed office layout and the lowest rating of job satisfaction in the collaborative office layout.

Psychology Poster Showcase

The Effects Of Social Media On Productivity

Student Author(s): Celie McKinley

Faculty Mentor(s): Catherine Middlebrooks

4:00 pm - 5:15 pm

Kyle Hall 340

Utilizing social media as a mental break from work or studying can be observed through the progression of technology. This study will explore the detrimental effects that social media has on productivity. Grounded in previous research assessing cognitive load theory and assessing the effectiveness of breaks, this study expands on the idea that breaks are vital for health and release from the cognitively demanding tasks in workplace settings. (Troughakos, & Hideg, 2009; Fritz, Lam, & Spreitzer, 2011; Taylor, 2011). Participants will be assessed on their productivity of completing a cognitively demanding task followed by a social media break—Facebook—and finally completing another equally challenging cognitively demanding task. The social media break conditions vary in cognitive load (high vs. low) and the extent to which the participant is communicating with others (one-way vs. two-way communication). Participants will use their own Facebook accounts along with their Facebook Messenger feature dependent upon their assigned condition. The differences in the efficiency and accuracy of the tasks will assess participants' productivity. According to cognitive load theory (Sweller, 1994), it is anticipated that participants who are in the high cognitive load conditions regardless of the extent of their communication will complete the cognitive load task slower than participants who are in the low cognitive load condition due to their resources being utilized more prominently during the break.

The Puzzle of Learning: A Historical Review of the Influence of Edward L. Thorndike

Student Author(s): Lesli Taylor

Faculty Mentor(s): Ruth Riding-Malon

4:00 pm - 5:15 pm

Kyle Hall 340

If you have ever taken a standardized test, such as the SAT, ACT, or GRE, you can thank Edward Thorndike. Edward Lee Thorndike was born in Massachusetts in 1874. As a student of both William James and James McKeen Cattell, Thorndike earned his Ph.D. from Columbia University in 1898 and would go on to become one of the most influential people in Psychology. Thorndike was an American psychologist who gave us the framework for the study of learning and behavior. In 1911, Thorndike proposed the law of exercise as well as the law of effect. These laws paved the way for Thorndike's idea of connectionism, which is the idea that animals learn by forming associations. The two laws proposed by Thorndike were also applicable to how humans learn, which in turn led to a more scientific approach to studying behavior. Thorndike's largest contribution to the history of psychology was his push for the use of quantitative analysis when assessing behavioral data. This encouraged the social sciences to use statistics, which led to a more widespread acceptance of psychological data in the scientific community. In addition to his contributions to the psychology of learning, Thorndike was a mentor to many students who would make equally large contributions to the field, such as B.F. Skinner. Thorndike also served as president of the American Psychological Association and the Psychometric Society. Thorndike was an influential psychologist whose work is still relevant in modern day society.

Psychology Poster Showcase

Learning from Tests: Testing as a Study Tool

Student Author(s): Lesli Taylor

Faculty Mentor(s): Kathleen Arnold

4:00 pm - 5:15 pm **Kyle Hall 340**

Studying and testing play an intricate role in the life of students. The purpose of the current study was to investigate the relationship between testing and studying, specifically the efficacy of studying. Prior studies have shown that interpolated testing, which is taking tests after you finish learning one chunk of information, increases how much you can learn on the next chunk of information. One reason that interpolated testing benefits learners may be because they make better study decisions. Prior studies have shown that learners make study decisions based on their goals (e.g., get an “A”). To achieve these goals they create agendas, which serve as guides to help them achieve their goals based on an assortment of things such as the difficulty of the material and the amount of time they have to study. Agendas can be affected by manipulations such as time constraints and presentation of study material. Interpolated tests may also affect agendas by teaching students what worked and what did not, which is part of one’s metacognitive knowledge. Therefore, interpolated testing may make students efficacious studiers. I hypothesized that testing increases student’s metacognitive knowledge and that is in turn used to be more efficacious when studying. Prior studies have suggested that feedback may be necessary for students to gain this metacognitive knowledge, but this has not yet been directly tested. I hypothesized that students who receive feedback on tests will score better on following tests as well as be more effective when they study.

The Impact of Team Versus Individual Sports on the Frequency of Organizational Citizenship Behaviors: An Investigation of Stress Levels

Student Author(s): Kasey Warren

Faculty Mentor(s): Catherine Middlebrooks

4:00 pm - 5:15 pm **Kyle Hall 340**

Playing sports provides benefits that sustain well beyond the game. Some of these benefits manifest in the workplace in the form of organizational citizenship behaviors. Organizational citizenship behaviors (OCB) are workplace behaviors that go above and beyond the required duties for the benefit of the organization as a whole. Team sports subject players to teamwork and are required to have more efficient and frequent communication to benefit the team as a whole and meet the team’s desired goal than those who play individual sports that don’t require a team. We predicted that when individuals who play team sports are placed into a stressful team-based task-dependent situation, they will exhibit significantly more OCBs. We decided to manipulate this stress condition with a within-subjects experiment in which participants were given two challenging team-based block arrangement tasks comparable in difficulty. The high-stress condition allowed seven minutes for the completion of the task and the low-stress condition had unlimited time. The results supported our hypothesis. Significantly more OCBs were performed by team sport participants in the high-stress condition, compared to the low-stress condition where results indicated team sport and individual sport participants’ number of OCBs were comparable. This suggests that participants with a history of playing team sports will perform more helping behaviors when in a stressful situation than those with experience in individual sports.

Psychology Poster Showcase

On the origin of psychology: how the work of Darwin influenced the field

Student Author(s): Phil Schulte

Faculty Mentor(s): Ruth Riding-Malon

4:00 pm - 5:15 pm

Kyle Hall 340

This poster will explore the life, research, and controversy of Charles Darwin and the influence that his theory of evolution had on the field of psychology. To begin, Darwin's life will be viewed through a lens of power and privilege that may have allowed him to achieve recognition for the theory of evolution despite the knowledge that Alfred Wallace had produced a similar theory. Following this, the similarities and differences between Darwin's and Wallace's theory of evolution are discussed. Finally, the role that evolution played in the understanding of psychology will be discussed with the context of historical roots, current areas of research, and future directions. Taken together, this poster argues that the theory of evolution had a contentious start but served to provide fodder for further advancement in the field of psychology.

Environmental Impacts on Pour Drinking Decisions

Student Author(s): Hailee Strobel, Emily Harrell, Wesley Davis

Faculty Mentor(s): Jeff Aspelmeier

4:00 pm - 5:15 pm

Kyle Hall 340

The proposed study investigates pluralistic ignorance for drinking attitudes (DV: Assessing using a 7-point scale on agreeableness) made for one's self and made for one's peers (IV: within-subject; Target of rating - rating for self vs. rating for others). The present study will also test whether these effects are moderated by type of drinking environment (MV - within subjects: fraternity party vs. social gatherings). Approximately 100 Radford University undergraduate students will be recruited from the Psychology Department participant pool. For the fraternity party setting, it is expected that the self-ratings of comfort with drinking will be significantly lower than ratings made for peers; a pattern that reflects a high degree on pluralistic ignorance. For social gatherings, it is expected that ratings made for both self and others will be more consistent and not significantly different; reflecting a low degree of pluralistic ignorance.

Who Is Hooking Up At Radford University?

Student Author(s): Hanan Ouchene, Sam Smith, Alya Al-Ahmed

Faculty Mentor(s): Jeff Aspelmeier

4:00 pm - 5:15 pm

Kyle Hall 340

The proposed study investigates pluralistic ignorance (PI) in attitudes regarding hookups with strangers. Attitudes about hookups (DV) will be measured using an author constructed multi-item scale evaluating comfort with different hook up behaviors (i.e., How comfortable do you think the average Radford University student with kissing during a hookup with a stranger?). Pluralistic ignorance will be evaluated by comparing participants' ratings of their own attitudes about hookups with ratings of what participants believe the average student thinks (IV: within subjects: self vs. other). The study will also test whether age moderates PI for hookups (MV: between subjects: 17yo-19yo vs. 20yo-22yo). There will be approximately 100 undergraduate Radford University students that will be recruited for the present study. An interaction between target ratings and age groups is expected. The younger age group is expected to experience higher levels of pluralistic ignorance, reporting lower levels of comfort for self and reporting higher levels of comfort for others. The older age group is expected to experience lower levels of pluralistic ignorance, self ratings are expected to be higher than younger participants self ratings and other ratings are expected to be lower than ratings made by younger participants due to maturity and social environment over time.

Psychology Poster Showcase

Texting While You Drive, Is It Worth It?

Student Author(s): Jermisha Woolridge, Mariah Chamberlain, Joseline Flores

Faculty Mentor(s): Jeff Aspelmeier

4:00 pm - 5:15 pm **Kyle Hall 340**

The present study investigates pluralistic ignorance for attitudes about texting and driving (DV: Self-reported multi-item measure using a 7-point scale with questions regarding the comfort of this behavior). This study will compare ratings participants make for themselves regarding comfort with driving and texting with the participants estimates of the comfort the average college student has with texting and driving (IV - Within-Subjects; Target of rating - self vs. ratings for the average college student). The study will also test whether these effects are moderated by impulsivity (MV - Between Subjects; High impulsivity vs. Low impulsivity; utilizing a 30 item self-report measure by Patton, Stanford, & Barratt, 1995). Approximately 100 Radford University undergraduate students will be recruited from the Psychology Department participant pool. It is hypothesized that among participants low in impulsivity, self-reported comfort ratings towards driving and texting will be significantly lower than what people assume the comfort ratings are for the average college student, which is an indicator of pluralistic ignorance. Furthermore, it is likely that among participants high in impulsivity, self-reported comfort ratings and the assumed comfort ratings for the average student towards driving and texting will both be higher, but not significantly different.

Body Image and Media

Student Author(s): Sydney Sasser, Andrea Ruiz, Morgan Hilton

Faculty Mentor(s): Pei-Chun Tsai

4:00 pm - 5:15 pm **Kyle Hall 340**

Those of different races, ethnicity, and backgrounds can be discriminated against because of their body often, even if it is in a subtle way. Those of different race and ethnic background have their own social norm of what society expects individuals to look like. Our topic ties to Psychology of Diversity because the mass media targets people of every kind, as stated above. The study from Fardouly and Vatanian (2016) revealed that more adolescents are affected by the media compared to adults. Marengo, Longobardi and Settanni (2018) focused on highly visual social media platforms such as Facebook and found that most adolescents mainly girls, compared themselves and showed to have the desire to be thinner and compare themselves to others rather than non users. In Hargreaves and Tiggemann (2004) study, they revealed that young boys can develop negative feelings about themselves because of muscular men on TV. This finding provided us a different perspective on not only young females but men as well when it comes to the way they are perceived by the media regarding their body image. We would like to explore different clothing store websites and compare their sizes from what is the biggest size to the smallest size. We may also look at the models that are on the websites as well. We also want to look at clothing stores online around different parts of the world to see each country cultural norm is like.

Psychology Poster Showcase

In the game of thrones, you win or you die; But is that really all?

Student Author(s): Jackson Dierberg, Joe Dellosso, Caitlin Martin, Kayla Bryant

Faculty Mentor(s): Pei-Chun Tsai

4:00 pm - 5:15 pm

Kyle Hall 340

The Game of Thrones is a massive, extremely popular TV show with a massive audience and fanbase. The amount of people it can reach is equally large. We hope to convey that while discrimination does exist, both in the world of Westeros and in our world, and that it is not something that should be allowed to continue (Clapton & Shepard, 2017). We reviewed multiple studies on The Game of Thrones and how the world within is rife with many issues that mirror our own. The female character Daenerys, who is the daughter of a slain king and wife of the conquering king Drogo, is denied her rightful place position on the throne because the king was concerned that she might have her own “strategic and political goals” (Clapton & Shepherd, 2017). Some of the key findings of Jones’s article includes the belief that women have often been depicted in the brightest of light (Jones, 2012). Women have often been depicted as though they were helpless and without the help or assistance of a man, they would not be successful or even be able to provide a life of their own. (Needham, 2017). As a result, the value of a woman is lower than a male, have less powerful roles, and as only seen as something sexual and to conquer. Our project plans to analyze the discrimination by watching 2-3 episodes per season for all seven seasons to get an aggregate number and severity of the amount of times that discrimination appears within the series.

The Effects of Chlordiazepoxide (CDP) and Withdrawal on Female Long-Evans Rats' Memory and Anxiety.

Student Author(s): Lindsay Thompson, Chelsey Fleming, Kari Mayberry, Salena Diaz

Faculty Mentor(s): Pamela Jackson

4:00 pm - 5:15 pm

Kyle Hall 340

Chlordiazepoxide (CDP), an anti-anxiety benzodiazepine drug, has been known for its negative effects on memory in humans for decades. However, little research has focused on the effects of withdrawal on memory and anxiety. This study analyzed the effect benzodiazepines may have on memory in rats, as well as how withdrawal may affect object recognition and anxiety. Long-Evans female rats (N=24) were semi-randomly separated into two groups of 12. One group of rats received a cylinder of CDP in their home cage overnight (10 mg/kg) mixed with 2% sucrose water for the first week, followed by 3% sucrose water for the second week to induce self-administration. The other half received the sucrose water alone. After 14 consecutive days, administration was halted to induce withdrawal symptoms. The rats performed a continuous object discrimination (COD) task using approximately 80 different randomly chosen objects during administration and withdrawal. The first five days on the discrimination task were while under the influence, whereas on Days 6-8 the rats were withdrawing from CDP. Subjects were also run on an elevated plus-maze between discrimination day seven and eight in order to access anxiety levels during withdrawal. It is expected that benzodiazepines will negatively affect the memory of rats performing the object recognition task. Withdrawal from benzodiazepines is also expected to affect their anxiety levels, as well as the recognition memory of the rats.

Psychology Poster Showcase

Transracial Barriers in Adoption

Student Author(s): Katie Jennelle, Tiffany Conner, Isabel Nolasco, Laneeka Banks

Faculty Mentor(s): Pei-Chun Tsai

4:00 pm - 5:15 pm

Kyle Hall 340

The topic of transracial adoption is one that is not often talked about. “Transracial adoption (TRA) is defined as an adoption that involves the placement of children in families that are racially and culturally different from them” (Barns, 2013). Statistically, most transracial adoptions primarily occur with a white family adopting a non white child (Lerner, 2008). It can leave adopted children wondering how they fit in with their adoptive family and with their ethnic/cultural group. Even when couples and families try to educate and prepare themselves before adopting a child of a different color, they will still have to face cultural differences at some point in the child’s life (Lerner, 2008). Our project would like to explore the effects and barriers that transracial adoption can cause on the child and their family unit. We will touch on both the perspectives of the adopted children and their adoptive parents. We will look at the child’s identity formation, the parents’ intercultural competence, and the discrimination/prejudice that both groups may face through a media analysis. Developing an ethnic identity can be difficult for transracial adoptees because they often do not have access to their birth culture (Ferrari, Rosnati, Manzi, 2015). For children with access to their birth culture, another article on the subject by Lindsey (2012) stated, “adopted children may be more secure in their identity being raised with a sense of two cultures.”

Does self-esteem moderate pluralistic ignorance for abusive relationships?

Student Author(s): Brittany Elias, Brittany McLean, Claudia Rafal

Faculty Mentor(s): Jeffery Aspelmeier

4:00 pm - 5:15 pm

Kyle Hall 340

The proposed study investigates self-esteem and pluralistic ignorance for attitudes about acceptability of abusive relationships by comparing participants’ self-ratings and their ratings of others’ attitudes (IV: consists of Within Subjects; Target of ratings for self vs. ratings for others) about whether they find it more acceptable to tolerate abusive relationships [DV: Assessed using a modified version of the Abusive Behavior Inventory (Shepard, M. F., Campbell, J. A., 1992)]. The present study will test whether these effects are moderated by self-esteem (MV: high self-esteem vs. low self-esteem; Rosenberg, 1965). Approximately 100 Radford University undergraduate students will be recruited from the Psychology Department participant pool. For low self-esteem participants, it is expected that self-ratings of comfort about abusive relationships will be significantly higher than ratings made for others; a pattern that reflects a high degree of pluralistic ignorance. For high self-esteem participants, it is expected that participants’ self-ratings and their ratings of others’ comfort with abusive relationships will be low and will not differ, reflecting a low degree of pluralistic ignorance.

Psychology Poster Showcase

Diversity in Hollywood: Linking the African American Race to Caucasian

Student Author(s): Wynter Young, Lexi lewis, Britney Reynolds, Samantha Lary

Faculty Mentor(s): Pei-Chun Tsai

4:00 pm - 5:15 pm

Kyle Hall 340

Diversity in Hollywood is something that happens every day and needs to be talked about. In our project we explore how Caucasian actors are considered for parts before other races, how movies are nominated for awards depending on roles, and the pay difference among different races such as Caucasian, Hispanic, and African American in Hollywood. (Chang& Liu, 2013) The diversity in Hollywood is not as diverse as it makes it out to be (Erihja, 2015). The articles "Race, Gender, Hollywood: Representation in Cultural Production and Digital Media's Potential for change" and "Unbinding Asian American manhoods in the movies" focus on how Whites and African Americans were used as actors in different types of movies. It focuses on specifics of how there was racial inequality of movies. Our project explores whether time may makes a change and how we can educate ourselves on this topic. Our project will compare African American actors to Caucasian actors on therapy differences, chances to receive career awards, as well as privileges each have. (Beltran,2005)

The Importance of Diversity in American Universities

Student Author(s): Christopher Trussell, Tybreoin Green, Austin White, Nate Dobos

Faculty Mentor(s): Pei-Chun Tsai

4:00 pm - 5:15 pm

Kyle Hall 340

The present paper reviews literature pertaining to diversity in American universities. This research seeks to demonstrate the importance of diversity in the university setting. A study conducted by Museus, Yi, and Saelua (2018) found that campuses that had culturally engaging environments also had students who reported higher levels of a sense of belonging. These results help to demonstrate the importance of diversity. Somewhat surprisingly, Franklin (2013) found that geographical location, such as rural or urban, has a minuscule effect on the university that students choose. Rather, the students that compose the campus population had a larger influence on the selection process. Finally, this paper will again state the importance of collegiate diversity. As Hurtado (2007) said in his article, "there is a need to renew our promise of American higher education advancing social progress" (pp.1) The present project will review statistics related to the enrollment of diverse students in universities in both rural and urban settings.

Psychology Poster Showcase

Reality Versus Media: Is What We See An Accurate Representation?

Student Author(s): Sarai Maguire-Hernandez, Michael Watts, Kristine Stuart

Faculty Mentor(s): Pei-Chun Tsai

4:00 pm - 5:15 pm

Kyle Hall 340

Media consumption greatly influences all our lives, whether we realize it or not. Entertainment influences our perceptions and ideas of what people or events are like, including the image of violent criminals. The perception of offenders may perpetuate stereotypes about a specific race or ethnicity, as well as people of gender minority or with mental illness. This often occurs due to the media's portrayal of crime in popular television shows, such as Law and Order, Criminal Minds, and Bones, but perhaps more prevalently in the news media that we are exposed to on a daily basis (Mastro, & Robinson, 2000). Our project will explore this idea in order to determine if the news media does perpetuate stereotypes of other racial groups. This can occur through overrepresentation of ethnic minority groups and the under representation of white perpetrators (Oliver, 2003). The articles (Dixon, 2003; Mastro, & Robinson, 2000; Oliver, 2003) revealed that the media provokes pre-existing implicit bias, priming of these biases, and compares aggressions toward a broad spectrum of racial groups other than one's own. There has been research that suggesting news reports show and highlight violent crime where the offender is a minority then it may "reveal subconscious bias that people are unaware of having" (Dixon, 2008). Our project will examine crime stories delivered by national news stations in order to verify that African American violent crime is overrepresented in the media. We plan to each look at the past 25 violent crime-related stories of CNN, NBC, and FOX news.

College Student Stress, Basic Psychological Needs satisfaction, Academic Encouragement, and Well-Being

Student Author(s): Katty Mancia, Dominic Sierra, Iris Traylor, Jasmine Young

Faculty Mentor(s): Pei-Chun Tsai

4:00 pm - 5:15 pm

Kyle Hall 340

The self-determination theory suggested that the fulfillment of three domains of basic psychological needs (i.e., autonomy, competence, and relatedness) is associated with one's well-being (Deci & Ryan, 2000; Ryan, 1995). Building on the self-determination theory, Jenkins-Guarnieri, Vaughan, and Wright (2015) adapted general basic psychological needs satisfaction scale to measure basic needs satisfaction among college student population. College students with greater basic psychological needs satisfaction are likely to be guided by their inner motivation to manage stress in an effective way. In addition, academic encouragement assesses to what extent students receive affirmation from people they respect whom instill confidence in them when they encounter academic challenges and/or help them realize their academic potential (Wong, Cheng, McDermott, Deng, & McCullough, 2019). Against this backdrop, our study aims to explore whether basic psychological needs satisfaction and academic encouragement may serve as moderators for the relationships between college student stress and well-being. We hypothesized that the association between college student stress and well-being will be significant only at a lower level of basic psychological needs satisfaction or academic encouragement, but not at a higher level of basic psychological needs satisfaction or academic encouragement. Also, our study would like to examine whether basic psychological needs satisfaction may serve as a mediator for the association between academic encouragement and well-being.

