RADFORD UNIVERSITY

23RD STUDENT ENGAGEMENT FORUM

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Student Engagement Forum Coordinators

Joseph I. Wirgau, Interim Director OURS

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The following individuals and offices are acknowledged for their contributions:

P. Niels Christensen, Associate Director of the Honors Academy

Sally Cox, Event Planning Manager

Halle Edwards, Work Study Student

Nancy Houff, Honors Academy Administrative Assistant

Radford University Printing Services

Cover Art - Alan C. Brown is a graphic design major, graduating with his BFA in the May commencement ceremony. His design for this cover was inspired by a well-known Russian poster which he reoriented to stress active movement into the center. Red, black and white were the colors of the original so it was a natural fit for the RUSEF.

O.U.R.S

Office of Undergraduate Research and Scholarship

RADFORD UNIVERSITY

Welcome!

It is my great pleasure and privilege to welcome you to the 23rd Annual Student Engagement Forum! The Student Engagement Forum 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, such as, climate change, spread of disease, acceptance of minority groups, the causes of bullying, maximizing stock market investments, the role of athletics within university missions, and so many more you will have to read through this thick program or better yet wander room to room in Heth for the next 48 hours to see them all!

Although what you hear and see represents countless hours of work, it is only the tip of the ice berg. Marston Bates once described research as "the process of going up alleys to see if they are blind." Niels Bohr boasted that an expert was merely "a person who has made all the mistakes that can be made in a very narrow field." It is only through great perseverance, belief, and support that any of these projects succeeds. I wanted to thank all of the presenters for staying the course and everyone who has said a supporting word or offered a shoulder to lean, or even cry on, when the inevitable challenges of conducting relevant research arose.

Much like these research projects, organizing the Student Engagement Forum is a team effort. Research is built upon previous work so that anyone today can have knowledge that surpasses all of the geniuses from the last generation. We are lucky enough to build the Student Engagement Forum off of the foundation created by the tireless work of Dr. Joe King and more recently Dr. Niels Christensen. I owe them a debt of thanks for both their willingness to share their experiences and for building this event for the past decade. This year the heavy lifting has been done by Erica Wilkening and Shivali Viswanath, and the success of the entire forum is in large part due to their professionalism and hard work. Thank you to Sally Cox and her team in Student Events as they are easy and fantastic to work with in reserving and setting up all the rooms used for this event. I want to thank Halle Edwards for helping me publicize the event, Alan Brown for designing the program cover as one more example of student engagement, and Dr. Matt Dunleavy donating his time and energy as our opening speaker, as well as his general support of OURS. Nancy Houff needs to be publicly applauded for helping to keep OURS running while time and energy were diverted this past month toward forum preparations. Lastly, I would like to thank Dr. Sam Minner for trusting me with this job and everyone I have had the extreme pleasure to help support this past year. You make it easy to come to work each day!

Enjoy the celebration of new knowledge and I hope to see you all next year for the 24th version of the Student Engagement Forum!

Dr. Joe Wirgau
Interim Director, Office of Undergraduate Research and Scholarship (OURS)

Forum at a Glance

Graduating Highlander Scholars

Molly Allen

Capstone mentor: Eric Mesmer, Psychology

Reading Generalization Intervention

The ability to read well is a task that can be taken for granted. Reading is a stepping stone to excelling in academics and life. To be able to read one must decode words, read fluently, and be able to comprehend text. Studies have shown that repeated reading interventions, such as recalling sight words, increases reading fluency and potentially comprehension (Burns, Kanive, Parker & Zaslofsky, 2012). One repeated flash card method that is frequently used is incremental rehearsal (IR). In a study conducted by Burns, Dean, & Foley (2004), results demonstrated that when using an IR intervention in which students learned key vocabulary words, student's scores for reading fluency and comprehension increased. The proposed study attempts to build on the Burns et. al results by examining the impact of learning high frequency words using the IR procedure on reading comprehension. In particular the proposed study will attempt to determine whether learning high frequency words in isolation, through the IR procedure, will result in generalized reading improvements (i.e. reading the high frequency words in a passage and comprehending questions that include the high frequency words). Our study proposes to include 4-5 third and/or fourth graders that have been identified with reading disabilities. Each student will read three passages and answer comprehension questions. For the intervention, each student will be taught unknown words with the IR procedure and read three different passages and answer comprehension questions. Word recognition, comprehension, and maintenance are three variables to be measured.

Kayleigh Ashby

Capstone mentor: Donald Samson, English

Analyzing Legal Writing for Law Students

This project will analyze the characteristics of effective legal writing, which is a field that most law and pre-law students struggle with upon entering law school. I will analyze what makes some legal writing better than other writing, and lay out guidelines for pre-law students to consider when merging into this difficult field. If I can pinpoint why law students have such a difficult time learning legal writing, and develop a simpler, more straight forward way to explain the exact guidelines required of these future lawyers, this will give me a leg up when I apply to and enter law school.

Sarah Backof

Capstone mentor: Leonita Cutright, Nursing

Congestive Heart Failure: Readmission Rates

The Affordable Care Act of 2010 shaped the establishment of the Hospital Readmissions Reduction Program, which will reduce payments to hospitals for certain chronic disease patients, readmitted within 30 days of discharge. A diagnosis of Congestive Heart failure (CHF) is one such chronic disease. According to the Centers for Disease Control, one million patients are admitted each year with this diagnosis. Congestive Heart Failure is the inability of the heart to pump enough blood to the rest of the body. Symptomatic patients often display difficulty breathing with the first response being a visit to the Emergency Department, often resulting in admission to the hospital. Recurrent admission to the hospital tends to have poor outcomes. Strategies aimed at improving outcomes for these patients are being driven by the new reimbursement measures. At Greater Baltimore Medical Center (GBMC), a two hundred and fifty-five bed community hospital outside of Baltimore, a transition program has been implemented utilizing a multidisciplinary team charged with prevention of re-admission for Congestive Heart Failure patients. The nurse's focus was to help the patients shift from an acute care hospital setting back to their homes. The team included nurses, social workers, physicians, long term care managers, pharmacists, physical therapists, hospice supervisors and care managers working together in an interdisciplinary group to implement self-care management strategies with this chronic disease population. These strategies include a thorough patient assessment, an educational program and follow up phone calls to guide management at home for the patient. The program allowed the transition RN to visit the patients selected for the program during the 30 day-interval after discharge. This created a personalized interaction, which the patients were able to ask questions and learn more in their home environment. The transition program has been in operation for a year and a half and has begun to show positive outcomes. The evidence reflected a decrease of re-admission rates. The results were obtained through monthly data analysis and usage of the Self-Care of Heart Failure Index tool. This model was beginning to be used for other chronic disease processes at the hospital. This model can serve as an example to other hospitals for Congestive Heart Failure patients.

Morgan Bohannon

Capstone mentor: Sharla Cooper, Nursing

Infant Massage in Current Practice

Infant massage is becoming very common among caregivers. There are many physical and emotional benefits to infant massage including improved infant weight gain, relief of colic, gas, and constipation, as well as increased emotional attachment and bonding (Heath & Bainbridge, 2004). Infants who are medically unstable, such as infants on ventilators, should be provided as gentle handling as possible because massage can produce too much stimulation and cause physiologic and behavioral disorganization, which adds to the stress of being in the ICU (Browne, 2000). The benefit of massage should carefully