Psychology Poster Showcase

Cultural Differences in Mental Health

Student Author(s): Crishauna Rolack, Amanda Fithian, Jeannie Utt

Faculty Mentor(s): Pie-Chun Tsai

4:00 pm - 5:15 pm

Kyle Hall 340

This topic is important because the researchers are analyzing countries outside the United States to gain information on how mental illnesses are addressed. Some countries may not have a word for mental illnesses and practitioners may have different treatment plans in different countries for the same mental illnesses. This topic is directly related to Psychology of Diversity because of cultural differences in mental illnesses in different countries are being researched and analyzed. In previous research about Asian cultures, mental illness has a negative stigma because it brought shame to families, which is a huge priority to Asian cultures and they put the good of their family over their own needs (Gilbert et al., 2009). Previous research was also performed on the impact that religion has on mental health; religion and kinship structure are believed to guide and shape conceptualizations of mental illness, and in some developing countries may lead to practices that minimize stress, social stigma, and self-evaluation of schizophrenia (Wiseman, 1997). Recent researchers learned to improve mental health worldwide, methods used for assessments need to be standardized across cultures (Rescorla, Althoff, Ivanova, & Achenbach, 2019). Our project will be investigating cultural differences by analyzing movies that focus on mental illnesses in different countries. It is important to address how each movie defines, address and treats mental illnesses by asking specific questions and compare our findings from each movie. Working in a helping profession, it is important to have cultural awareness of the different people who will be getting helped.

Do Political Attitudes Moderate Pluralistic Ignorance of Xenophobia on Radford University's Campus?

Student Author(s): Katty Mancia, Kylie Duncan, Zoe Young

Faculty Mentor(s): Jeffery Aspelmeier

4:00 pm - 5:15 pm

Kyle Hall 340

The proposed study examines pluralistic ignorance for xenophobic attitudes amongst Radford University students. This will be accomplished by measuring ratings of participants' own attitudes and participants' perceptions of others' attitudes (IV: Within subjects; target of rating - self vs. others) on a xenophobic scale (DV: Items of Summated Rating Scale to Measure Xenophobia K. Van Der Veer, et al., 2011). This study will also test whether pluralistic ignorance for xenophobic attitudes is moderated by self-reported liberal vs. conservative political stances (MV: Between subjects; using the Society Works Best Instrument; Smith et., 2011). Among liberal participants, it is hypothesized the self-rating will be significantly lower than "other" rating with a high degree of pluralistic ignorance expected. Among conservative participants, it is expected that the self and "other" ratings will be equal and relatively high compared to liberals' self-ratings. Approximately 100 undergraduate Radford University students will be recruited for the present study.

Psychology Poster Showcase

Smoking, Vaping, and College

Student Author(s): Christian Cassella-Chandler and Rachel Millard

Faculty Mentor(s): Jeff Aspelmeier

4:00 pm - 5:15 pm

Kyle Hall 340

This study will investigate pluralistic ignorance for attitudes about smoking by comparing participants' own ratings of comfort with smoking with their perception of their peers' comfort with smoking. The IV (within subjects) will be self-attitudes in comparison with the beliefs about the attitudes of others' regarding smoking and vaping nicotine. The DV will be attitudes reported on cigarette smoking and vaping. The DV will be measured using a 5-item semantic differential that will be rated on a 7-point numerical scale accessible through Qualtrics. This study tests whether pluralistic ignorance for smoking is moderated by the method of inhalation to include cigarette smoking versus vaping. Approximately 100 undergraduate Radford University students will be recruited for the present study. For attitudes towards cigarette smoking, it is expected that self-ratings of comfort will be significantly lower than other ratings of comfort. A similar pattern is to be expected for attitudes about vaping, but both self and other ratings will be more positive than respective ratings for cigarette smoking. It is also predicted that pluralistic ignorance for attitudes about smoking cigarettes will be stronger than attitudes about vaping.

Correlates of the Fear of Missing Out

Student Author(s): Hanna Hatfield

Faculty Mentor(s): Nicole Iannone

4:00 pm - 5:15 pm

Kyle Hall 340

The Fear of Missing Out (FOMO) is a new and relatively misunderstood social phenomenon which involves a feeling of anxiety surrounding the idea that others are experiencing an event or favorable interactions of which you are not a part of (Wang et. al, 2018). Previous research has shown that social media can play a role in eliciting FOMO, although it can be experienced without social media's contribution as well. Additionally, extraversion and neuroticism have shown a relationship with increased social media use which could then potentially lead to greater frequency of experiencing FOMO. We hypothesize that factors such as increased social media use, low self-esteem, high levels of extraversion and high levels of neuroticism will be positively correlated with experiencing FOMO. We also predict that FOMO will be positively associated with certain behaviors (e.g., spending more money, channel surfing). Participants will be recruited from an online psychology survey research website and will complete measures of social media use, self-esteem, personality characteristics, FOMO, and potential behaviors related to FOMO. Correlational tests will be used to evaluate the relationships between various personality factors, behaviors, and social media use and prevalence of the fear of missing out.

Psychology Poster Showcase

Learning from Closed-Book Essays: An Intervention Study

Student Author(s): Lauren Wright and Brody Dawson

Faculty Mentor(s): Kathleen Arnold

4:00 pm - 5:15 pm

Kyle Hall 340

Retrieving items from memory is one of the most effective ways one can study, as has been shown in many studies examining the effectiveness of various kinds of tests (Roediger & Butler, 2011). However, one kind of test, the essay test, has received less attention but may be one of the most effective ways to implement retrieval practice. Writing a closed-book essay not only engages retrieval practice, but it also engages organizational and elaborative processing, both of which also benefit learning. Previous research has shown that writing a closed-book essay can be at least as effective as a more traditional free recall test (Arnold, Umanath, Thio, Reilly, McDaniel, & Marsh, 2017). However, other research has suggested that closed-book essays may be no more effective than open-book essays, a writing task that does not require retrieval (Arnold, Drew, McDaniel, & Marsh, under review). In this study, we are examining the cognitive processes involved in closed-book essays by testing an intervention designed to boost retrieval, which should in turn allow for more organizational and elaborative processing. If the intervention enhances these cognitive processes and boosts learning, closed-book essays with an intervention may become a more effective learning tool than open-book essays and other more traditional forms of testing.

The Views of Ageism in College Students

Student Author(s): Marissa Yow

Faculty Mentor(s): Jenessa Steele

4:00 pm - 5:15 pm

Kyle Hall 340

Negative ageist stereotypes and ageism can have a mental and physical effect on older adults. This study examined the views that college students hold on ageist stereotypes and ageism. There were 73 college students (18-25+) that completed the survey. The survey included measures for social support, ageism, and benevolent ageism. It was expected that there would be a gender difference in benevolent ageism, females were expected to score higher than males. There was a significant relationship found between benevolent ageism and gender. Males were found to have a higher score in benevolent ageism than females. Using a larger sample size that is more diverse in gender would benefit future research.

The Life and Death of Structuralism: The Edward B. Titchener Biography

Student Author(s): Paul Pohto

Faculty Mentor(s): Ruth Riding-Malon

4:00 pm - 5:15 pm

Kyle Hall 340

Many recognize Wilhelm Wundt as a founding figure of modern psychology. However, without Edward Bradford Titchener, one of Wundt's pupils, many influential theories and concepts would have never reached the United States. Titchener was a well-known critic of applied psychology and as a result boycotted APA conventions despite being a founding member. Titchener is acknowledged for developing a structuralist view within psychology that sought to classify and label facets of the mind (e.g., sensations, thoughts). According to historical documents, Titchener's reputation preceded him in regard to his style of lecture at Cornell University as well as his impressions on students. This poster presentation will further expand on the life of Edward B. Titchener as well as his influence and contributions to modern day psychology.

Biology Poster Showcase

Impacts of the invasive Emerald Ash Borer on Ash Trees in Southwest Virginia Forests

Student Author(s): Stephen Ruppert, Brian Ditch, Adam Allen

Faculty Mentor(s): Christine Small

5:30 pm - 6:45 pm

Kyle Hall 340

Emerald Ash Borer (*Agrilus planipennis*; EAB) is an Asian wood-boring beetle first documented in Michigan in 2002. EAB populations have expanded exponentially, killing millions of ash trees (*Fraxinus* spp.) across eastern North America. Female beetles deposit eggs just beneath the bark and larvae burrow, blocking the flow of nutrients. Adults emerge in spring through D-shaped exit holes. Infected trees typically die within four years. Although EAB only recently invaded southwest Virginia (2016-2018), it is now considered one of our most destructive forest pests. Twelve 400 m² plots were established at Wildwood Park, Radford, VA. Approximately 80 white ash trees were tagged and assessed for health, EAB impacts, and factors potentially correlated with infestation severity. Woodpeckers are the main predator of EAB, so bark damage is often the first sign of infestation. To assess bark damage, we counted number of woodpecker holes between 1.25 and 1.75 meters on each tree. Also, we developed a bark scale for upper, middle, and lower tree sections ranging from no signs of damage to bark loss and larval galleries. Tree stress measures included presence of basal sprouts, number of epicormic sprouts, and extent of canopy dieback. Direct impacts included number of EAB exit holes, larval feeding galleries, and bark splits. This research serves as a baseline for studies of forest changes following the loss of ash trees, potential increases in invasive plants, the search for genetically resistant ("lingering") ash trees, and supports national efforts to better understand impacts of this destructive beetle.

Bird-window Collisions at Radford University: Light Pollution as a Source of Disorientation for Birds

Student Author(s): Anastasia Mejia, Kyla Luna, Taylor Brown

Faculty Mentor(s): Karen Powers

5:30 pm - 6:45 pm

Kyle Hall 340

It is estimated that bird-window collisions (BWC) kill between 100 to 976 million birds annually. At Radford University, we are currently monitoring 15 buildings for bird carcasses, documenting their GPS coordinates of bird strikes, and identifying the birds to species, if possible. We are focusing on whether light pollution is linked to the number of or location of bird-window collisions. Light pollution is an artificial light that brightens the night's sky by man-made structures and could negatively affect ecological systems. With urbanization, like that on our campus, light pollution can cause direct glares, which can cause birds to experience disorientation. Birds may be attracted to or be repulsed by these glares. The same trends may occur during daylight hours, due to the visible reflection of vegetation in the windows. We hypothesized that building aspects with higher light measures will result in greater numbers of collisions. We will be using a light meter to collect data for each aspect of the 15 buildings on four occasions: a sunny day, a rainy or cloudy day, a night with a full moon, and a night with a new moon. We will compare our data to BWCs collected since February 2018 to determine if there is a relationship between BWC locations and relative light measures. To date, we have documented 35 BWCs on campus, and surveys are on-going. Results will be discussed in light of recent analyses.

Biology Poster Showcase

Creating CRISPR/Cas Mutants in Arabidopsis

Student Author(s): Tayler Lewis, Megan Calvanese, Angie Leon

Faculty Mentor(s): Tara Phelps-Durr

5:30 pm - 6:45 pm

Kyle Hall 340

The overall purpose of this experiment was to use clustered regularly interspersed short palindromic repeats (CRISPR)/Cas system, to create mutations in the Arabidopsis ASYMMETRIC LEAVES 1 and 2 (AS1 and AS2). CRISPR/CAS is an efficient method for targeted genome editing. Arabidopsis thaliana is a common plant used for plant molecular biology and genetics. The AS1 and AS2 proteins are DNA binding proteins that regulate gene expression during plant development. We will use the CRISPR/Cas system to create specific mutations in the AS1 and AS2 genes. We built a CRISPR/Cas vector that contained a short AS1 sequence that will target CRISPR/Cas 9 to the AS1 gene once transformed into plants. We verified our vector by PCR and restriction digest. We are ready to put the CRISPR/Cas vector into normal (wildtype) plants to create new Arabidopsis lines that have new AS1 mutations. Plants that have been altered by our CRISPR vector will have an AS1 phenotype that have wrinkled leaves and shortened petioles.

Tibial Torsion and Patterns of Metatarsal Robusticity in Humans: An Osteometric Study

Student Author(s): McKenzie Schrank, Jessica Wollmann, Aubree Marshall

Faculty Mentor(s): Laura Gruss

5:30 pm - 6:45 pm

Kyle Hall 340

Here we use osteometric data from a modern human sample to test the hypothesis that the very low degree of tibial torsion in the Dmanisi D3901 H. erectus individual (1°; modern humans average 15-20°) is related to its unusual pattern of metatarsal robusticity (Pontzer et al., 2010). Anatomically, a lower degree of tibial torsion may be expected to produce a more medial orientation of the foot, with greater stresses engendered in the more central rays of the foot during locomotion. This may explain the relatively greater robusticity in the Dmanisi MT III and IV compared to modern humans. Here we compare tibial torsion and MT robusticity in a sample of 40 young male human individuals from the Robert J. Terry Anatomical Skeletal Collection at the Smithsonian Institution. Tibiae were photographed and the resulting images were used to calculate tibial torsion. MT robusticity (dorso-plantar and medio-lateral bending strength and axial strength) was estimated from external measurements and biplanar x-rays. We found no relationship between tibial torsion and the pattern of robusticity (either bending or axial strength) among the metatarsals. Our results suggest that tibial torsion alone is not adequate to explain MT robusticity patterns in D3901. The extent to which tibial torsion actually influences foot orientation during locomotion is unclear, but our separate experimental study has so far failed to reveal relationships between tibial torsion, foot orientation, and stress patterns in the foot in living human subjects, which corroborates these osteometric results.

Biology Poster Showcase

Tibial Torsion and Pressures in the Feet During Walking and Standing in Humans: an Experimental Study

Student Author(s): Jessica Wollmann, Aubree Marshall, McKenzie Schrank, Celinna Haber

Faculty Mentor(s): Laura Gruss

5:30 pm - 6:45 pm

Kyle Hall 340

Pontzer et al. (2010) reported a very low degree of tibial torsion in the Dmanisi D3901 *H. erectus* individual. Structurally, less tibial torsion may be expected to produce a more medial orientation of the foot, possibly resulting in greater stresses in the more central pedal rays during locomotion. This may explain the relatively greater robusticity in the Dmanisi MT III and IV compared to modern humans. We tested this hypothesis experimentally. Here we present pilot data for tibial torsion, foot angle, and plantar pressure data during standing and walking, in a pilot sample of 10 human subjects. Trans-malleolar axis, a proxy for tibial torsion, and foot angle were measured from photographs of each subject's foot taken from underneath. A Matscan pressure mat was used to measure plantar pressure under subjects' metatarsal heads (MT I vs. MT II-IV vs. MT V), as well as foot angle, during walking and standing. We found no relationship between tibial torsion and foot angle during standing or walking, nor between foot angle and the pattern of pressure across the metatarsals. Further data collection is underway and a larger sample size will verify these results, but our preliminary findings suggest that tibial torsion is not a major determinant of foot orientation during locomotion, and is unlikely to explain the pattern of MT robusticity in D3901. These results concur with our related osteometric study (Schrank et. al), which found no relationship between tibial torsion and metatarsal robusticity in a modern human sample.

A new method for obtaining tibial torsion in living humans

Student Author(s): Aubree Marshall, McKenzie Schrank, Jessica Wollmann

Faculty Mentor(s): Laura Gruss

5:30 pm - 6:45 pm

Kyle Hall 340

Tibial torsion, the twisting of the tibia about its longitudinal axis that develops throughout childhood, is relevant to many clinical, biomechanical, and paleoanthropological issues. The most accurate method of measuring tibial torsion is with a CT scan, but this is costly and exposes the subject to ionizing radiation. It is therefore impractical for many researchers, especially those outside of clinical work. Here, a new cheap and reliable method of measuring tibial torsion is introduced. The procedure involves seating a subject on a table, with the thigh parallel to the edge of the table and the knee at its edge at a 90° angle to put the tibial condyles at a baseline 0° (horizontal). The foot is placed in a relaxed position on a clear sheet of plexiglass supported by a wire frame, elevated at an adjustable height so that a photo of the foot can be taken from below. From this photo foot angle and transmalleolar axis (TMA, between the medial and lateral malleoli), a proxy for tibial torsion, can be measured. TMA and foot angle were measured multiple times on both feet in sixteen subjects by four observers. Test-retest reliability was good, with a correlation between measures of $r = 0.778$ for TMA and $r = 0.868$ for foot angle. This method should therefore be considered as an accessible new method to replace expensive and potentially harmful CT scans when measuring tibial torsion in living subjects.

Biology Poster Showcase

Lichens of Wildwood Park

Student Author(s): Richard Brooks

Faculty Mentor(s): Gary Cote

5:30 pm - 6:45 pm

Kyle Hall 340

Lichens are a unique, important part of the ecosystem. A lichen is a fungus in a symbiotic relationship with an alga; this symbiosis allows algae to grow over most of the world. Having a healthy lichen population in your area indicates cleaner air. Finding a certain species can also hint towards the age of a forest, with some lichens only growing in the oldest of forests. Lichens have been around for a long, long time; their role in primary succession was the keystone for land colonization by land plants. What I'm doing in Wildwood is locating types of lichens that have not already been discovered there. With each new discovery a new piece of information is found, another piece to the puzzle. Once I find a lichen that appears to be new, I sample it and take it to the lab for further identification. Lichen species are very diverse, so in order to get an accurate I.D., chemical tests, and sometimes high-powered microscopy are used. When a newly discovered lichen has been identified in Wildwood, it is documented and posted on the website.

Deer Spotlighting Surveys at the Radford Army Ammunition Plant: Impacts on Harvest Data

Student Author(s): Jasmine Brown

Faculty Mentor(s): Karen Powers

5:30 pm - 6:45 pm

Kyle Hall 340

The Radford Army Ammunition Plant has been working with the Virginia Department of Game and Inland Fisheries to follow Quality Deer Management guidelines and maintain a healthy, sustainable deer herd. Since 2012, July - September spotlighting surveys by RFAAP staff and Radford University faculty and students have preceded the hunts on the Main Plant, and have had immediate management implications for the planned harvest numbers. The number of hunt days and the relative number of does and bucks harvested reflect the results of such counts. Here, we examined metrics calculated from the spotlighting surveys (e.g., deer/mile surveyed, buck:doe ratio, fawns per doe), and compared them to actual harvest data. We hypothesized higher field dressed weights in adult bucks, adult does, and fawns would correspond to lower herd density. Also, we predicted that a greater doe:fawn ratio would correspond to greater fawn weights (assuming more fawns means a heavier burden on does). Our findings failed to support our hypothesis. Non-significant trends in adult buck, adult doe, and fawn relationships suggest that as deer counts increased, so did the average weight of the deer harvested. Further, greater doe counts suggested lower fawn weights (again, non-significant relationship). One consideration is that total deer counts ranged yearly from ca. 12.5-15.9 deer per mile of road surveyed. Were these numbers similar on a square mile basis, we might suggest that density is not a limiting factor. Although our data did not relate spotlighting counts to herd health, additional survey years may help us tease out trends.

Biology Poster Showcase

Alkaloid Extraction And Identification From Dieffenbachia seguine

Student Author(s): Cole Faulkner

Faculty Mentor(s): Gary Cote and Cindy Burkhardt

5:30 pm - 6:45 pm

Kyle Hall 340

Alkaloids are synthesized by a variety of organisms. As they are often toxic to animals, they commonly defend against predation, an important role in many plants. We have been interested in whether *Dieffenbachia seguine* (Araceae) might produce alkaloids associated with calcium oxalate crystals in specific tissues, especially male and female flowers. The crystals could serve as delivery vehicles, puncturing tissues ensuring alkaloid entry. We further hypothesized that alkaloids would not be found in sterile flowers, which serve as a food reward to pollinator beetles. We developed a method to isolate putative alkaloids from *D. seguine*, and to analyze them by gas chromatography-mass spectrometry (GC-MS). Thus far, we have found the alkaloid indole in the leaves, and in male, female, and sterile flowers of the plant.

Relating Bird-window Collisions at Radford University to Wind and Precipitation Metrics

Student Author(s): Miranda Flack

Faculty Mentor(s): Karen Powers

5:30 pm - 6:45 pm

Kyle Hall 340

Bird-window collisions (BWCs) are the primary cause of bird mortality in the world, totaling up to one billion birds each year. Windows with highly-reflective glass are responsible for many of the window collisions. Since February 2018, we have been studying these collisions on Radford University's campus and asking how a number of vegetation, landscape, and building metrics affect BWCs. We surveyed 15 buildings on the campus at least once each day during our research. For each documented BWC, we recorded the location (GPS) and identified it to species, if possible. My project focused on weather data, seeking to determine if there was any relationship between the location and timing of window collisions and the average wind speed, wind direction, and total precipitation of the current day. I hypothesized that days with higher wind speeds and gusts would document more hits, and that the location of the hit would relate to the direction that the wind is blowing. Specifically, BWCs would be more prevalent on building aspects facing a headwind, ultimately "pushing" the birds into the windows. We have documented at least 29 BWCs to date. These surveys are on-going, and results will be discussed in light of recent analyses.

An Internship at the Science Museum of Western Virginia: Investigating Freshwater Fish Schooling and Aggressive Behavior

Student Author(s): Miranda Flack

Faculty Mentor(s): Karen Powers

5:30 pm - 6:45 pm

Kyle Hall 340

The Science Museum of Western Virginia is home to many aquatic habitats and species, but the one of the largest aquatic habitats there is a 750-gallon freshwater community tank. The community tank consists of 15 species of primary consumers, secondary consumers, and decomposers, as well as 3 species of live plants. Most of the consumer species are schooling species, some of which are known to exhibit territorial or intra- and interspecific aggressive behavior. My goals were to estimate tank density and then relate schooling behavior of fish to aggressive encounters. First, I took photos of the fish and estimated total biomass to determine if the tank is considered above or at capacity. Next, I recorded up to 20 hours of video footage and related the number of aggressive encounters to schooling size. I hypothesized that the schools with more fish were more likely to exhibit aggressive behavior. Aggressive encounters and known densities will be used to determine if changes could be made to improve the conditions in the tank.

Biology Poster Showcase

Internship at Science Museum of Western Virginia: Trouble-Shooting Captive Care of Poison-Arrow Frogs

Student Author(s): Stanford Horbacz

Faculty Mentor(s): Karen Powers

5:30 pm - 6:45 pm

Kyle Hall 340

As an animal care intern at the Science Museum of Western Virginia, it is my responsibility to help maintain healthy environments for animals on display through daily feedings and habitat maintenance. This internship has presented unique opportunities to learn about many types of vertebrates and invertebrates, while allowing me to develop basic animal care skills. This internship incorporates animal husbandry of reptiles, amphibians, insects, and arachnids. One rare amphibian that I care for is the phantasmal poison-arrow frog (*Epipedobates tricolor*). This frog is an endangered species native to the Andes Mountains in Ecuador. Things that seem simple on paper, such as recreating an Ecuadorian habitat in a terrarium, can pose unique challenges in selecting and maintaining suitable vegetation types and structures, moisture levels, and temperature. Each of these factors require their own innovative solution. As an intern, I was able to creatively problem-solve to help the animal care team circumvent obstacles as they arose. In this poster, I will present some resourceful problem-solving solutions that have been implemented for three species of poison-arrow frogs, *Epipedobates tricolor*, *Phyllobates terribilis*, and *Dendrobates leucomelas*. This internship is an opportunity to see a unique application of many facets of the biology major which is helpful in understanding the versatile options biology majors have post-graduation.

Interning at PrideRock Wildlife Refuge: Learning to be a caretaker

Student Author(s): Meghan Howard

Faculty Mentor(s): Karen Powers

5:30 pm - 6:45 pm

Kyle Hall 340

In summer 2018, I completed an internship at PrideRock Wildlife Refuge, an animal sanctuary located in Terrell, Texas. This sanctuary cares for exotic cats, bears, and wolf hybrids from private owners, non-operational zoos, or circuses. They research and implement all the best management practices to care for the animals who retire there. As an intern caretaker, I was in charge of prepping and distributing daily meals, daily cleaning of cages, ensuring all animals were in good condition, and moving animals in and out of roll-arounds as needed. I also conducted a research project to enhance the livelihood of the tigers in residence. Recognizing that tigers can easily get bored in an enclosure, we sought to provide a number of stimulating activities, and gauge individuals' reactions. Activities included blood popsicles, bubble baths, meat piñatas, pool time, scent stimulus, and toys. We pre-selected activities that aligned high energy vs. low energy tigers with activities of the same level. We observed and recorded how each animal reacted to each stimuli. The reactions ranged from no response to being overly excited and protective about their "gift." Testing these stimulating activities provides preliminary reactions to a large number of captive tigers, and may be useful information to any other captive tiger facility seeking to provide enrichment.

Biology Poster Showcase

Calcium Oxalate Crystals in the Leaf Buds

Student Author(s): Samantha Jones-Carlyle

Faculty Mentor(s): Gary Cote

5:30 pm - 6:45 pm

Kyle Hall 340

Calcium oxalate crystals are found throughout the plant kingdom. It is generally assumed that these crystals in leaves discourage herbivory, although other roles in leaves and other parts of the plant have been proposed. Another plant part that would be valuable to protect would be the future leaves and flowers enfolded in winter buds. Insects could be a problem in late fall and early spring. In the winter, insects might not be a problem, but mammalian herbivores would be. We hypothesized that the scales enfolding the developing leaves and flowers might be armed with crystals to discourage herbivory. To test this, we collected buds from 25 native and non-native local trees, dissected off the bud scales and cleared the scales for microscopy. Crystals were abundant in some species, but apparently absent in others. In some species, they were found primarily at the base, or primarily at the tip. Both flat plates, and druses (star-like aggregations of plates) were seen. Chinese elm (*Ulmus parvifolia*) had both crystal structures present.

Does the Time of Day Have An Impact on the Number of Bird-Window Collisions at Radford University?

Student Author(s): Lindsey Lee and Lauren Burroughs

Faculty Mentor(s): Karen Powers

5:30 pm - 6:45 pm

Kyle Hall 340

Bird window collisions (BWCs) kill up to one billion birds every year in the United States. At Radford University, many of the buildings constructed within the last decade incorporated in their design large, expansive windows. In February 2018, we began a long-term surveying project of 15 buildings to compare the number of bird-window collisions that occurred during the morning and the afternoon on Radford University's campus. We hypothesized that there will be more BWCs during the afternoon, suggesting that collisions happen during daylight hours. This will be determined by comparing the number of BWCs in the morning to the number of BWCs in the afternoon. Bird-search methods include walking around 15 buildings once or twice per day. Data collection includes GPS location of where the evidence of the bird strike was found, the building where it occurred, and the time of day when the bird was found. There will also be identification of species based on the evidence/remnants of birds. As of March 5th, 2019, there have been 263 walks in the morning (41.6% of walks) and 369 walks in the afternoon (58.4% of walks), making the total number of walks 632. With the 28 carcasses that have been discovered, 16 have been discovered in the morning and 12 have been discovered in the afternoon. Around mid-April, a chi-squared test will be run on all documented hits to determine if more hits occurred during the afternoon than expected by chance alone.

Biology Poster Showcase

Analyzing Relationships of Bird Window Collisions at Radford University to Landscaped Vegetation and Anthropogenic Perches

Student Author(s): Diana Nickle

Faculty Mentor(s): Karen Powers

5:30 pm - 6:45 pm

Kyle Hall 340

Bird window collisions (BWCs) account for the majority of untimely bird deaths each year. Radford University's constant expansions and renovations have introduced modern architecture to the historically rustic, brick buildings. In February 2018, students at Radford University began surveying 15 buildings across campus once or twice a day. These buildings were chosen because of their variation in window area and height, or proximity to roads and vegetation. Vegetation and roosting spots are very important to local and migratory birds, whether it is only to rest on their journey or to nest in the spring and summer. The vegetation around campus has been designed for aesthetic purposes and therefore cultivated; non-native and native plants are purposely positioned throughout the landscaped campus. Their origin could be a factor in the rate of bird-collisions, as they are usually planted close to building boundaries and windows. In some circumstances, unintentional anthropogenic structures could be suitable for perching (e.g., bike racks, utility boxes and benches). I will be measuring the amount of natural and anthropogenic perches near 15 buildings on campus, as they could account for "hits." I'll measure points every 10m along a building's edge and qualify "hits" if the point has a potential roosting spot at heights above 1 m from the ground and within 3 m of the building. I'll also document whether the vegetation hit is from a native or non-native plant species. As recognized in a similar experiment by Virginia Tech, bird deaths increased marginally near ornamental (non-native) vegetation. I expect to find a higher rate of bird-window collisions around the buildings with a greater proportion of points with non-native vegetation rather than those with native and with more hits documenting anthropogenic roosts. Results will be discussed in light of recent analysis.

Internship with the U.S. Forest Service: Research on Sensitive Species

Student Author(s): Kayla Ogden

Faculty Mentor(s): Karen Powers

5:30 pm - 6:45 pm

Kyle Hall 340

This spring, I am completing an internship with the U.S.D.A. Forest Service, in their Roanoke office. The biologists at this location focus on management of the George Washington-Jefferson National Forest. I spent the first portion of the internship time producing baseline write-ups for various sensitive species in this region. This involved compiling literature about morphology, range, ecological importance, and conservation needs for each species. Through the remainder of my time, I am experiencing fieldwork first hand. I will help monitor Appalachian grizzled skipper (*Pyrgus centaureae wyandot*), which is a rare native butterfly species that comes out in early spring. I am also going to assist with doing checks on various projects: American chestnut (*Castanea dentata*) plantings, golden-winged warblers (*Vermivora chrysoptera*) and their spring migration, and a habitat management project for a smooth-coneflower (*Echinacea laevigata*) conservation site, which is the product of a partnership between the Forest Service and the Virginia Department of Transportation. In this poster, I'll present my findings from my research of two sensitive species, Appalachian grizzled skipper and Herodias underwing (*Catocala herodias gerhardi*). I'll also report my findings from these field experiences, and how they relate to my educational pathway at Radford University. From working alongside the wildlife biologists at the U.S. Forest Service, I am gaining valuable knowledge and experience I will certainly use as I pursue my own career in environmental biology.

Biology Poster Showcase

COI Barcoding in bird carcasses from building collisions on Radford University Campus

Student Author(s): Claudia Paniagua-Ugarte

Faculty Mentor(s): Karen Powers and Bob Sheehy

5:30 pm - 6:45 pm

Kyle Hall 340

Birds colliding into buildings is a leading cause of bird mortality. In February 2018, students at Radford University initiated an investigation of bird window collisions (BWCs) on campus. Fifteen campus buildings were selected with a variety of heights, window areas, and vegetation buffers. Walks around the buildings were performed on a daily basis. Students documented mortalities by recording GPS coordinates of any bird remains (including feathers, limbs, and full bodies). All remains were then identified, if possible, to the species level. However, not all carcasses were able to be readily identified. In the 2018-2019 walks, eight species were unidentifiable due to their deteriorated state or force of impact. I plan to use DNA barcoding (using DNA sequence information to identify species), focusing on the COI gene, to identify each of the eight sets of remains from this larger project. Adding species identifications to these unknowns will help us fully acknowledge all documented hits of all bird species on campus.

Examining Window-collision Locations on Radford University's Campus: Migratory versus Resident Bird Species

Student Author(s): Hannah Reed and Zoe Krajcirovic

Faculty Mentor(s): Karen Powers

5:30 pm - 6:45 pm

Kyle Hall 340

Window collisions are estimated to be the direct cause of up to one billion cases of avian mortality each year. The mortality rate can be expected to increase as modern architecture trends incorporate greater window area into new buildings and renovations. For the purposes of our study, we have defined resident birds as those living in the same region across all seasons, and migratory birds as those that remain in this region only seasonally. In February 2018, we began to monitor the frequency of bird-window collisions across Radford University's campus. Data are collected by monitoring the perimeter of 15 buildings on campus each day. When a hit is detected, the coordinates of the remains found are recorded and, if possible, the species of bird is determined. We hypothesized that migratory birds are the most common victims of window collisions, especially for buildings closest to the New River. As migratory birds move seasonally, we assume that they use the New River as a migratory landmark. To date, we have documented 29 strikes. Of the 29, 20 individuals across 19 species were migratory, and 9 individuals of 8 species were residents. Using ArcMap10.4 to map bird-window hits, we found 8/9 resident birds collided with buildings on the east half of campus. No spatial patterns is evident for the migratory birds. Our project is on-going, and we will assess trends statistically in future analyses.

Biology Poster Showcase

Radford University Bird-Window Collisions: Impacts of Window Area, Aspect, and Building Height

Student Author(s): Laura Soares

Faculty Mentor(s): Karen Powers

5:30 pm - 6:45 pm

Kyle Hall 340

Because bird-window collisions (BWCs) are the cause of the greatest number of bird fatalities in the United States, we began investigating BWCs at Radford University in February 2018. Initially, our 2018 studies analyzed hits at 15 buildings according to their vegetation density, window area, and distances from food supply, roads, and migratory pathways. Building on the 2018 findings, I chose to analyze how building heights relative to window sizes affected the presence or number of bird fatalities. Through the use of architecture record drawings of our campus combined with in-person measurements, I am accurately determining the window area and height measurements for each side (aspect) of each of these 15 surveyed buildings. I expect to find more window-collision incidents at building aspects with a greater aboveground elevation. Examining window area:building height as a ratio (separately for each aspect), I predict that more fatalities will be documented at building aspects with greater window area:height ratios. To date, we have documented 34 bird-window collisions, and surveys are on-going.

Exploration of Inflammatory Response in Alcohol-Treated Rodents

Student Author(s): Alicia Wood

Faculty Mentor(s): Joyce Caughron and Dayna Hayes

5:30 pm - 6:45 pm

Kyle Hall 340

A previous study endeavored to determine how gastrointestinal microbiota affect the relationship between alcoholism and alcohol cravings. Rodents were exposed to alcohol and given fecal microbiota transplants to see if cravings for alcohol were reduced. Alcohol can increase gut permeability, causing inflammation in the gut, which triggers the release of biochemical markers like interleukin-1B (IL-1B). The objective of this follow-up study is to induce long-term alcohol exposure in rats to determine its effect on IL-1B levels; understanding the relationship between long-term alcohol intake and inflammation could influence treatment of alcoholism and its associated symptoms. A standard model for alcohol consumption in rodents is drinking in the dark (DID). The DID study takes 21 days to complete. There will be 18 rats, 9 males and 9 females, with the experimental group getting 20% ethanol solution and the control group getting water. Fecal samples will be collected before, during and after the study. Post-study, gut tissue and brain tissue will also be collected. Enzyme-Linked Immunosorbent Assay (ELISA) will be used to measure IL-1B levels in the fecal samples and the tissue samples for comparative analysis. This study is running and will be finished with available data 03/24/2019. This is a multi-step study. Once DID is complete, the samples will be prepped for ELISA. If alcohol triggers gut permeability increasing the presence of cytokines like IL-1B, it follows that the alcohol-treated rats will have higher levels of IL-1B than the control group.

Biology Poster Showcase

Identification of signals that regulate CYP4F gene expression

Student Author(s): Sabrena Hodnett, Harvest Farrer, Emma LaBarr, Ashley Franklin

Faculty Mentor(s): Peter Christmas

5:30 pm - 6:45 pm

Kyle Hall 340

Cytochrome P450s (CYPs) are a superfamily of enzymes that metabolize lipid substrates. Members of the 4F subfamily (CYP4Fs) are thought to play a role in the regulation of inflammation because they generate or inactivate lipids that function as inflammatory mediators. The study of human CYPs has been facilitated by a new liver cell line (HepaRG) that can be differentiated to a phenotype similar to primary tissue: these cells retain expression of CYPs in culture and respond to inflammatory signals. We used HepaRG cells to determine baseline expression of CYP4F enzymes, and to search for agents that modulate expression. The cytokines interleukin 1 (IL1), tumor necrosis factor (TNF), and interleukin 6 (IL6) activate expression of inflammatory marker proteins such as CRP, but stimulate a significant down-regulation of multiple CYP4Fs. Other classes of cytokines such as type I interferons have no effect on CYP4F expression. In contrast, retinoic acid increased CYP4F8 expression and reversed the down-regulation of CYP4F8 observed in IL1-treated cells. Retinoic acid and other retinoids are used as therapeutic drugs to treat certain inflammatory disorders. In future studies we will investigate if changes in expression of CYP4F8 and other CYP4Fs lead to changes in the levels of lipid mediators that regulate inflammation.

Scale of integration from the alpha-proteobacterium into mitochondrial genome

Student Author(s): A.L. Hiett, M.K. Barney, P. D. Garskol

Faculty Mentor(s): Bob Sheehy and Joyce Caughron

5:30 pm - 6:45 pm

Kyle Hall 340

Mitochondria originated from a type of bacteria called alphaproteobacteria. The endosymbiotic theory suggests that mitochondria were originally unicellular organisms that now inhabit eukaryotes as their main energy supplier, in the form of ATP. Mitochondrial DNA has slowly been integrated into the nucleus over time, the few genes left being those which code for protein complexes within the mitochondrial membrane. All non-essential processes have been taken over by the nucleus. A comparison of closely related clades of the alphaproteobacteria to human mitochondria through a series of sequence alignments will provide a scale to show the integration of the DNA. J-Dotter and MEGAX64 will be used for single sequence and multiple sequence alignments. Two factors that are very important will be number of genes and function of genes. From there, a conclusion will be drawn to answer the question: at which point in the integration process is an endosymbiont no longer considered an independent organism?

Biology Poster Showcase

Analyzing genomic differences between multi-host and single-host bacteriophages

Student Author(s): C. Fox, M.R. Gonzalez, A. Roberts

Faculty Mentor(s): Bob Sheehy and Joyce Caughron

5:30 pm - 6:45 pm

Kyle Hall 340

By identifying the regions of similarity between phages that contain multi-host binding capability using bioinformatic techniques such as sequence similarity analysis and coding region annotation, the regions of interest are identified that could lead to determine the required attributes of phages that make them capable of multiple host specificity. Sequences of Klebsiella K64-1 phage are analyzed in contrast to those of a highly similar but single-host phage using a blasting technique. The same method is applied to multi-host Pectobacterium phage CBB with a single-host phage. Protein-coding regions are then identified and compared between the multi-host and single-host partners. Regions that are significantly different between the closely related phages are then used to compare between phage K64-1 and CBB phages to identify regions of similarity that are probable sequences of interest for multi-host phage genomes and morphology. tRNAs belong to non-coding regions within genomes that have significance in membrane morphology. The phage genomes of the multi-host phages are then run through computational programs that find likely tRNA sequences and then the sequences are compared between Klebsiella K64-1 phage and Pectobacterium phage CBB using sequence analysis to find high similarity regions. Because tRNAs are membrane molecules, they have high potential to be associated with the host-phage binding that is required in order for the phage to infect the specified host.

Comparison of Tail-Related Proteins in EA Cluster Phages

Student Author(s): J. Gibson-Cromer, K. Hodges, J. Wyllie

Faculty Mentor(s): Bob Sheehy and Joyce Caughron

5:30 pm - 6:45 pm

Kyle Hall 340

A bacteriophage (or phage) is a virus that infects bacterial host cells, over the past few years the number of sequenced phage genomes has significantly increased. Phage genomes contain a high proportion of genetic sequences of unknown function, and probably represent the largest pool of unexplored genes. This experiment stands to compare the DNA sequences of genes that code for minor tail proteins in E subcluster bacteriophages using bioinformatics tools such as BLAST, HHpred, MEGA, JDotter, Phamerator, PECAAN. In comparing these sequences, we are looking for any similarities that could point to a sequence that is consistent with tail-related proteins, then comparing this sequence with genes of unknown function that are located between these minor tail proteins. We expect to find sequence similarities within the known minor tail protein coding genes. We are hoping that these similarities will also be found in the genes of unknown function, and will help us determine a possibly tail-related function for that gene.

Biology Poster Showcase

A proposed approach for identifying function for genes where the function is unknown

Student Author(s): C. Krysa and L. Jones

Faculty Mentor(s): Bob Sheehy and Joyce Caughron

5:30 pm - 6:45 pm Kyle Hall 340

The ultimate goal of bioinformatics is to determine gene function. One of the leading, modern methods for studying and determining gene function is the use of Clustered Regular Interspaced Short Palindromic Repeats (CRISPR). CRISPR is faster, less expensive, and more accurate than previous methods. The CRISPR molecule evolved first in single celled organisms as a means for fighting viral infection. When a virus attaches itself to the cell and injects its DNA, the cell responds with CRISPR, a single strand RNA molecule that is connected to the CRISPR associated protein, or Cas. The RNA is primed to attach itself to the virus DNA and Cas makes a cut rendering the virus DNA ineffective. This method can be manipulated in the lab such that the RNA strand attaches to a specific target (DNA sequence) and the Cas makes the cut which turns the gene off. This makes it possible to study the effects of that gene on the development of the virus or other organism. It can also be used to alter the gene's sequence as well. For this study, gene 20 in the bacteriophage HanSolo will be used. A strand of RNA matching the sequence for gene 20 will be purchased and mixed with Cas. This insures that the virus DNA will be cut at the site of gene 20 turning it off.

Development of a Non-invasive DNA Collection technique for Species Determination in Amphibians

Student Author(s): E. Hansen

Faculty Mentor(s): Bob Sheehy

5:30 pm - 6:45 pm Kyle Hall 340

In this area of vast salamander diversity, difficulties arise in distinguishing between species, especially those with morphological overlaps. At this time, the widely used technique to distinguish among, at least to the naive eye, morphologically similar species is to collect tail or nail clippings of salamanders and use DNA barcoding of the COI locus to identify the species. These clippings are especially invasive to salamanders, as clipping body parts reduces energy storage. To solve this problem, we too have been using DNA barcoding techniques of the COI locus from Plethodon samples, but are moving away from the invasive sampling. We are developing the process of using buccal brushes to gather epidermal cells, which then serve as the alternative DNA source used instead of clippings. Through firm, full-body brushing and treatment with the Puregene DNA isolation kit, the DNA received from the brushing provides an appropriate template for PCR amplification of the COI locus. This method is applicable to field situations for a variety of amphibian taxa, as the DNA collected preserves well and there is no need for specialized equipment or handling conditions. With more research, we will be able to identify a wide variety of Plethodon species in the surrounding area, avoiding mis-identification. This approach should be easily extended to a wide variety of amphibian taxa.

Impacts of the Mountain Valley Pipeline: the relationship between aquatic insect richness and riffle morphology or chemistry in Mill Creek, Roanoke County, Virginia

Student Author(s) Donya Mohamed and Samantha Houck

Faculty Mentor(s) Jamie Lau and Kristina Stefaniak

5:30 pm - 6:45 pm Kyle Hall 340

The objective of this study was to determine how riffle morphology, alkalinity, and pH impact aquatic insect family-level richness within the context of the Mountain Valley Pipeline (MVP). The MVP is a natural gas pipeline that is planned to cross more than 1000 waterbodies from West Virginia to Virginia. We conducted a systematic physical habitat assessment of the riffles, quantified water chemistry variables, and collected aquatic insects in one riffle per site. A linear regression will be used to determine the significance and strength of the relationship between richness and riffle morphology or chemistry. We will present the before-MVP construction results for three control and four impact sites along Mill Creek.

Biology Poster Showcase

Cadaver Brains: A Comparative Analysis to Aid in Post-Mortem Identification of Morphological and Pathological Structures Key to Alzheimer's Diagnosis

Student Author(s) Claire Dundon

Faculty Mentor(s) Laura Gruss and Matthew Close

5:30 pm - 6:45 pm

Kyle Hall 340

Alzheimer's disease (AD), the most common form of dementia, can be clinically diagnosed in patients through identification of common symptoms. Patients typically show early episodic memory loss and progressive cognitive and functional impairments. (Whitwell, 2010) However, it is not until post-mortem that a definitive diagnosis of AD can be made using pathological hallmarks like the presence of amyloid plaques and neurofibrillary tangles. (Whitwell, 2010) Comparison of two cadaver brains will provide an in-depth look at the pathological differences between a "healthy" brain and one with AD. Overall size and weight differences as well as discrepancies in regions like the lateral ventricle, hippocampus, cerebral cortex and the temporal lobe (entorhinal cortex) will be examined. A definitive post-mortem diagnosis claim can be made through the preparation and analysis of microscopic slides for examination of cellular density and the presence of plaques and tangles. Consideration will also be given to the vascularization of both brains, as those with AD also tend to incur vascular problems.

Developmental effects of Fenoxycarb and Royal Jelly in Lobster Roaches (*Nauphoeta cinerea*)

Student Author(s) Keyyl Clark and Emmaleigh Mondell

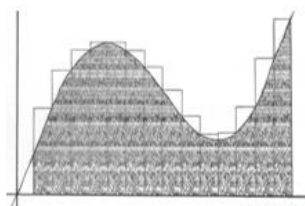
Faculty Mentor(s) Jason David

5:30 pm - 6:45 pm

Kyle Hall 340

Royalactin is an invertebrate growth hormone made by worker bees, which is fed in great amounts to the queen bees in the form of royal jelly. Fenoxycarb is a juvenile hormone agonist that functions as a growth regulator for all arthropods. We sought to explore the interactive effects of these hormone modulators on lobster roaches (*Nauphoeta cinerea*). In addition to control populations we emplaced three colonies of early instar roaches which were fed varying combinations of royal jelly and fenoxycarb: RJ alone, fenoxycarb alone, or a combination of the two. Overall population size shrank significantly and rapidly without regard to treatment. However, surviving roaches were largest in the group given a combination of royal jelly and fenoxycarb. Roaches have not yet reached maturity, so we are still collecting and finalizing our results. We are hoping to see more drastic changes as they reach full growth.

SCIART SHOWCASE



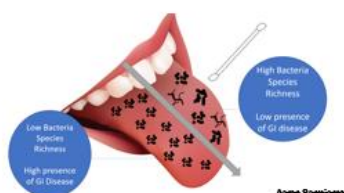
Diana McDevlin



Sydney Lobato



Hany Brown



Aamir Samirano



Mark Jabourian



Kyle 340, 5.30 pm - 6.45pm

Accelerated Research Opportunities Poster Showcase**Before Vs After Music Time With Speech Therapy****Student Author(s): Kayla Snyder****Faculty Mentor(s): Patricia Winter****7:00 pm - 8:15 pm****Kyle Hall 340**

This study will compare a child's speech before and after music time. The study will examine videos from our summer speech sessions with children with hearing impairments to analyze the difference of overall speech pre and post intervention. The main part of this study is to see if music therapy changes the amount of speech happening after music time every day. In this we will review videos from our summer music sessions and will determine if speech and speech related actions increase after the music portion of the day or if there is no change. We hope our research will support that music with speech therapy does have a positive effect on the children's speech. Also, we hope to be able to use this research to notice the effects during live music making with the children over the duration of the summer sessions.

Project Peaceline**Student Author(s): Kaylee Sturgis and Melissa McKeldin****Faculty Mentor(s): Allison K. Wisecup****7:00 pm - 8:15 pm****Kyle Hall 340**

The purpose of Project Peaceline is to incite safety in our community. The curriculum is presented in all middle and high schools in the New River Valley (grades sixth through tenth). We address violence, domestic abuse, sexual harassment, and safety by building upon the idea of healthy relationships. What we do here at the CSCR (Center of Social and Cultural Research) is input data from surveys given out to the four area high schools that contain questions pertaining to the subjects listed above, and once we obtain all the surveys sent out and input the data then it is all put into SPSS to be analyzed then published to see what peoples thoughts/opinions are and see what they know about these specific subjects.

Exploring EDCs and their Impact on the Environment**Student Author(s): Abigail Ouellette****Faculty Mentor(s): Sara O'Brien****7:00 pm - 8:15 pm****Kyle Hall 340**

Endocrine disrupting chemicals (EDCs) are commonly occurring pollutants that can be introduced into water ways through many pathways (agricultural, pharmaceutical, industrial, etc.) While the basic toxicology of EDCs on captive animals has been studied in a laboratory setting, this experimental perspective may not fully mimic how EDC exposure occurs in the environment. It is important to attempt to bridge the gap between laboratory and field settings by considering the chemical not only toxicologically, but also ecologically to fully understand the impact of EDCs on aquatic ecosystems. In order to design an experiment that more closely mimics the exposure in the environment, several factors must be examined, including temporal factors such as changes in exposure over a season, spatial factors such as variations of EDC levels in the water column and/or sediment, and synergistic exposure cofactors such as additional pollutants and stressors. My work in the lab has allowed me to begin to explore how EDCs may vary in the environment and how we can capture this variation in field and lab settings.

Accelerated Research Opportunities Poster Showcase

IgA is an Indicator of Stress in the Human Body

Student Author(s): Ian Rolston

Faculty Mentor(s): Sarah Redmond

7:00 pm - 8:15 pm

Kyle Hall 340

It is a widely known fact that stress begins to play a major part of an adult's life around the time they start their college career. According to previous research, stress can negatively affect the human body and a student's academic career, but through coping techniques, this stress can be managed and reduced. By identifying times within a college student's career that are most stressful, actions can be taken to combat stress, allow students to identify symptoms of stress, and better prepare them for future stress. The study will provide a quantitative indicator for levels of stress at the time of a student's sample being collected. IgA is an indicator for the levels of stress in an organism, where the lower levels of IgA in a sample containing mucous indicate high levels of stress. This information is available for analysis once the student provides a sample of spit, from which the researchers isolate the IgA protein, and determine the levels of stress based on the amount of IgA. We expect that periods throughout the semester that students perceive to be most stressful will likely be the periods that are most critical for implementing stress coping techniques. When these periods of peak stress are identified, Radford University and other higher education institutions could provide coping workshops in order to provide a more fulfilling and productive college experience.

Examining the Effectiveness of the Brita Filter to Remove Organic Pollutants From Aqueous Environments

Student Author(s): Haley Collins

Faculty Mentor(s): Amy Balija

7:00 pm - 8:15 pm

Kyle Hall 340

Two commonly used media for removing harmful substances from water include activated carbon and ion-exchange resins. These materials are used in large scale operations including industrial wastewater treatment and municipal drinking water purification. The Brita filter, a commercial device designed for household use, also employs activated carbon and ion-exchange resins. The goal of this research was to compare how effective Brita filters remove organic pollutants from water as compared to biorenewable polymers previously prepared in the Balija lab. The active media was removed from a Brita filter and used to remove various pollutants from an aqueous solution using standard analytical techniques. The results indicated that the Brita Filter was ineffective in removing Rose Bengal from the water compared to the polymer systems.

Analysis of Ligand Binding in B-Glucuronidase

Student Author(s): Rayshell Torres-Santana and Samantha Powell

Faculty Mentor(s): Kimberly Lane

7:00 pm - 8:15 pm

Kyle Hall 340

B-Glucuronidase, found in humans and *E. coli*, is a protein that breaks down complex carbohydrates. This protein has been associated with the severe gastrointestinal (GI) side effects of some chemotherapeutic drugs, such as CPT-11, for colon cancer. In previous studies, structural and chemical biology have been used to identify potent inhibitors targeting bacterial B-glucuronidases to eliminate the GI toxicity of CPT-11; these studies have shown one particular inhibitor (Z77) to interact with residues from the enzyme, specifically the phenylalanine in the 365 position (F365). The purpose of this project is to generate mutations on the F365 position in order to see the importance of its interaction with the Z77 inhibitor. Mutations will be made on the amino acid phenylalanine into leucine, alanine, tyrosine, and tryptophan. Wild type B-glucuronidase has already been expressed and purified in the lab. By the end of this project, we will have analyzed the effects of the mutations on the enzyme's activity and binding patterns.

Accelerated Research Opportunities Poster Showcase

UAV-Assisted Outcrop Study of the Hampton and Erwin Formations in SW VA

Student Author(s): Zachary Dolan

Faculty Mentor(s): Beth McClellan

7:00 pm - 8:15 pm

Kyle Hall 340

The Chilhowee Group is composed of sedimentary rocks that were deposited during continental breakup of a supercontinent, approximately 550-500 million years ago. The supercontinent Rodina was the main landmass on Earth from ~1 billion years ago until it began to rift about 750 million years ago (this is before the most recent supercontinent of Pangea). Today the Chilhowee Group spans the Appalachian mountains from Alabama to Vermont. Our research is a detailed study of part of the Chilhowee Group in southwest Virginia, where three formations have been recognized: the Erwin Formation, the Hampton Formation, and the Unicoi Formation. Our target is an outcrop of deformed sedimentary rocks of the Hampton and Erwin Formations near the Blue Ridge Scout Reservation. We will use an unmanned aerial vehicle (drone) to capture overlapping images along the outcrop. With these images, we will use Pix4D structure-from-motion software to build a 3D model of the outcrop. This model, combined with our field observations, will allow us to examine the outcrop in depth, extract structural data to better understand the deformation (folding) of the rocks, and measure variations in layer thickness in the transition zone between the Hampton and Erwin Formations, which marks a change from deposition in deeper water (Hampton) to shallow water or beach environments (Erwin).

Dendrochronology in the Greater Yellowstone Ecosystem

Student Author(s): Nicholas Francis and Rosemary Lavelle

Faculty Mentor(s): Stockton Maxwell

7:00 pm - 8:15 pm

Kyle Hall 340

Dendrochronologists study the past through a unique lens: looking at the response of tree growth by studying and analyzing specific patterns recorded by the tree over time. Tree rings provide much more information than simply the age of the tree, they can also record climate and forest disturbances such as fire or insects. The results of this project are an integral part of a National Science Foundation project, which investigates how the greater Yellowstone ecosystem has changed over the past several centuries in response to climate and forest disturbances. The researchers investigated tree cores that were collected from a stand of Douglas Fir trees just outside of Yellowstone National Park, WY. The rings of each samples were counted, dated, scanned, and measured to create an accurate annual chronology of the average tree growth across the forest stand. The trees ranged in age from 400 to nearly 1000 years old. Although seemingly static objects, these trees are continuously putting on mass during the growing season, increasing their size by fractions of a millimeter at a time. As the trees begin to mature after the initial sprout, the growth slows down and becomes more sensitive to environmental change, and these changes are recorded in the rings. The purpose of this project is to determine the chronology of tree-growth in Yellowstone National Park.

Accelerated Research Opportunities Poster Showcase**Type 2 Diabetes Management Through a High Fat, Low Carbohydrate Diet****Student Author(s): Mary Brown , Liv Morka, Taylor Nugent****Faculty Mentor(s): Wendy Downey****7:00 pm - 8:15 pm****Kyle Hall 340**

Type 2 diabetes mellitus (T2DM) is a global epidemic. The majority of those who suffer from T2DM are also obese, which further complicates their condition. Recent studies have shown T2DM patients have better control of blood glucose levels while eating a low carb or ketogenic diet. However, the terms “low carb” and “ketogenic” tend to be very broad, and more research will be required with precise definitions before entities such as the American Diabetes Association can recommend these diets to patients. A systematic review of 127 studies was completed to gain a greater understanding of the effects of a low carb, high fat diet on the management of T2DM and weight loss. The conclusions of this study will offer new insights into how this chronic disease can be managed and treated.

Cosmic Building Blocks: Understanding the Dust in Dwarf Galaxies**Student Author(s): Krislyn Sourivong****Faculty Mentor(s): Sandra Liss****7:00 pm - 8:15 pm****Kyle Hall 340**

Low mass galaxies, also known as dwarf galaxies, are the most common type of galaxy throughout the universe. Furthermore, interactions between these galaxies are believed to be the building blocks of more massive galaxies like our own Milky Way. Under this galactic hierarchy, galaxies are expected to merge together to create larger galaxies accompanied with a burst of star formation that eventually leads to the quenching of those galaxies. However, that same process cannot be said for dwarf galaxies. Despite their prevalence and importance, not much is known about these galaxies and their interactions compared to their more massive counterparts. One particularly open question related to dwarf galaxy interactions involves whether or not these interactions are the driving force behind their observed enhancement in infrared color (Smith and Hancock 2009). For this project, we will process and analyze recently obtained Spitzer Space Telescope infrared data in conjunction with complementary data from ultraviolet, optical, and infrared telescopes, to investigate this phenomenon. From this collected data, we hypothesize that these interactions between these galaxies may be a driving force for the observed elevated infrared excess. The results will either confirm or refute the conclusions drawn by Smith and Hancock, either way adding more evidence to help further shape existing models in the field.

Accelerated Research Opportunities Poster Showcase

Archaeology & Pseudoarchaeology in Video Games

Student Author(s): Katherine Young

Faculty Mentor(s): David Anderson

7:00 pm - 8:15 pm Kyle Hall 340

Video games are a popular pastime for many children and adults. Games sell stories that create a break from reality, and part of selling that idea is using truths. Franchises, such as the *Tomb Raider* and *Assassin Creed* series, thrive on using a mixture of history and archeology in their plots, but the fictional aspect creates a pseudoarchaeological phenomenon. The concept of pseudoarchaeology involves interpretations of the past without any archaeological science. Many video games use half-truth and half-fiction of the human past. The purpose of this study is to gather video games that contain references to history/archaeology and analyze their content for pseudoarchaeology. Each game chosen would be examined to see if it matched any variables set (gameplay, genre, time era, etc.). All the games that match any variable(s) will be organized into a simple database. The database will show the video games found with aspects of pseudoarchaeology; it will also show any common themes in the games. So far, the most common theme is the cultures from the ancient world that are represented (i.e. Ancient Maya, Greece, Egypt). Once more information is gathered, it will show themes video games tend to use with pseudoarchaeology. This research could possibly give an idea on what impact video games have on the belief of some pseudoarchaeological claims.

Optimal Group Testing for Two-Stage Hierarchical Pool Testing

Student Author(s): Sam Altman Farrell

Faculty Mentor(s): Md Shamim Sarker

7:00 pm - 8:15 pm Kyle Hall 340

The purpose of this study was to create a mathematical model for organizations such as the Center for Disease Control (CDC) or Red Cross to be able to determine the optimal pool size to use when testing for a disease. In this research, Dorfman's two-stage hierarchical algorithm was used to estimate the disease prevalence for any given disease. Then, our computer program took this data and calculated the optimal pool size to minimize cost and the amount of testing variance and bias. Organizations such as the CDC and Red Cross currently use group testing when testing individuals for diseases, but they don't know the optimal pool size to minimize cost and the amount of variance and bias. This research would save them millions of dollars by lowering the overall number of tests they have to run to determine if each individual tests positive or negative for a disease. A major trend found is that the smaller the disease prevalence is, the more efficient bigger testing pools are. This means that more money can be saved the lower the disease prevalence is.

Chemistry Poster Showcase

Photo-degradation of Organic Contaminants Using a Novel Nano-carbon / TiO₂ Layer-by-layer Composite

Student Author(s): Katherine M. Mankowski

Faculty Mentor(s): Francis Webster

7:00 pm - 8:15 pm

Kyle Hall 340

Titanium dioxide (TiO₂), a semiconductor, has been extensively used as a photocatalyst and has been shown to have great potential for use in water treatment due to its high activity, stability and low cost. The use of carbon nanomaterials to enhance the activity of TiO₂ photocatalysts has received recent attention and improved performance has been demonstrated in composite systems using carbon nanotubes, graphene oxide, and activated carbon. The following work investigates the catalytic performance of TiO₂ / nanocarbon films formed using layer-by-layer (LbL) deposition. Composite films were formed on quartz surfaces using a simple dip-coating technique using highly functionalized carbon nanoparticles derived from glycerol and Degussa P25 titanium dioxide. This technique allows for the immobilization of carbon and TiO₂ nanoparticles, both of which are now easily accessible to contaminants. Composite films were analyzed to determine surface microstructure, growth, and stability using UV-vis spectroscopy, Fourier transform infrared spectroscopy (FTIR) and scanning electron microscopy (SEM). Film growth was found to be linear with the number of bi-layers deposited and the material showed good catalytic activity for the degradation of methylene blue at 365nm. Photocatalytic activity as a function of layer composite thickness and the light wavelength was also investigated. The Carbon / TiO₂ LbL system was used to test the photo-degradation of various organic compounds and the reusability of the films was demonstrated.

Multi-Functional Coatings Formed From The Electrostatic Self-Assembly Of Glycerol-Based Carbon Nanoparticles And Moringa Oleifera Cationic Protein (MOCP)

Student Author(s): Carlie Perry

Faculty Mentor(s): Francis Webster

7:00 pm - 8:15 pm

Kyle Hall 340

Electrostatic layer-by-layer (LbL) self-assembly of multilayer films has been the focus of many recent research efforts to prepare novel coatings, and a wide range of functional properties can easily be obtained through the simple alternate adsorption of oppositely charged polyelectrolytes in solution. The use of naturally occurring and sustainable materials has become increasingly used in water purification as an economical means to produce potable water in the underdeveloped world. In this work, we combine these ideas through the synthesis of LbL films using glycerol-based negatively charged colloidal carbon particles and the positively charged Moringa oleifera cationic protein (MOCP). The carbon nanomaterial has been shown in our laboratory to have the enhanced ability to adsorb pollutants including lead, cadmium and organic dyes, and the MOCP is known to have anti-microbial properties, reduce turbidity and adsorb heavy metals. Characterization of the composite films included the investigation of factors that affect film growth, topography, composition, and stability using techniques including UV-vis spectroscopy, scanning electron microscopy (SEM), and Fourier transform infrared spectroscopy (FTIR). Results showed that the film thickness and structure depended on the ionic strength used in film deposition. SEM indicated relatively uniform coatings, exhibiting some globular formation. The practical use of these coatings was evaluated by forming films on common quartz sand and results showed an enhanced ability to remove lead, cadmium and methylene blue dye contaminants. The anti-microbial potential of these coatings was evaluated using coated sand and testing with a non-pathogenic form of Escherichia coli using simple bacterial culture techniques.

Chemistry Poster Showcase

Analysis of Mutations in Human B-glucuronidase and its Major Role in Mucopolysaccharidosis Type VII

Student Author(s): Haley Pflanzner

Faculty Mentor(s): Kimberly Lane

7:00 pm - 8:15 pm

Kyle Hall 340

Mucopolysaccharidosis Type VII, more commonly known as Sly Syndrome, is an autosomal recessive disease characterized by a deficiency in the function of the lysosomal enzyme β -glucuronidase. This enzyme is produced from the *GUSB* gene and is necessary in metabolism of glycosaminoglycans (GAGs). Abnormal aggregation of GAGs in lysosomes occurs when mutations in *GUSB* hinders or eliminates the production and activity of β -glucuronidase. This leads to cell, tissue, and organ disfunctions resulting in disorders that are normally progressive, degenerative, and even lethal. Individuals can experience poor endurance, restricted mobility, pain, and fatigue. Patients with the most severe phenotype have hydrops fetalis at birth and usually do not survive longer than a few months. Some patients with milder phenotypes have been reported to live up to 50 years and can have disorders including mental retardation, short stature, bone dysplasia, hepatosplenomegaly, attention disorders, and others that vary from patient to patient. Studies have shown that the severity of the mutation is correlated to where it is positioned and located within this protein. Molecular modeling was used to analyze the known disease-causing mutations and their locations in the *GUSB* gene. Nucleotide changes and the effects on amino acids were also used to evaluate the phenotype defined severity. When we compared our results to those in past studies, there was a match in the mutations we determined to be the most severe. The point mutations representing the most severe alleles were p.P148S, p.R216W, p.Y495C, and p.W507X.

Determining Relative Interaction Strengths in Thin Films of DBA Grown on a Single Crystal Metal

Student Author(s): Cory Ashworth

Faculty Mentor(s): Shawn Huston and Timothy Fuhrer

7:00 pm - 8:15 pm

Kyle Hall 340

Submonolayer films of 9,10-dibromo-anthracene (DBA) have been grown on Ag(111) and studied via UHV scanning tunneling microscopy (STM). While previous studies showed bromine dissociation for the DBA molecules upon adsorption, in our work the DBA molecules remain intact. The cause of this discrepancy is still under investigation, but is likely to be the result of the local environment of the surface upon molecular deposition. Differences in surface temperature and light exposure are the likely causes of the discrepancy. In our work, islands composed of individual DBA molecules form as the result of $\text{Br}\cdots\text{Br}$ bonding between adjacent molecules. These islands are only weakly bound to the surface and will rotate or drift when perturbed even at very low temperatures (8 K). Analysis of the molecular layer lattice constants in comparison to the structure of the underlying substrate also shows an incommensurate match. Molecules at the edges of islands are metastable and are seen to move over time which indicates that the intermolecular bonding is also weak. Given the observed dynamics, we draw the conclusion that the structure of the film growth is largely driven by intermolecular interactions rather than substrate-molecule interactions.

Chemistry Poster Showcase

Nobel Prize Winning Science Deniers: Albert Einstein

Student Author(s): Samantha Powell

Faculty Mentor(s): Timothy Fuhrer

7:00 pm - 8:15 pm

Kyle Hall 340

We are writing what will function as chapters in a history book of the topic "Nobel Prize Winning Science Deniers". This book will be used as a text in a general education science course that seeks to identify the reasons that even the most knowledgeable people in science can allow personal bias to influence their thoughts and cause them to make scientific mistakes. We hope to learn to avoid those pitfalls in our own thought. Albert Einstein was one of the greatest scientists in the early twentieth century. He developed the theory of relativity, and won the Nobel Prize for his explanation of the photoelectric effect, specifically that light travels in small pockets, called quanta or photons. However, Einstein was unable to fully understand the idea that all energy travels in quanta, particularly because the mathematics in quantum mechanics required an observer to force reality. Einstein believed that all of physics was deterministic and any proper theory should be able to account for all measurable phenomena, and this disagreed with the math of quantum mechanics.

Analysis of Ligand Binding in Mutated B-Glucuronidase

Student Author(s): Samantha Powell and Rayshell Torres-Santana

Faculty Mentor(s): Kimberly Lane

7:00 pm - 8:15 pm

Kyle Hall 340

B-glucuronidase is a protein found in a variety of organisms with four parts (subunits) that breaks down complex carbohydrates. Bacterial forms of this enzyme have been implicated in the severe side effects seen with use of certain chemotherapies like irinotecan (CPT-11), used to treat cancer. Recent studies identified potent inhibitors that react with B-glucuronidase to prevent the side effects of irinotecan. One such drug, Z77, binds to an area of the enzyme outside of the active site, interacting with a loop of amino acids. In this loop, a phenylalanine in position 365 (F365) makes a pi stacking interaction with the Z77 molecule. The goal of this project is to mutate the F365 in the subunits by replacing it with four different amino acid, alanine, leucine, tyrosine, and tryptophan, to better understand how the drug inhibitor interacts with this amino acid.

Quantifying Bacterial Degradation Of Pollutants Via HPLC

Student Author(s): Emma Kange, Maria Gonzalez Bermudez, River Fiedler

Faculty Mentor(s): Sarah Kennedy

7:00 pm - 8:15 pm

Kyle Hall 340

Bisphenol-A (BPA) is a known carcinogen found in most synthetic plastics. It also disrupts normal hormone levels and normal development in fetuses, babies and children. The main goal of this research project is to observe the bacteria *Serratia marcescens* as it degrades a known amount of BPA in solution and then analyze the degree of degradation using high performance liquid chromatography (HPLC). Preliminary work involves method development for the separation of the BPA from bacterial growth media. The conclusions of this study could be meaningful for the development of current and novel techniques for BPA bioremediation.

Chemistry Poster Showcase

Analysis of the Light Induced Degradation of Nitrocellulose Lacquer Coatings using

Reflection Absorption Spectroscopy

Student Author(s): Taylor W Pryor

Faculty Mentor(s): Francis Webster

7:00 pm - 8:15 pm

Kyle Hall 340

Nitrocellulose was one of the first polymers produced, and it was commonly used for coatings years ago. However, it was found to be unstable and explosive in bulk form, so the use of nitrocellulose as a coating has decreased over the years. However, it is still used to coat guitars due to the resulting deep gloss shine. It is also commonly used as a conservation coating for silver objects in museums as it is one of the few coatings that is indistinguishable from clean silver if applied correctly. While the thermal degradation of nitrocellulose coatings has been widely studied, photodegradation of nitrocellulose films has received little attention. In this work, the photodegradation of nitrocellulose coatings on silver (< 100 nm) was investigated. Coated silver samples were exposed to different wavelengths of light 254nm (UVA) , 310 nm (UVB) , and 365 nm (UVC) and the degradation analyzed using Infrared Reflection Absorption Spectroscopy. At lower wavelengths (254 and 310nm), the polymers degraded rapidly and the loss of the nitro groups and growth of carbonyl containing oxidized species could easily be monitored using this reflection technique. At 254 nm, complete nitro loss was seen in approximately 0.5 hours, while it took approximately 12 hours at 310 nm. The kinetics of degradation could be fit to an autocatalytic mechanism and the rate constants determined. At 365nm, no apparent degradation took place, even after extended light exposure (> 400 hrs). To better investigate the possible degradation at this wavelength, a new technique was developed that used a variable temperature sweep to characterize the thermal behavior of the thin coatings. Reflection Absorption Spectroscopy for Thermal Analysis (RASTA) was then used to study coated silver exposed for extended times to light at 365nm. While the infrared spectrum itself showed little damage, the temperature scan showed decreasing stability of the film with increasing light exposure indicating bond scission in the polymer backbone. A downward shift of the onset of degradation of over 20°C was observed and the degradation was monitored by the loss of the 1670 cm⁻¹ nitro peak and the growth of the 1750 cm⁻¹ peak that indicates oxidized species. A possible mechanism and comparison with light of lower wavelengths will be discussed.

Efficient Synthesis of Novel Four-Armed Cores for Dendrimers and Other Branched Macromolecules

Student Author(s): Cooper Burgin and William Nape

Faculty Mentor(s): Amy Balija

7:00 pm - 8:15 pm

Kyle Hall 340

Dendrimers, highly branched macromolecules, traditionally require lengthy synthetic sequences and significant amounts of purification, both which are harmful to the environment. A proposal to circumvent the traditional dendrimer synthesis problems is to utilize environmentally friendly reactions. In this project, the mixed aldol condensation reaction will be utilized to prepare zero and first generation dendrimers. Aldol reactions are high yielding and involve mild reaction conditions that are ideal for a green chemistry approach. This study utilizes cyclic ketones such as bicyclohexanone and cyclohexanone that will be condensed with various aromatic and conjugated aldehydes. Preliminary results reveal the formation of kinetic and thermodynamic products over time and the influence of aldehyde equivalents on product structure, color, and solubility. Product determination for these reactions is accomplished through standard analytical techniques such as ¹H NMR, TLC, and column chromatography.

Chemistry Poster Showcase

Temperature Dependent Stabilities of Various Isomers of C₃₂ and C₃₆ Endohedral Metallofullerenes

Student Author(s): Sarah Church

Faculty Mentor(s): Tim Fuhrer

7:00 pm - 8:15 pm

Kyle Hall 340

Fullerenes smaller than C₆₀ have gained special interest because of the interesting chemical and physical properties that accompany their smaller curvature radius and higher chemical activity. C₃₂ and C₃₆, the fullerenes of interest in this study, both fail to obey the Isolated Pentagon Rule, allowing small alterations to each fullerene's conformation to potentially result in large impacts upon their stabilities. The stabilities of the six C₃₂, K@C₃₂, Ca@C₃₂, and Sc@C₃₂ isomers and the fifteen C₃₆, K@C₃₆, Ca@C₃₆, and Sc@C₃₆ isomers, were computed at temperatures between 298-6000 K. These computations were performed using Density Functional Theory (DFT) methods for geometry optimization and frequency calculations carried out at B3LYP/6-31G(d). Isomer 6 (D₃) was found to be the most stable in each case for C₃₂. In C₃₆, isomer 14(D_{2h}) was the most stable overall in C₃₆ and K@C₃₆. However, for Ca@C₃₆, isomer 14 was the most stable up to 2300 K and then isomer 15(D_{6h}) was the most stable from 2300 K to 6000 K.

Investigating the Expression and Purification of *T. thermophilus* laccase.

Student Author(s): Katelyn Johnston and Kateri Schoettinger

Faculty Mentor(s): Sarah Kennedy

7:00 pm - 8:15 pm

Kyle Hall 340

Laccase is a multi-copper oxidase enzyme that can serve as a green alternative to oxidation reactions by serving as a biocatalyst. It serves many purposes in manufacturing of paper, pharmaceuticals, and food. Laccase can be found in a wide variety of different species of fungi, plants, bacteria, and animals. The majority of research has been done on fungal laccases, but in recent years, there has been an increase of interest with the bacterial laccase. We designed an expression plasmid to make the bacterial *T. thermophilus* laccase protein. This extremophile was chosen because of its thermostability, which may be important when applied to industrial oxidation reactions. Our current work is focused on optimizing the laccase protein expression in the *E. coli* host organism. The next step after the expression of the *T. thermophilus* laccase is to purify the protein and apply it to oxidizing a variety of pollutants.

Synthesis and Modification of Pyrazoline Architectures

Student Author(s): Twisha Mistry

Faculty Mentor(s): Amy Balija

7:00 pm - 8:15 pm

Kyle Hall 340

Pyrazolines are nitrogen containing heterocycles that are potential drug candidates with anticancer, antifungal, antibacterial, and anti-inflammatory activities. Pharmaceutical companies utilize structure activity relationships to examine how slight modifications to the pyrazoline scaffold impact biological activity. Currently, there are few methods to directly manipulate the pyrazoline once it is formed. The goal of this project is to assess various synthetic methods for their ability to modify the pyrazoline architecture. Preliminary studies have focused on bromination reactions. In this presentation, the synthesis, characterization, and modification of the pyrazoline ring system will be discussed.

Chemistry Poster Showcase

Self-assembly of Functionalized Carbon Nanoparticles on Polyurethane Foam for Low-cost Water Purification

Student Author(s): Tamera Riffle

Faculty Mentor(s): Francis Webster

7:00 pm - 8:15 pm

Kyle Hall 340

Pollution now affects almost all bodies of water on earth and in developing countries, the ability to provide clean water has been hindered by a lack of infrastructure and high costs. The development of new materials and techniques to improve water purification is an area of active research and the search to lower the economic barriers to provide clean water is an on-going challenge. In this study, we report the development of a multi-functional and inexpensive adsorbent that is prepared through the evaporation mediated self-assembly of acidic carbon nanoparticles on common polyurethane foam. The carbon nanoparticles were prepared through the simple, one step, acid dehydration of glycerol, and were found to contain many functional groups including sulfonic acid (2.5 mmol/g), carboxylic acid (2.5 mmol/g), and hydroxyl (5.1 mmol/g) functional groups. The carbon materials were suspended in ethanol and deposited on common polyurethane foam using simple evaporative self-assembly. The coated foam was found to be extremely effective at removing common contaminants including lead, cadmium, and methylene blue and both the thermodynamics and kinetics of adsorption were evaluated. The practical application of the foam for pollutant removal was tested using a rapid small-scale column technique (RSSCT) and the breakthrough curves were evaluated and fit to the Thomas model. The columns could be easily regenerated with 0.1M nitric acid and recycled many times without losing adsorption capacity. The carbon nanoparticle coated polyurethane foam showed the enhanced ability to remove common contaminants and can be easily incorporated into large-scale filtration systems.

Synthesis and Electrochemical Characterization of Fullerene Derivatized Fulvenes

Student Author(s): Kateri Schoettinger and Michael Wieland

Faculty Mentor(s): Timothy Fuhrer and Anna Curtis

7:00 pm - 8:15 pm

Kyle Hall 340

Renewable energy, including solar energy, has been emphasized in our world recently due to an excess of carbon emissions from fossil fuels. Fullerenes and fulvenes are allotropes of carbon that could be used as a base for photovoltaic cells because of their great stability and low band gaps, which show potential for conducting electricity. These carbon-based photovoltaic cells could be more cost-effective than current silicon-based cells. Studies have found that functionalized fullerenes, endohedral metallofullerenes, and fulvenes all show great potential for photovoltaics. Our computational work has shown that fulvene functionalized fullerenes may not only be just as effective, but may be able to serve as both electron donor and acceptor in a photovoltaic cell. We are in the process of devising a scheme to synthesize fulvene functionalized fullerenes for this purpose.

Chemistry Poster Showcase

Operationally simple approach to indole derivatives from 2-alkenylanilines utilizing an oxidation-transannulation-elimination sequence

Student Author(s): Rachel M. Chapman and Matthew B. Griffey

Faculty Mentor(s): Christopher J. Monceaux

The indole motif has been designated as a privileged scaffold, in that they are capable of acting as ligands for a variety of biological targets. Unsurprisingly, there are several methods in which to synthesize indole derivatives, however there still remains great interest in new and streamlined methods to synthesize indole derivatives. The conversion of 2-alkenylanilines to indoles has recently emerged as a straightforward route. Herein we describe a novel route to indole derivatives from a variety of *N*-substituted 2- alkenylanilines. This route features three operationally-simple steps: 1) an oxidation to convert *N*- substituted 2-alkenylanilines into epoxide intermediates, 2) transannulation, and 3) acid-catalyzed elimination of water.

Highlander Research Rookie Poster Showcase

The Mountain Valley Pipeline's Impact on The Water Chemistry of Surrounding Streams

Student Author(s): Makenzie Bennington

Faculty Mentor(s): Kristina Roth Stefaniak and Jamie Lau

7:00 pm - 8:15 pm

Kyle Hall 340

The Mountain Valley Pipeline (MVP) is a 303-mile natural gas pipeline that is planned to cross more than 1000 bodies of water from West Virginia to Virginia. Substantial modifications to the stream channels and surrounding areas are expected because of the nature of the installation process. Evidence suggests that the magnitude of the impacts will be significant; therefore, the objective of this study is to capture the long-term impacts of the MVP on the water chemistry and stream ecology of Mill Creek. Water chemistry analyses (alkalinity, total water hardness, anions, cations, and metals) provide insight into the health of the streams and will be monitored to show changes due to the pipeline construction and restoration period. Before installation baseline water samples have been collected at multiple sites along Mill Creek and analyzed for alkalinity, total water hardness, and presence of anions. Alkalinity and total water hardness values were determined through quantitative analysis using titrations. An ion chromatography method was developed to quantify anions, including chloride, nitrate, sulfate, and phosphate ions. After the completion of the pipeline this data will be used as reference to assess the impact and recovery time of Mill Creek

Student Retention Analysis: The Making of a Successful Highlander

Student Author(s): Nalani Story

Faculty Mentor(s): Caleb Bradberry

7:00 pm - 8:15 pm

Kyle Hall 340

Despite retention being a continuing problem among college campuses, universities are continuing to struggle with retention of their students. Using course data and student census information provided regarding students involved in ITEC majors, we are creating a predictive model of student characteristics and behavior. The goal is to use data-driven decisions to determine what aspects of both a student's profile and his/her experience at Radford University leads to desirable, or undesirable, results. Desirable results are defined by progressing through ITEC courses at a reasonable pace and successfully graduating from Radford. Alternatively, undesirable results include repeating courses several times, transferring to a different university, or otherwise leaving Radford (i.e. academic suspension or dropping-out). Currently, our focus is on students majoring in Computer Science. We have approached this goal via analyzing the provided data and using machine learning coupled with artificial intelligence to derive correlations between different aspects of a student. ITEC 120, The Principles of Computer Science I, is the first required course of all Computer Science, Information Systems, and Cybersecurity Degrees. With one of the highest WDF (Withdraw, Drop, or Fail) Rates at Radford University, this class serves as a significant hurdle for those who wish to major in ITEC. Ensuring students are appropriately prepared before taking this course will increase student success and retention among ITEC Students at Radford University.

Highlander Research Rookie Poster Showcase

Good Fats? The use of a Low Carb, High Fat Diet for Type 2 Diabetes and Weight Loss

Student Author(s): Mary Brown, Liv Morka, Taylor Nugent

Faculty Mentor(s): Wendy Downey

7:00 pm - 8:15 pm

Kyle Hall 340

Recent studies have shown Type 2 diabetes mellitus (T2DM) patients have had better control of their blood glucose levels while partaking in a low carb or ketogenic diet. As terms such as “ketogenic” or “low carb” have yet to have a defined, research will be required to find accurate definitions before this diet can be recommended by organizations such as the American Diabetes Association. As a majority of T2DM patients also tend to be obese, a systematic review of 127 studies was completed for a greater understanding of not only the effects of low carb, high fat diets on the management of T2DM, but also its effects on weight loss. While analysis of this data has not been completed, results from the reviewed studies are promising.

Being Out Of The Loop On Gender Stereotypes

Student Author(s): Jillian Rauch

Faculty Mentor(s): Nicole Iannone

7:00 pm - 8:15 pm

Kyle Hall 340

Research has found that people who are out of the loop on popular culture (including brand logos) felt a lower need satisfaction (lower belonging, self-esteem, sense of control, and meaningful existence) and a more negative mood (Iannone, Kelly, & Williams 2017). These results have not yet been found in situations concerning gender stereotypes. According to societal standards, males are not expected to know much about fashion or make-up products and females are not expected to know much about sports teams. It is hypothesized that when each gender is presented with the information that we expect them not to know about, then they will feel less out-of-the-loop, higher need satisfaction, and a more positive mood than when they are out of the loop on the information they would be expected to know about. Participants will be told they will be shown logos that most men or women are familiar with. They will be given a variety of logos to look at and asked to rate their familiarity with them. Then, the participants will respond to questions to assess their need satisfaction, mood, how out of the loop they felt, and other behavioral items that assess their desire to potentially get back in the loop (i.e., reading a fashion magazine or attending a sporting event). Participants would then answer demographic questions and receive more information about the study.

Poverty's Influence on Academic Achievement in Children

Student Author(s): Sarah Ward

Faculty Mentor(s): Wendy Eckenrod-Green

7:00 pm - 8:15 pm

Kyle Hall 340

Education is a crucial part of a child's life and so is the role the family unit plays as a whole. This project looks at how these go hand in hand. This research examines several factors that could have an impact on the child's academic achievement and participation in elementary school. The factors reviewed include, family income, mental illness, household size, family structure, and if the child is getting enough food. Also examined is how backpack programs support underprivileged kids by providing food for the weekend and does food insecurities affect children's grades, and participation in schools. This study will also help determine what else underprivileged kids are needing and not getting, that impact their academic achievement. This research is crucial in helping needy children get an equal education.

Highlander Research Rookie Poster Showcase**To Apply, or Not to Apply? When Following a Suggested Timeline Doesn't Work****Student Author(s): Melissa Wirchansky****Faculty Mentor(s): Matthew Grimes****7:00 pm - 8:15 pm****Kyle Hall 340**

In the College of Education and Human Development (CEHD), most degree programs require some form of experiential learning. For example: Students planning to teach must first student teach in local public school classrooms, while students planning to pursue a career as an athletic trainer or dietician often spend time with professionals in their future fields. In some cases, students who plan to pursue a particular career or experiential learning opportunity (ELO) will change their minds very late in the process. Rarely does the CEHD have the opportunity to find out why students have changed their minds. The purpose of the overall project was to explore the nature of experiential learning among students in the CEHD. This particular study used an assessment-driven approach to examine a) the extent to which students followed the suggested timeline for application to the Teacher Education Program, b) what factors influenced students' decisions to apply, and c) the most common reasons students chose not to apply and/or follow the suggested application timeline. The findings suggest that students' reasons for not applying are so varied that it is more important to focus on individual students' needs than to rely on a one-size-fits-all timeline for application to the Teacher Education Program.

Identifying Cyclicity and Provenance through Thin Section Petrology of Shallow Marine Deposits in the Indo-Burman Ranges**Student Author(s): Emily Whately****Faculty Mentor(s): Dr. Ryan Sincavage****7:00 pm - 8:15 pm****Kyle Hall 340**

The creation of a massive fluvial system by tectonic forces has generated a stratigraphic record within the Indo-Burman ranges (IBR) in Eastern India containing Miocene-Pliocene-aged deltaic and shallow marine deposits. The mechanical properties of these sedimentary bodies will help in understanding the tectonically active megathrust fault that poses a potential for a major earthquake in a densely populated area. The rise of the Himalayas and a simultaneous closing of the remnant ocean basin created a coupled tectonic-sedimentary suture-type delta, which controls sediment distribution and long-term evolution of the delta. We analyzed hand samples and thin sections from the M2 facies of the Surma group extracted from a quarry in Aizawl, Mizoram, India for grain size, mineralogy, and cyclicity. Our mineralogy results are compared to previous detrital zircon provenance data in the IBR and the Bengal and Nicobar Fans, thus filling a spatial and temporal knowledge gap in a dynamic system. We identify numerous scales of cyclicity within the M2 facies to determine the sediment accumulation rate within the subaqueous delta. Ultimately, these data will aid the characterization of IBR stratigraphy and how the different units may respond in the event of a megathrust earthquake.

Highlander Research Rookie Poster Showcase**Content Analysis of University Mental Health Websites****Student Author(s): Jose Bermudez****Faculty Mentor(s): Kevin Bowers****7:00 pm - 8:15 pm****Kyle Hall 340**

Background: Awareness of mental health issues growing among college students in the U.S has been rapidly growing in recent years. University officials and administrators are concerned about the need to supply the exponential demand students have towards counseling services on school campuses. One of the biggest concerns is the fact that even though mental issues have been shifting from being perceived as a social stigma to being perceived as an actual disease that needs to be treated, many schools have not unanimously prioritized this issue, leading to a scarcity of resources available to students who deal with problems such as depression and anxiety. Aim: To examine the actions taken towards mental issues on college mental health websites, determining multiple factors that influence the availability of resources such as counseling, rehabilitation and rehab; and how easy is for students to access these resources. Methods: This study used a content analysis to examine counseling services web pages at not-for-profit colleges and universities that offer Bachelor's degrees.

Stand-Up Radford: A Pilot Study to Increase Workplace Physical Activity and Improve Overall Health**Student Author(s): Madison Gaminde****Faculty Mentor(s): Kathleen Poole****7:00 pm - 8:15 pm****Kyle Hall 340**

Leading a sedentary lifestyle is an independent risk factor for obesity, diabetes, cancer, and cardiovascular disease. Unfortunately, our modern lifestyle of sitting while commuting to school or work, sitting at school or work, and then sitting at home in front of various screens has led to a new ailment termed "sitting disease." Many university employees have primarily sedentary jobs in which they spend most of the time sitting at a desk. Prolonged sitting is physically unhealthy and worsens moods and reduces productivity. Since working adults spend such a large part of their day sitting, the workplace is an ideal setting to pilot interventions aimed at reducing sedentary behavior and enhancing healthy lifestyle behaviors. The purpose of this project was to determine if transforming traditional work spaces into active office workstations can increase workplace physical activity and improve overall health. Eleven faculty/staff members were recruited for participation. Participants used adjustable sit-stand desks in their offices and participated in a four-week intervention. All participants attended a pre- and post-assessment including measurements of body composition, blood pressure, and a survey of healthy behavior and workplace satisfaction. Participants wore a Garmin activity monitor to record physical activity. This seven-week project employed a quasi-experimental time series design using repeated measures in which the same group of participants crossed-over from the control group to the treatment group after a one-week baseline data collection period.

Highlander Research Rookie Poster Showcase

The effects of river water on antibiotic resistance in *Escherichia coli* and *Staphylococcus aureus*

Student Author(s): Peter Neville

Faculty Mentor(s): Joyce Caughron

7:00 pm - 8:15 pm

Kyle Hall 340

Antibiotic resistance in pathogenic bacteria is one of the most pressing issues facing the field of microbiology today. As such, it is important to gain an understanding as to why and how bacteria can become resistant to something that could previously eliminate it. While clinical antibiotic use is the main focus of study in the field of antibiotic resistance, it is important to keep in mind that exposure to environmental pollutants may encourage physiological responses from the bacteria that coincidentally result in antibiotic resistance. In order to investigate this phenomenon, we collected 3 sets of approximately 600mL of water upstream and 3 sets of approximately 600mL of water downstream of the Radford Ammunition Plant. We then grew *Escherichia coli* and *Staphylococcus aureus* in each set of water using 3mL of LB broth (Remel) as a source of nutrients. Both types of bacteria were then grown on LB agar (Remel) plates and exposed to antibiotics of clinical relevance: ciprofloxacin, vancomycin, cefotaxime, and trimethoprim/sulfamethoxazole. Preliminary data suggests that there are no significant differences in resistance to antibiotics upon exposure to river water, but there is greater variability in the responses from *S. aureus* cells than from *E. coli* cells. A couple of the replicates of *S. aureus*, one for each antibiotic, do show signs of possible significant differences. We are currently continuing this investigation with more replicates and with a slightly modified protocol that includes longitudinal tracking of antibiotic resistance. Final results will be discussed.

Perceived risk can increase an individual's likeliness to own a firearm

Student Author(s) Samantha Doncaster

Faculty Mentor(s) Nicole Hendrix

7:00 pm - 8:15 pm

Kyle Hall 340

The study examines the effect of perceived risk of victimization on an individuals' likelihood of owning firearms. This study will examine the instance and pattern of fear in a large, nationally representative sample. Of particular interest, is whether or not fear is associated with higher levels of gun ownership. Research suggests many individuals experience fear and deal with that fear in numerous ways. For some individuals, they may not feel safe in their environment because of neighborhood, police, or a multitude of other reasons. Therefore, some individuals buy firearms to protect themselves. Americans may purchase firearms for their homes as a preventative measure.

Highlander Research Rookie Poster Showcase**The Impact of Professional Development Initiatives on Music Teachers' Perceptions of Self-efficacy and Student Learning in Nepal: Years 3-4****Student Author(s) Bryan Dowd****Faculty Mentor(s) Jennifer McDonel****7:00 pm - 8:15 pm****Kyle Hall 340**

Two of the major issues that are hindering growth of music education in Nepal are (a) a complete lack of training programs and skilled teachers and (b) lack of a well-defined national curriculum with set of standards for teaching music. Existing music programs in the country are performance based, with little or no theoretical and ethical foundations.

The primary grant applicant traveled to Nepal in January 2016 and January 2017 to present professional development (PD) workshops at the MusicArt Society in Kathmandu and Jhapa to support the organization's mission to begin raising the quality of music education in Nepal and providing for the music education of all children in Nepal, especially impoverished and orphaned children who otherwise would not receive any music education in government schools.

Please note: Kristina Wade and Tana Vance are also Highlander Reserch Rookies. Ms. Wade and Ms. Vance are perfoming oral presentation. Please see the Tuesday, April 23rd program for times and locations.

Nutrition and Dietetics Poster Showcase

Improving Iron Bioavailability and Sensory Characteristics of a Soy Flour-Based Cookie with Addition of Wheat and Spices

Student Author(s): Madison Smith and Allison McBride

Faculty Mentor(s): Laurie Bianchi and Kristina Stefaniak

7:00 pm - 8:15 pm

Kyle Hall 340

Iron deficiency anemia (IDA) is the most common worldwide nutrient deficiency; five to 10 million people in the United States and 2 billion people worldwide are affected. IDA is highly prevalent among women and children, and in children it can cause permanent cognitive delays. Soybeans are a rich source of iron, but high in phytic acid (PA). PA is an antinutritional factor that chelates iron tightly thereby decreasing iron bioavailability. Wheat flour contains phytase, an enzyme that degrades PA; it has the potential to increase iron bioavailability from PA. Four recipes for soy-flour based cookies were developed. Two recipes contained different levels of wheat flour in an effort to decrease chelation of iron from PA; one recipe was absent of spices, and the fourth was all soy flour. The purpose of this research project was to determine iron and PA content of the cookies with varying levels of wheat flour. Iron was quantified using the inductively coupled plasma (ICP) instrument and PA quantification was done using a spectrophotometric assay for each of the cookie recipes. A sensory study using Just-About-Right scales was also completed to determine if the addition of wheat flour affected consumer perception of bitterness, sweetness, and aftertaste. Hedonic scales were used to assess overall consumer acceptance of each treatment. Both chemical analysis and sensory data were obtained with the intent of using the cookies in a future clinical trial to assess efficacy of them in improving iron status in women at risk of IDA.

Assessment of taste discrimination and knowledge of organic foods and genetically modified foods

Student Author(s): Rachel Barron

Faculty Mentor(s): Laurie Bianchi and Anna Devito

7:00 pm - 8:15 pm

Kyle Hall 340

Since the 1990's, demand for organically produced foods has increased. Some consumers perceive organic foods as safer, healthier, and better for the environment despite scientific evidence indicating otherwise. Previous research has shown that consumers choose organic foods due to taste preference. The objectives of this study are to 1. determine if consumers can discriminate a taste difference between organic and nonorganic foods purchased at the same point of sale and 2. to assess consumer knowledge regarding current scientific evidence and Food and Drug Administration approved practices for organic foods. A triangle test for differences sensory study was conducted to determine if taste differences exist between organically vs conventionally grown red bell peppers and brown rice and bovine growth hormone free and conventional 2% milk. Sensory panelists were also administered a survey which included questions regarding organic food purchasing habits, perceptions of organic foods, and knowledge of allowable practices and scientific evidence of organic and genetically modified foods. Trends between panelists' food beliefs and their ability to discriminate taste differences of organically and conventionally grown foods were evaluated. Ninety-three panelists participated in the sensory study; 91 completed the survey. For milk and rice, panelists could detect differences between organic and conventionally grown/raised foods ($\alpha=0.05$). Panelists were not able to detect taste differences between organic and nonorganic bell peppers. The survey contained 10 knowledge-based questions. On five items, less than 50% of participants answered correctly. Our data suggests that education is needed to correct misinformation regarding organic and genetically modified foods.

Psychology Poster Showcase II

Biography and Important Contributions of Wilhelm Wundt

Student Author(s): Rebecca Assadnia

Faculty Mentor(s): Ruth Riding-Malon

7:00 pm - 8:15 pm

Kyle Hall 340

Wilhelm Wundt is thought of as the “father of experimental psychology” and is believed to have one of the first, if not the first, psychological research laboratories (Stanford Encyclopedia of Philosophy, 2016). Wundt focused on psychology as a section of philosophy, seeing psychology as a way to apply experimental methods to metaphysics and the mind (Stanford Encyclopedia of Philosophy, 2016). Wundt was particularly interested in researching thought and sensation, reducing them to their basic elements (McLeod, 2008). Wundt also believed consciousness could be broken down into its basic elements and introspection was utilized as a way to study the mind (McLeod, 2008). He focused on three sections of cognitive functioning, including thoughts, feelings, and images (McLeod, 2008). Based on his work, Wundt contributed much to the approach of experimental psychology (McLeod, 2008). This presentation will look at Wilhelm Wundt’s contributions to the field of psychology, as well as give a brief overview of his life.

Controversial Science: The History, Consequences, and Future Trajectory of Phrenology

Student Author(s): Rachel Scott

Faculty Mentor(s): Ruth Riding-Malon

7:00 pm - 8:15 pm

Kyle Hall 340

Skepticism is a common theme in psychology, and this is never more evident than when a new theory is made public. In the history of modern psychology there is perhaps one theory that has resulted in the most skepticism from modern day students and professionals alike: phrenology. This conceptualization of mental processes via physical characteristics, originally conceived by Franz J. Gall, spread in popularity throughout Europe, and especially the United States (Cornel, 2017). However, many psychological scientists quickly began having reservations about phrenology when the resulting replication studies failed to reproduce Gall’s original findings (Jones, Alfaro-Almagro, Jbabdi, 2018). Additionally, many began to believe that phrenology was heavily based on insubstantial and stereotypical beliefs about physical characteristics based on race (Branson, 2017). Despite its many reported flaws, the American public loved it. There are those who respect the endeavors of what we now realize is pseudo-science and see value in discussing the lasting impact of phrenology on psychology and society as a whole. Indeed, there are historians who credit phrenology with the growing awareness in the 19th century of the internal self (Sysling, 2018) and its impact on global politics and reformation (Poskett, 2017). This poster will explore the history of phrenology from its founding in 1840 to its modern day implications. In this exploration, the debate surrounding the theory and its lasting impact on the field of psychology will be discussed. Additionally, the future of phrenology will be discussed based on recent literature.

Psychology Poster Showcase II

Plato and the Birth of Psychology

Student Author(s): Alex Latham

Faculty Mentor(s): Ruth Riding-Malon

7:00 pm - 8:15 pm

Kyle Hall 340

Modern societies owe a great many things to the ancient Greeks. From the founding of Democracy to the dissemination of knowledge to the masses, the ancient Greeks contributed greatly to our current social structures. Additionally, the sciences have been greatly influenced by the philosophers and sophists of Greece. One such philosopher, Plato, is not only responsible for the trajectory and birth of modern philosophy, but also has played a crucial role in the development of modern psychology. His ideas relating to perception, form, metaphysics, well-being, and development have influenced such figures as William James, Sigmund Freud, and many others. This presentation will explore the man who is Plato and his many contributions that have reverberated through psychology into the present.

Honors Capstone Showcase
Oral Sessions

Barriers and Areas for Improvement to Exclusive Breastfeeding Practices During Hospital Stay

3.00 pm, M-073

Student Author(s): Morgan Bishop

Faculty Mentor(s): Dr. Marjorie Young

Leishmaniasis Through the Lens of the Host

3.15 pm, CFS M-073

Student Author(s): McKenzie Schrank,

Faculty Mentor(s): Dr. Jason Davis

Stressors and Challenges of Caregivers of Children with Disabilities

3.30 pm, CFS M-073

Student Author(s): Jenna von Schlichting

Faculty Mentor(s): Dr. James Newman

A Comparison of the Push-in and Pull-out Models of School Based Speech Language Pathology and Implications for Student Success

3.45 pm, CFS M-073

Student Author(s): Katelyn Shubert

Faculty Mentor(s): Dr. Corey Cassidy

Predicting Healthcare Costs in Rural and Urban Patients

4.00 pm, CFS M-073

Student Author(s): Jonathan Charnock

Faculty Mentor(s): Dr. Caleb Bradberry

How to train your fish, and potentially prevent PTSD in the process

4.15 pm, CFS M-073

Student Author(s): Hannah Stewart

Faculty Mentor(s): Dr. Dayna Hayes & Dr. Sara O'Brien

Variance of Mutual Funds in Different Economic Environments

4.30 pm, CFS M-073

Student Author(s): Thomas Truluck

Faculty Mentor(s): Dr. Abhay Kaushik

The Meaning of Movement: Movement as a Main Method of Criticism in a Dance Choreography

4.45 pm, CFS M-073

Student Author(s): Fiona O'Brien

Faculty Mentor(s): Dr. Ji-Eun Lee, Dr. Tim Channell

Honors Capstone Showcase
Poster Sessions

Giving Deserved Recognition: Meriam Rejewski and the Polish Codebreakers Contributions to Breaking Enigma

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Cole Bankert
Faculty Mentor(s): Dr. Neil Sigmon

Developmental Impact of the Environment of Poverty on Children

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Alicia Barnett
Faculty Mentor(s): Maude (Molly) Hunter-Sloan

Prehabilitation: An Examination in Anterior Cruciate Ligament Injury Prevention

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Jane Everett
Faculty Mentor(s): Dr. Michael Moore

Risks, Rewards and Impacts of Resource Officers within a School Setting

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Taylan Gursoy
Faculty Mentor(s): Dr. Jeffrey Chase

The Turing-Welchman Bombe: The Key for the Downfall of the Third Reich

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Rebecca Journigan
Faculty Mentor(s): Dr. Neil Sigmon

The impacts of the veterinary office and being separated from their owners on stress in canines

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Lindsey Lee
Faculty Mentor(s): Dr. Sarah Redmond

Trends of Opioid Prescribing Practices Among U.S. Physicians

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Cameron Livingstone
Faculty Mentor(s): Dr. Pamela Frasier

Honors Capstone Showcase
Poster Sessions

Implementation of Interactive 3-D Models in Geosciences for Online and Distance Learning

5.00-5.45 pm, Center for the Sciences Lobby

Student Author(s): Michaela May

Faculty Mentor(s): Dr. Parvinder Sethi

A Comprehensive Analysis of SMIPO Funds

5.00-5.45 pm, Center for the Sciences Lobby

Student Author(s): Matthew Neville

Faculty Mentor(s): Dr. Michael Chatham

Mindfulness in the Elementary Classroom

5.00-5.45 pm, Center for the Sciences Lobby

Student Author(s): Kelsey Peters

Faculty Mentor(s): Dr. Kristan Morrison

Peaked Interest: The Economic Cycle's Impact on the Public's Interest in Hunger

5.00-5.45 pm, Center for the Sciences Lobby

Student Author(s): Jessie Quesenberry

Faculty Mentor(s): Dr. Danylle Kunkel

Preventing Type 2 Diabetes among Adolescents

5.00-5.45 pm, Center for the Sciences Lobby

Student Author(s): Jillian Rush

Faculty Mentor(s): Dr. Christi Callahan

Differences in Substance Abuse among High School Athletes and Non-athletes

5.00-5.45 pm, Center for the Sciences Lobby

Student Author(s): Chase Thompson

Faculty Mentor(s): Dr. David Sallee

Eating Disorders

5.00-5.45 pm, Center for the Sciences Lobby

Student Author(s): Ashley Timbrook

Faculty Mentor(s): Dr. Melissa Grim

Recurrent Bilateral Chronic Exertional Compartment Syndrome: A Case Study

5.00-5.45 pm, Center for the Sciences Lobby

Student Author(s): Robyn Toran

Faculty Mentor(s): Dr. Michael Moore

Honors Capstone Showcase
Poster Sessions

A Pedagogical Project on the Masticatory Biomechanics P. boisei

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Jessica Wollmann
Faculty Mentor(s): Dr. Laura Gruss

Learning from Closed-Book Essays: An Intervention Study

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Lauren Wright
Faculty Mentor(s): Dr. Kathleen Arnold

Grieving Globally: Grieving Processes Around the World and Nursing Implications

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Alyssa Zilka
Faculty Mentor(s): Dr. Sharla Cooper

Cadaver Brains: A Comparative Analysis to Aide in Post-Mortem Identification of Morphological and Pathological Structures Key to Alzheimer's Diagnosis

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Claire Dundon
Faculty Mentor(s): Dr. Laura Gruss

The impacts of the veterinary office and being separated from their owners on stress in canines

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Lindsey Lee
Faculty Mentor(s): Dr. Sarah Redmond

What's in the Face

5.00-5.45 pm, Center for the Sciences Lobby
Student Author(s): Tala Rhodes
Faculty Mentor(s): Sandra .French

Honors Capstone Showcase
Oral Sessions

Heart of a Highlander: a Look at Radford Basketball

6.00 pm, CFS M-073

Student Author(s): Blake Holmes

Faculty Mentor(s): Dr. Kevin Bowers

Implementing Montessori Methods while Following the Virginia Standards of Learning

6.15 pm, CFS M-073

Student Author(s): Emily Stinson

Faculty Mentor(s): Dr. Kristan Morrison

Analyzing Target Acquisition Data from Subjects in Different Age Groups Using Different Input Devices

6.30 pm, CFS M-073

Student Author(s): James Mitchell

Faculty Mentor(s): Dr. Joe Chase

African American History in Dante, VA

6.45 pm, CFS M-073

Student Author(s): Julia Kell,

Faculty Mentor(s): Dr. Theresa Burriss

A Critique of Robert Cathcart's Movements: Confrontation as Rhetorical Form

7.00 pm, CFS M-073

Student Author(s): Sarah Derrick

Faculty Mentor(s): Dr. Sandra French

Blockchain Technology and Its Impacts on the Business World

7.15 pm, CFS M-073

Student Author(s): Michaela Ingle

Faculty Mentor(s): Dr. Felix Amenkhienan

Spread of Microorganisms on Stethoscopes

7.30 pm, CFS M-073

Student Author(s): Leigha Spangler,

Faculty Mentor(s): Ann Hutchens and Dr. Joyce Caughron

Truancy, dropout and otvational interviewing: A survey of educators

7.45 pm, CFS M-073

Student Author(s): Rebecca Radinsky

Faculty Mentor(s): Dr. Kerry Vandergrift

Honors Capstone Showcase **Oral Sessions**

The Legacy of Josephine Baker: Performer and Activist

8.00 pm, CFS M-073

Student Author(s): Fiona Scruggs

Faculty Mentor(s): Prof. Deborah McLaughlin

Second Language Acquisition After the Critical Period

8.15 pm, CFS M-073

Student Author(s): Rachel Berry

Faculty Mentor(s): Dr. Boyoung Park

Pop-Developmentalism: The Political Economy of Consumer Activism and Sweatshop Labor

8.30 pm, CFS M-073

Student Author(s): Rachel Sharrett

Faculty Mentor(s): Dr. Tay Tan

Center for Gender Studies Symposium Keynote Presentation

Dr. Iuliia Hoban

Age and Gender Dimensions of Migrant Detention in the European Union

3.30 – 4.30 Heth 022

The presentation will explore the issue of the detention of migrants in the European Union (EU) through the lenses of age and gender. Vulnerable populations, such as children, who encumber on the migration routes, are often at higher risk of marginalization and human rights violations. While there is a robust EU legal regime to provide unaccompanied minors, who face detention, with multiple levels of protection, there is a difference in the implementation of legal principles across the EU member-states. The presentation examines some possible explanations of this variation such as public opinion, geographic and political specificities within individual member states. The types of persecution and challenges that children face on the migration journeys are also gendered in nature. The presentation discusses some similarities and differences experiences that boys and girls face through their migration journeys. I conclude with a consideration of possible policy recommendation on the treatment of unaccompanied minors in detention.

Gender Studies Showcase

Blazing a Trail: The History of Women in the Field of Psychology

Student Author(s): Amanda Chappell

Faculty Mentor(s): Ruth Riding-Malon

4:30 pm - 5:30 pm

Heth Lobby

This research project describes the trials and tribulations that past and present female psychologists have faced in a once male dominated field. Although the field is not yet two hundred years old, many of its important recognized contributions have been made by male psychologists. Female psychologists have often been overlooked, yet their contributions have truly shaped the field. Over the years, females in the field of psychology have faced severe discrimination; many were not able to study alongside male students, some did not receive the degree they had earned, and many were not able to secure the academic positions that their male counterparts could easily obtain. Despite the many challenges that women in psychology have faced, some female psychologists have nevertheless become famous because of their work, including Anna Freud, Mary Whiton Calkins, Mary Ainsworth, Karen Horney, Margaret Floy Washburn, and Mamie Phipps Clark. From becoming the first female president of the American Psychological Association to designing research studies that were cited in the Brown vs. Board of Education, these well-known female psychologists have made a lasting impression in psychology. Today, in many colleges, the female student population within psychology departments has dramatically increased, but challenges for women in this scientific discipline still remain. It is important to recognize these challenges and to give credit to the women who have made the recognition of accomplishments possible for female psychologists today.

The Effects of Experimenter Gender on Gender Role Attitudes in an Online Survey

Student Author(s): Amanda Chappell

Faculty Mentor(s): Jeff Willner

4:30 pm - 5:30 pm

Heth Lobby

Several researchers have found that the gender of the experimenter has affected their results when conducting research face-to-face with participants. Experimenter gender can have an impact on a variety of topics, including reports of pain, levels of aggression, and reported attitudes of gender roles. Although this is an issue that researchers are aware of, most researchers fail to include the gender of the experimenter when describing the methods of their study. The gender of the experimenters may not only influence the reactions of the participants within the experiment but also may be a reason why there are replication problems within the field of psychology. In the current study, college-aged participants will complete an online study. The participants will view an informed consent page which will include the names of either two male researchers or two female researchers. Then, participants will complete six surveys and answer some demographic questions. The main survey of interest will assess attitudes towards gender role stereotypes. It is expected that for gender stereotypes, males will report more conservative and traditional attitudes than females. Male experimenters may produce more traditional gender stereotypes for both male and female participants. Although we know that experimenter gender can affect in-person studies, this study is the first to assess whether participants may be influenced by the gender of the experimenter in an online format.

Gender Studies Showcase

Exploring Age Differences in Responses to Disrespect Among Young and Older Adults

Student Author(s): Amanda Chappell and Rachel Scott

Faculty Mentor(s): Jenessa Steele

4:30 pm - 5:30 pm

Heth Lobby

Disrespectful actions have many negative repercussions, as disrespect can foster hostility, prompt violence, and negatively impact relationships (Hawkins, 2015; Miller, 2001). Emotional responses to disrespect tend to be negative, although more research is needed to investigate overall reactions to disrespectful experiences across the lifespan. In this study, the researchers investigated how different age groups respond to being disrespected, specifically by being ignored. In the current study, young and older adult participants responded to six scenarios, which portray ignored disrespect. Within the scenarios, the relationship with the disrespect perpetrator varied from very close to distant. The participants reported their emotional response and overall sensitivity to the particular disrespectful scenarios. Preliminary analyses revealed that there were many significant gender differences in responses to the scenarios, with female participants reporting more sensitivity and a stronger emotional reaction than male participants ($p < .05$). The researchers, therefore, controlled for gender and conducted a 2 X 2 Analysis of Covariance to determine the effects of age and relationship with the disrespect perpetrator on sensitivity and emotional reaction. In general, participants were more upset when disrespected by someone close to them. We did not find the age differences that we predicted or any significant interactions between age and relationship. The findings of this study suggest that it is more hurtful to be disrespected by someone close to you and also that females may be more sensitive to disrespect than males. Learning more about reactions to disrespect is relevant for virtually all interpersonal relationships and can have implications for a variety of settings, including in schools, at home, and within healthcare.

Are lead Female characters really leading?

Student Author(s): Ashley Ralston, Devon Johnston, Petre McSwain, Giovanni Ruiz

Faculty Mentor(s): Pei-Chun Tsai

4:30 pm - 5:30 pm

Heth Lobby

Bechdel test is defined as identifying whether or not a film plays upon gender stereotypes and or has a sexist portrayal of women (O'Meara, J., 2016). The Bechdel test focuses on the non-diverse number of movies that has at least two leading females spends little to no actual time talk amongst themselves. Specifically, about subjects that do not pertain to a single male or multiple males. Meaning that even though these are considered female leading films are they really female leading if said females aren't having much discussion. The existing literature discussed the history, effects, prevalence of the topic on the Bechdel test (Scheiner-Fisher, C., & Russell, W., 2012). Our groups project plans to apply the Bechdel test to analyze selected movies and we would like to analyze what characters have done the most of talking, if they were not the leads or female as well as what the topics are being discussed about. Will the leads be discussing more topic of more importance or will the background characters?

Gender Studies Showcase

Sexism in Bob's Burgers

Student Author(s): Emma Maddex, Chloe Deel, Carter Noell, Maddie Rogers

Faculty Mentor(s): Pei-Chun Tsai

4:30 pm - 5:30 pm

Heth Lobby

Our project aims to explore sexism on Bob's Burgers, a popular Sitcom. Sexism is a big problem in today's society, even on television. Seeing it portrayed everywhere makes it seem like it is okay, but it is not. Being discriminated because of gender difference is not acceptable. That is why our group would like to address this issue. Tully (2018) described directly about gender inequality throughout Bob's Burgers. One character in particular, Tina, has a huge fan base and she is who we will mostly base our findings on. Tully believes Tina is a huge millennial character. And our group thinks Tina is changing the way women are perceived. Watson (1997) a general view of sexism in sitcoms. revealed the evolution in the past 50 years of shows, while our project will focus on exploring the past 9 years. In addition, Gwynne (2015) discussed how most females are portrayed as "house wives" and how unfair this is to women because women have done so much more for our society. Our group project would review two episodes from the nine seasons of Bobs Burgers and count the amount of times sexism is referenced per episode. This will give us an idea of whether sexism has been changed over time

An Investigation of Discrimination Against Pregnant Women in the Job Application Process

Student Author(s): Isabella Barker

Faculty Mentor(s): Catherine Middlebrooks

4:30 pm - 5:30 pm

Heth Lobby

An effect of discrimination has been observed on women during the job application process. The researchers hypothesized that women are discriminated against more during the application process when their social media indicates that they are pregnant, as opposed to men whose social media indicates they are expecting a child. To test this hypothesis, researchers created fake applicant resumÃ©s with corresponding social media accounts for these applicants. Applicants' resumÃ©s indicated similar information, such as college education level and work experience, to help counterbalance the experiment. Social media pages clearly indicated pregnancy for both men and women applicants. In this experiment, researchers recruited 60 hiring managers (30 female, 30 male) to rank the applicants in order of who they would hire first to last. Results indicated that the hypothesis was supported. This suggests that pregnant women are discriminated more so than their expecting male counterparts.

Predicting Academic Success of First Semester College Women

Student Author(s): Hanna Hatfield and Kelsey Frank

Faculty Mentor(s): Jeff Aspelmeier, Ann Elliott, Anja Whittington

4:30 pm - 5:30 pm

Heth Lobby

A longitudinal study of academic success identifies factors that predict the first semester GPA and second semester enrollment of women enrolled in their first semester of college. Initially, 156 freshmen, recruited from the Psychology Department participant pool, completed measures of resilience, psychological functioning, social-support, self-esteem, and attachment security during the first 4 weeks of the semester. Participants also provided permission to obtain their Fall 2018 GPA and Spring 2019 enrollment data from university records. During the last four weeks of the semester, 93 participants returned to complete measures of resilience, psychological functioning, social-support, locus of control, and social desirability. Regression and Logistic regression models were used to evaluate the group of variables that best predict first semester GPA and persisting to the second semester of college.

Gender Studies Showcase

Racism Sexism on hip hop and rap lyrics

Student Author(s): Barbara Hill

Faculty Mentor(s): Pei-Chun Tsai

4:30 pm - 5:30 pm

Heth Lobby

Different races are prejudged in hip-hop/rap music. This topic ties to psychology of diversity by showing how people are put in different categories. African American and Latino lyrics were perceived as criminalizing, pathologizing and degraded women (Pulido, 2009, p.71). This topic talks about psychology of because it hit the point of stereotyping and prejudging off different races and gender. I am trying to see how hip-hop lyrics are trying to perceive African American and Latino's. In Henry, West and Jackson (2010) article, they pointed out how Black female are viewed it through the different media such as television programs, music videos, magazines, and radio stations (p.241). In addition, Pulido (2009) described how African Americans and Latinas/os' are treated and why they choose the lyrics form their music. One participant in the study described how the lyrics come from what they see and hear (Pulido, 2009, p.79). My project plans to study how different media perceive African American and Latinas/os hip-hop lyrics by using literature analysis.

Has Gender Influenced the Choice of College Majors Over Time?

Student Author(s): Brandi Edwards, Sophia Kelly, Jasmine Young, Nicole Ramirez

Faculty Mentor(s): Pei-Chun Tsai

4:30 pm - 5:30 pm

Heth Lobby

The current study will investigate a four-year college in Southwest, Virginia in order to compare gender differences in major choice. The majors evaluated in the current project include biology/chemistry, nursing, accounting/marketing, criminal justice, and education. This study will travel through time starting in 2011 and ending in 2015 to investigate how gender has changed in these majors at Radford University. Previous studies have well documented the importance as well as the uniqueness of our topic. One study from Dunlap and Barth (2019) showed that gender stereotypes of women in a science, technology, engineering, or math major (STEM) has become less traditional as a previously male dominated field. While another study we reviewed, "10 College Majors with the Biggest Gender Gap" showed the statistics of how many men and women inhibit each of these majors, and proved that there is a severe gender gap in education and the job market. Yet the gender binary is being broken down, and the gender gap in education is starting to decline. Another study conducted by Zafar (2013), deemed that when males are choosing a major, an important outcome is the social status of the job that would result from that major, and for women they found it very important that they enjoyed the work they were doing. The results showed that both groups valued their parents' opinions, as well as maintaining a 3.5 GPA. It is expected that the majors investigated will be less traditional than they once were.

Gender Studies Showcase

Has Gender Influenced the Choice of College Majors Over Time?

Student Author(s): Nicole Ramirez, Sophia Kelly, Brandi Edwards, Jasmine Young

Faculty Mentor(s): Pei-Chun Tsai

4:00 pm - 5:15 pm

Kyle Hall 340

Our current study will investigate five different four-year colleges in order to compare gender differences in major choice. The majors evaluated in the current project include engineering, nursing, accounting/marketing, criminal justice, and education. This study will travel through time every 5 years starting in 2018 and ending in 1998 to investigate how gender has changed in these majors. Previous studies have well documented the importance as well as the uniqueness of our topic. One study from Dunlap and Barth (2019) showed that gender stereotypes of women in a science, technology, engineering, or math major (STEM) has become less traditional as a previously male dominated field. While another study we reviewed, "10 College Majors with the Biggest Gender Gap" showed the statistics of how many men and women inhibit each of these majors and proved that there is a severe gender gap in education and the job market. Yet the gender binary is being broken down, and the gender gap in education is starting to decline. Another study conducted by Zafar (2013), deemed that when males are choosing a major, an important outcome is the social status of the job that would result from that major, and for women they found it very important that they enjoyed the work they were doing. The results showed that both groups valued their parents' opinions, as well as maintaining a 3.5 GPA. It is expected that the majors investigated will be less traditional than they once were.

Race/Gender and Financial Status in Disney Throughout the Years

Student Author(s): Alexandria Spakes and Kylie Hendrickson

Faculty Mentor(s): Pei-Chun Tsai

4:30 pm - 5:30 pm

Heth 022

Our topic is important because Race/Gender and the Financial Status that Disney portrays is overlooked. Many people do not see the race aspect that Disney gives since many of their main characters are Caucasian, gender roles define men as superior, and the financial status of the characters are Princes and Princess are wealthy. This teaches children that being a certain race, gender, or financial status is better than the other. This ties to Psychology of Diversity because it shows the social and culture differences not only in Disney movies but today's society as well. We are exploring sexism, racism (stereotypes), and how financial status plays a role. The poor are not portrayed throughout the media such as the news and fictional television shows, they are portrayed through talk shows and reality television (Streib, 2016, p. 2). The poor are often under represented and labeled as lazy, unintelligent. The middle class is over represented in reality television, and the media. The working class is portrayed as irresponsible, backwards, and morally corrupt (Streib, 2016, p. 3). The media not only frame people but also class structure. In Disney, Princesses are usually portrayed as physically weak, that they needed help with something or they would fail, they are submissive, they are readily obedient, and emotional (England, 2011, p. 5). While these are negatively viewed there are also positive ways to look at these characters such as nurturing, affectionate, and helpful (England, 2011, p. 5). For our menu topic we will look at media as a whole and how they portray the race/gender and financial aspects, compare that to Disney to see how it has changed over time.

Center for Innovative Teaching and Learning Digital Media Showcase**A Digital Portfolio of Seasonality and Salamander Research in Appalachia****Student Author(s): Emily Hansen****Faculty Mentor(s): Christine Small****4:00 pm – 4:30 pm McConnell 4th floor**

As a biology major, I have focused my time on my passion of laboratory and field science. As a professional research career hopeful, I study both salamander presence and DNA in Appalachia, a "hotspot" for salamander diversity. I introduced safe DNA collection methods and collected general population/habitat information. I am also part of a semester-long project of studying the seasonality and environmental changes in Selu and Wildwood Park through the use of field cameras and weekly plant monitoring. The field camera animal captures and plant growth data is to be contributed to the National Phenology Network in hopes of contributing to the understanding of seasonal change and climate change across the country.

Undergraduate Biology Research: A Digital Portfolio**Student Author(s) Erin Dimino****Faculty Mentor(s) Christine Small****4:00 pm – 4:30 pm McConnell 4th floor**

Research at the undergraduate level allows students to gain experience and knowledge through hands on work that very few people have the opportunity to achieve. I have conducted research on decomposition rates and how sharp force trauma effects it in different environments and the effects of seasonal changes on wildlife, salamanders, and plants. Although these topics may be vastly different, they have helped me grow as a student and researcher. My portfolio emphasizes research on seasonal changes in spring 2019 in southwest Virginia. These projects investigate phenological changes in wildlife using camera traps, cover boards to monitor salamanders, and compare native and invasive plant species.

From the Tennessee Valley to the New River Valley: A Research Portfolio**Student Author(s) Raegan Forbes****Faculty Mentor(s) Christine Small****4:00 pm – 4:30 pm McConnell 4th floor**

As an undergraduate biology student at Radford University, I have had the opportunity to do research in various habitats in this area. Southwestern Virginia is a hot spot for species diversity from salamanders to wildflowers and shrubs. The overarching theme of my research is phenology, or how plants and animals change with the seasons, and contributing data to the National Phenology Network. My digital research portfolio highlights wildlife monitoring with camera traps and salamanders with coverboards at Selu Conservancy. At Wildwood Park, I am monitoring seasonal changes of invasive and native shrubs and wildflowers. These research opportunities have helped me grow as a biologist and as a person.

Center for Innovative Teaching and Learning Digital Media Showcase**A Young Ecologist: A Digital Portfolio Story****Student Author(s) Conner Philson****Faculty Mentor(s) Christine Small****4:00 pm – 4:30 pm McConnell 4th floor**

Undergraduate research (UR) is a transformative experience applying higher levels of Bloom's Taxonomy at an early stage. Through success, and plenty of "failure" UR has helped me to develop from a student interested in ecology to a practicing ecologist. Here I tell my story through research in the Appalachian Mountains to Galapagos Archipelago. I emphasize my research on the phenological (seasonal) changes of plants and animals in Appalachian deciduous forests in southwest Virginia. This research focused on how spring bloom and animal presence change with the season. Our work can be combined with larger databases to provide nationwide view of phenology with relation to global climate change.

The Ecosystem of Wildlife and Plants Using Camera traps and Data Analysis Sheet.**Student Author(s) Abigail Nickasen****Faculty Mentor(s) Christine Small****4:00 pm – 4:30 pm McConnell 4th floor**

As an undergraduate student in Radford University I started to developed passion and interest for nature when I enrolled in phenology field class. This course enlighten me on how to monitor and record data about wildlife and plants. I now possess the knowledge of different diversities in wildlife and the seasonal changes occurring winter or spring in plants. I have acquired field skills and techniques such as setting up camera on trial mile and also how use data sheet analyzes to study or record data in plants. Specific plants involve in our studies were *Lindera benzoin* (spicebush) an invasive species and *Rosa multiflora* (multiflora Rose) also native species.

The onset of spring in Wildwood park and Wildlife monitoring of Selu Conservancy**Student Author(s) Beram Taib****Faculty Mentor(s) Christine Small****4:00 pm – 4:30 pm McConnell 4th floor**

As an aspiring scientist in the STEM field I am learning something new everyday whether it ranges from lab work to doing research in the field I,Ã always trying to grow my knowledge of what I do and don,Ã know. We continue to monitor wildlife in Selu conservancy to get a better understanding of species requirement, while also monitoring spring indicators of local plants in wildwood park using signals such as leaves buds, flowers bud, presence of fruits, and more to give us a better understanding of when spring is coming, and finally exploring how salamanders presence has changed compared to past years. These studies are continuously ongoing with new studies around the corner ready for me to begin continuing my love for all things science.

Center for Innovative Teaching and Learning Digital Media Showcase**Research Experience Investigating Seasonal Changes in Wildlife, Plants and Salamanders in Southwest Virginia****Student Author(s) Stephanie Martin****Faculty Mentor(s) Christine Small****4:00 pm – 4:30 pm McConnell 4th floor**

Cute animals, beautiful forests, and slimy creatures are just a few things that I have focused on throughout my journey at Radford University. I monitored seasonal changes by setting out 12 wildlife camera traps at Selu Conservancy in forest, wetland, and field environments to observe what and when animals were present. Also, I monitored two invasive plant species (multiflora rose and tree of heaven) at Wildwood park to see if climate changes impacted their leaf burst, flower burst, and fruit production timeline. My final project focused on plethodontid salamanders by using coverboards at Selu to see if climate change (soil temp, air temp, moisture) affected their relative abundance.

A Research Portfolio from Streams to Forests**Student Author(s) Angie Holmes****Faculty Mentor(s) Christine Small****4:00 pm – 4:30 pm McConnell 4th floor**

The beauty of Appalachia lies within vast forests of green leaves, parks of blooming wildflowers, gently flowing streams, and the diversity of species within. Seasonal changes bring a new and exciting landscape. My love for nature has led me down a research path ranging from streams to forests. My research portfolio highlights my current research observing seasonal changes in invasive plant species in Wildwood Park, wildlife using game cameras, and salamanders using coverboards at Selu Conservancy. My long-term research project involves the anthropogenic effects on stream quality. Specifically, I am monitoring stream quality before and after the insertion of the Mountain Valley Pipeline.

Digital portfolio of my experiences and research on the effects of seasonal changes on animals, salamanders and plants in Southwest VA.**Student Author(s) Randi Robertson****Faculty Mentor(s) Christine Small****4:00 pm – 4:30 pm McConnell 4th floor**

As a graduating biology student at Radford University, I am seeking to obtain a career by utilizing my education, as well as my experiences in the real world. My digital portfolio emphasizes the places I have worked, the skills I've built, and my career interests. My projects focused on monitoring wildlife by using camera traps, salamanders by using cover boards, and plants by comparing two invasive species at Selu and Wildwood Park. Our data showed seasonal changes and its impact on the individual projects performed and were contributed to the National Phenology Network, who focuses on seasonal changes.

Center for Innovative Teaching and Learning Digital Media Showcase**Appalachian Conservation Research Projects****Student Author(s)** Adam Allen**Faculty Mentor(s)** Christine Small**4:00 pm – 4:30 pm** **McConnell 4th floor**

As an undergraduate student at Radford University I have expanded my field and research skills to help me pursue my passion for wildlife communities and ecosystem conservation. In my digital research portfolio, I recapped the research from my biology class and independent projects at Selu Conservancy and Wildwood Park. My portfolio will emphasize research pertaining to the seasonal changes (phenology) Appalachian communities go through. This phenology research looked at wildlife camera traps, invasive vs. native plant species, and salamanders. I also describe the impacts an extremely invasive beetle, the Emerald Ash Borer has on Ash trees in the region. My portfolio shows my progression and growth towards my career goals.

Digital portfolio of my research monitoring seasonal changes at Radford University**Student Author(s)** Donya Mohamed**Faculty Mentor(s)** Christine Small**4:00 pm – 4:30 pm** **McConnell 4th floor**

As an undergrad at Radford University, I have been very fortunate to participate in research opportunities. Me and a group of undergraduates at Radford University in a biology/phenology course monitored the effects of the climate on species at Selu Conservancy and Wildwood park in Southwest Virginia. Phenology is the timing of nature, its events and when climate changes it alters the timing of natural occurrences. Behaviors of wildlife in Selu Conservancy from mammals to reptiles were studied. We installed wildlife camera traps in different habitats and monitored species. Samples of salamanders under coverboards and obtained measured. At Wildwood Park, we studied the plant invasions by sampling invasive and native species.

A digital portfolio devised to present my undergraduate research experiences at Radford University.**Student Author(s)** Samantha Jones-Carlyle**Faculty Mentor(s)** Christine Small**4:40 pm – 5:10 pm** **McConnell 4th floor**

Within my undergraduate experience at Radford University, I have gained field experience in plant tissue microscopy, bird-window collisions, and stream, wetland, and forest ecology. Currently, I am monitoring phenological events that unfold within the transition from winter to spring, and their following response to climate change. The objectives of this study are to monitor wildlife with the use of trail cameras, capture and identify salamanders using cover boards, and collect data on timing of leaf and flower emergence in native spicebush (*Lindera benzoin*) and invasive multiflora rose (*Rosa multiflora*) shrubs.

Center for Innovative Teaching and Learning Digital Media Showcase**My Digital Research Portfolio: Ecology Projects****Student Author(s) Stephen Ruppert****Faculty Mentor(s) Christine Small****4:40 pm – 5:10 pm McConnell 4th floor**

I am an undergraduate student at Radford University who is very interested in ecology. This digital portfolio captures the research that I have conducted from fall 2018 through spring 2019. It focuses on the effects of seasonal changes (phenology) on wildlife, salamanders, and plant species. Camera traps were set up in twelve different areas of Selu Conservancy to observe seasonal responses in animal species. Cover boards were used to observe salamander species at Selu Conservancy. The plant phenology project identified ten native and invasive plant species and monitored them to track phenological changes. For the emerald ash borer (EAB) project, we are monitoring and recording the effects of the EAB on ash trees in southwest Virginia.

The novel research biologist: a look at seasonal changes**Student Author(s) Selena Angel****Faculty Mentor(s) Christine Small****4:40 pm – 5:10 pm McConnell 4th floor**

As an undergraduate biology student at Radford University, I had the opportunity to build a research portfolio that reflects my field work experience and my personal and career objectives. My field research includes the impact of seasonal changes (phenology) on plant and animal life. Our research at Wildwood Park compared phenological aspects of native and non-native plant species. At Selu Conservancy we monitored salamanders using coverboards and wildlife with camera traps, to observe their behavior as the seasons changed from winter to spring. Completing fieldwork provided me with a strong background that applies to my career aspirations.

Digital Portfolio: My experience monitoring plants and wildlife in southwest Virginia**Student Author(s) Miranda Dimas****Faculty Mentor(s) Christine Small****4:40 pm – 5:10 pm McConnell 4th floor**

I am currently involved with research that focuses on seasonal changes in plants and wildlife. My research portfolio includes wildlife camera trapping at Selu Conservancy to observe behavioral patterns and interactions of species from winter and spring. Salamander monitoring at Selu Conservancy includes collecting data such as species abundance, habitat type, length, and weight. Our research also includes plant phase monitoring at Wildwood Park with a specific interest in invasive species. As a Biology major at Radford University with a particular interest in ecology and field research, I am fortunate to be involved in numerous research projects that have given me environmental research experience in Southwest Virginia.

Center for Innovative Teaching and Learning Digital Media Showcase**Monitoring seasonal changes in wildlife, plants, and salamanders in Southwest Virginia****Student Author(s) Hailey McArdle****Faculty Mentor(s) Christine Small****4:40 pm – 5:10 pm McConnell 4th floor**

As an undergraduate biology student, I am eager to use skills I have acquired from field research to further my career interest in teaching field research. My research portfolio discusses the monitoring of wildlife, plants and salamanders at Wildwood Park and Selu Conservancy. The multiple projects in my portfolio include the use of cover boards for discovering salamanders, wildlife camera traps to capture animals in the surrounding areas and documenting weekly changes in invasive and noninvasive plant species. Data collected from the research projects was then added to the National Phenology Network. The results concluded from our data will show the impact that seasonal changes have on the wildlife, plants and salamanders in Radford, VA.

An Aspiring Wildlife Biologist: A Digital Portfolio**Student Author(s) Amanda McClelland****Faculty Mentor(s) Christine Small****4:40 pm – 5:10 pm McConnell 4th floor**

My career goal is to become a wildlife biologist. In a world that is rapidly deteriorating due to climate change, I am interested in evaluating Appalachian ecosystems of southwest Virginia to better understand how plants and animals are affected. My digital portfolio highlights research I conducted in spring 2019, including three research projects monitoring seasonal and behavioral characteristics of local plants and animals. These projects assess the phenological changes of wildlife using camera traps and salamanders using cover boards at Selu Conservancy, as well as monitoring invasive plant species at Wildwood Park. I hope to use these skills to further monitor and protect wildlife from the effects of anthropogenic climate change.

Research Portfolio**Student Author(s) Angie Leon****Faculty Mentor(s) Christine Small****4:40 pm – 5:10 pm McConnell 4th floor**

This semester I created an e-portfolio that consolidated my research into an easily accessible website. My portfolio demonstrates to potential employers my experience as well as my growth in the scientific community. In my website I provided 3 different areas of research I am involved in as well as a curriculum vitae to summarize any other important information.

The Life of an Aspiring Ecologist**Student Author(s) Marnesha Jones****Faculty Mentor(s) Christine Small****4:40 pm – 5:10 pm McConnell 4th floor**

As an environmental biology major, I am constantly challenging my ability to think and conserve. Undergraduate research has helped me grow as an ecologist while putting that knowledge into perspective. Rather than just discussing environmental issues, I have investigated and observed these problems whilst gaining hands-on experience in the field. My portfolio highlights my research experience monitoring Phenology (seasonal changes) in relation to plant and animal species, relationships between butterflies and their host plants, and bird window collision densities relative to food sources. I am fortunate to say that my undergraduate career has taught and prepared me for graduate schools as well as other research programs.

Center for Innovative Teaching and Learning Digital Media Showcase**Environmental Research Experiences in Ecology: Seasonal Changes and Aquatic Predator-Prey interactions****Student Author(s) Nick Murff****Faculty Mentor(s) Christine Small****4:40 pm – 5:10 pm McConnell 4th floor**

Throughout my undergraduate experience at Radford University, I have been fortunate to participate in various research projects in the New River Valley of Virginia, specifically focusing on aquatic predator-prey interactions and seasonal processes of ecology. These experiences have allowed me to develop a niche for a variety of field work methods and techniques that are similar to my interests in the field of biology. I hope to use these skills to practice environmental regulation of streams and rivers, in order to protect their designated uses for future generations.

Wildlife Studies**Student Author(s) Jasmine Morgan Brown****Faculty Mentor(s) Christine Small****4:40 pm – 5:10 pm McConnell 4th floor**

As an aspiring wildlife biologist, I have been involved in a variety of research experiences in southwest Virginia, highlighted in my digital research portfolio. This semester, I am monitoring seasonal changes and contributing data to the National Phenology Network through research on plants at Wildwood Park and camera traps studies to detect wildlife diversity and behavior and salamander surveys at Selu Conservancy. I have worked with researchers from Radford University, Radford Army Ammunition Plant, and VA-DGIF to digitize hunter and firearm registrations, on spotlight surveys, data collection during deer quota hunts, comparing metrics from surveys to harvest data, and Quality Deer Management guidelines.

Radford Phenology Basics: Tylis Johnson**Student Author(s) Tylis Johnson****Faculty Mentor(s) Christine Small****4:40 pm – 5:10 pm McConnell 4th floor**

My Eportfolio currently displays the three projects to be completed in my Phenology course. These projects monitor seasonal changes in the Radford area. Our field research contributes to the national conservation and monitoring of native species. I have labeled the projects Salamander, Wildlife, and Plant Conservation. My Eportfolio conveys the skills that I have learned from these projects and executed over the semester. These skills include a range of field biology knowledge such as data collection and analysis, scientific team-based communication, and the basic steps and principles used in implementing professional research techniques such as cover-boarding, camera trapping, and monitoring changing phenophases.

Citizen Leader ePortfolio**Student Author(s) Jennifer Cole****4:40 pm – 5:10 pm McConnell 4th floor**

Center for Innovative Teaching and Learning Digital Media Showcase**Mainstreet****Student Author(s)** Meg Robertson**Faculty Mentor(s)** None listed**5:20 pm – 6:50 pm** McConnell 4th floor

An amateur short horror film following the life of a young man haunted by a ghost. Tyler takes a new job at a local store, trying to pay his bills and impress his girlfriend. Yet, just when things seem to be going well, a murder victim starts to haunt him, making him question what's really happening to workers at the store.

Impacts of the Mountain Valley Pipeline: the relationship between aquatic insect richness and riffle morphology or chemistry in Mill Creek, Roanoke County, Virginia

Production 1200 Downsizing Review**Student Author(s)** Trae Price and Shakis Moore**Faculty Mentor(s)****5:20 pm – 6:50 pm** McConnell 4th floor

Trae in an effort to save money on bills has shrunken himself down to size. Shakis asks him where he got the idea and it turns out he got the idea from the film Downsizing.

This I Believe Essay: Oh How the Fireflies Glow**Student Author(s)** Nicole Jones**Faculty Mentor(s)** Ariel Firebaugh**5:20 pm – 6:50 pm** McConnell 4th floor**This I Believe Essay: The Story of the Flamboyant Tree****Student Author(s)** Emilie Colon**Faculty Mentor(s)** Ariel Firebaugh**5:20 pm – 6:50 pm** McConnell 4th floor**This I Believe Essay: Curiosity****Student Author(s)** AJ Greene**Faculty Mentor(s)** Ariel Firebaugh**5:20 pm – 6:50 pm** McConnell 4th floor**This I Believe Essay: From the Creeks of Appalachia: One Man's Perspective****Student Author(s)** Cole Faulkner**Faculty Mentor(s)** Ariel Firebaugh**5:20 pm – 6:50 pm** McConnell 4th floor

Center for Innovative Teaching and Learning Digital Media Showcase**The Boys Who Killed Bloodsuckers****Student Author(s)** Meg Robertson**Faculty Mentor(s)** None listed**7:00 pm – 7:30 pm** **McConnell 4th floor**

An amateur collaborative short film following the lives of two young men fighting crime and drug addiction. A new gang moves into town, and Bow and Stevie must fight for their lives and their loved ones, literally. With a throwback twist, Justin Smith, producer and director, brings a fresh life to gothic tales and supernatural beings. The film premieres in full at the Giles Country Film Office Community Night on April 26, 2019.

Sunset Series**Student Author(s)** Eilish Bailey**Faculty Mentor(s)** None listed

A series of portraits taken at sunset around Radford, Virginia.

7:00 pm – 7:30 pm **McConnell 4th floor****Citizen Leader ePortfolio****Student Author(s)** Sam Popilarski**Faculty Mentor(s)** N/A**7:00 pm – 7:30 pm** **McConnell 4th floor****Citizen Leader ePortfolio****Student Author(s)** Madison Smith**Faculty Mentor(s)** N/A**7:00 pm – 7:30 pm** **McConnell 4th floor****Citizen Leader ePortfolio****Student Author(s)** Fiona Scruggs**Faculty Mentor(s)** N/A**7:00 pm – 7:30 pm** **McConnell 4th floor****livingston ePortfolio****Student Author(s)** Claire Dundon**Faculty Mentor(s)** N/A**7:00 pm – 7:30 pm** **McConnell 4th floor****Digital Media Showcase News Package****Student Author(s)** Shakis Moore**Faculty Mentor(s)** N/A**7:00 pm – 7:30 pm** **McConnell 4th floor**

This project is a news package designed to inform other students about the digital media showcase.

Center for Innovative Teaching and Learning Digital Media Showcase**Adventures in Reading: Utilizing YouTube as an Educational Tool****Student Author(s): Samantha Lett, Alexis Epperly and Alyssa Foster****Faculty Mentor(s): Boyoung Park****7:00 pm – 7:30 pm McConnell 4th floor**

This project was completed in Dr. Boyoung Park's *Generation YouTube* course where students were to create a YouTube video relating to their major. Alexis, Alyssa, and Samantha are all Elementary Education majors with different concentrations. The trio created a series of 3 videos on their *Adventures in Reading* channel. One was a read-aloud. The other 2 videos were tied to the book through maps (used in the book), and fractions/mathematics (to make gingerbread men). Their goal was to utilize YouTube as an educational tool, as kids can look up the videos used at school, at home. By creating *Adventures in Reading*, the trio was learning how to create videos for future students as technology is becoming integrated into the classroom.

Production Technology Showcase

6:00 pm - 8:00 pm

McGuffey 203

Mentors: West Bowers Matthew Turner Michael J. Meindl Joseph Staniunas

MCEAP Thrift Store

Student Author(s): Tyler Rudd

One More Victory Royale

Student Author(s): Justin Neagle

We Are New River Radio

Student Author(s): Logan Brown

GOTE: Come Out and Get You Some

Student Author(s): Luke Hayes

Main Street Grant

Student Author(s): John Steinbach and Jennifer Blake

Interstate-81

Student Author(s): Tanis Enos and Camden Lazenby

Flamingo Fleet

Student Author(s): Hunter Hogsten

Live Music Announcing

Student Author(s): Cora Rasnake

Why Radford?

Student Author(s): Patrick Deets

Student Choreography Showcase

Wednesday, May 1 and Thursday May 2, 2019 at 7:30 p.m.
Albig Studio Theatre, B112 Peters Hall

An evening of exploratory dance, Student Choreography Showcase highlights the voices of emerging choreographers enrolled in the Department of Dance's Choreographic Studies II class. Free admission.

Out of Focus

Student Author(s): Sarah Danaceau

Faculty Mentor(s): Deborah McLaughlin

Out of Focus is an autobiographical solo dance piece exploring how personal experiences shape one's worldview and sense of self. Through the lens of burgeoning adolescence, the choreographer re-examines their own inner conflict between childlike wonder and curiosity, and a profound fear and distrust of the unknown. The choreographic process for this piece involved rediscovering the headspace of an exuberant child, itching for risk and adventure, while still feeling the need for parental comfort and guidance. Through this method, the choreographer was able to create movement that more accurately evoked familiar images of childhood, while exploring feelings about maturing.

(dis)connected

Student Author(s): Sarah Danaceau

Faculty Mentor(s): Deborah McLaughlin

(dis)connected is an experiment in human interaction and relationships, presented as a group dance piece. Inspired by the choreographer's own struggles with social interaction and connection, this piece explores the different ways in which human relationships can go right or wrong, and challenges the audience's perception of what's normal. The research process for this piece included reading John Elder Robison's Look Me in the Eye, a memoir about growing up with Asperger's in a time before a name for the disorder existed, as well as doing independent research on other disorders that can affect interaction with others and oneself, such as Social Anxiety Disorder and ADHD.

Appartato

Student Author(s): Tabitha Kirk

Faculty Mentor(s): Deborah McLaughlin

Appartato is an autobiographical dance based on the choreographer's conflict with being secluded in a place where no person can be found. The intention of this piece is to show how this silent personal conflict can feel relentless and lonely as though no one is available to give a hand. This struggle is portrayed through the use of repetitive movement and sound. Appartato explores the individual struggle, the ongoing process, and the strides that are taken to overcome this conflict.

Student Choreography Showcase

not yet titled

Student Author(s): Tabitha Kirk

Faculty Mentor(s): Deborah McLaughlin

not yet titled is a look at the choreographer's intimate relationship with a person whose identity has been substituted for someone she does not recognize. This work portrays emotions that were previously unknown in the choreographers' life and how this new relationship has affected her. The combination of the music, a rocking chair, and the personal situation at hand express vicariously the life of a person she now does not know. not yet titled is a series of solos, duets and group sections that highlight movements to display the ever changing relationship and past stories which are dear to the choreographer. Each dancer has an aspect connected to their movement; the effects of a tragedy, the happiness of childhood, the struggle of a bond with another, and the adversity for all who are involved.

A vicious habit

Student Author(s) Keagan Vickers

Faculty Mentor(s) Deborah McLaughlin

a vicious habit is a glimpse into the choreographer's mind. It depicts the ways in which people experience obstacles within themselves and how people struggle to overcome those internal obstacles. The solo in an abstract manner portrays the act of holding oneself back and the negative effects that imposing self-restraints can have, and how rewarding and strengthening it can be to free oneself from their fears. Several motifs are used to depict the fear and anxiety that some experience and how they often lead to self-destructive behavior. a vicious habit is meant to show what a toxic mind-set can do to a person if it is persistently allowed to run rampant within. Another aspect of the piece is captured in the title by calling out these behaviors as habits. The piece is in part meant to show how these habits can become consuming and hard to break. Introspection on the interaction between an individual and their own mind are at the heart of a vicious habit, and the negative impacts of such a toxic mind-set are inspected through the movements, motifs, and music.

Barrier

Student Author(s) Cassie Williams

Faculty Mentor(s) Deborah McLaughlin

This choreography was created to describe a relationship to power. What sparked this interest were certain actions of the current president that brought to light the type of person he is and how unsettling the amount of power he holds is. The piece began evolving into an examination of the power that men have over women in the world. What I aimed to show through this work was the hopeless feeling that many women experience around men. Through dance I wanted to describe the thought women have come to in an uncomfortable situation with a male, which is that being able to defend or take up for oneself is a challenge and often scary. Through dance and visuals my purpose is to describe the feeling many women experience and how common of an occurrence this is. The work will be presented by a group of dancers, with one dancer as the leader exhibiting power over the others.

Student Choreography Showcase

Daddy's Little Girl

Student Author(s) Lauren Murphy

Faculty Mentor(s) Deborah McLaughlin

My solo, titled "Daddy's Little Girl", is a choreographic adventure exploring my relationship with my dad. My dad is a goofy, lively, protective, and loving guy. He has taught me to be strong, kind, and to never give up. My dad is a musician, and has shared his talents with me and has supported me in dance my whole life. I chose to dance to the song Brown Eyed Girl (Instrumental Version) by The O'Neill Brothers Group because whenever my dad sings that song, he always dedicates it to me and calls me his baby brown eyed girl. I incorporated a recording of my dad playing this song on the guitar and singing along to it in my piece to unite his talents with mine. Throughout my choreographic journey, the creation of this piece was not as easy as I expected it to be. I wanted it to be personal, but also entertaining for the audience. I would think of lessons my dad has taught me, or activities we have done together for inspiration for my choreography. This choreographic exploration has been a pleasure to create and I am beyond thankful for dance to be an outlet to share a bond so special to me with many others.

Student Choreography Showcase

May 1 & 2, 2019

7:30 pm

Albig Studio Theatre

Peters Hall Room B112

Free Admission

For Information: (540) 831-6850



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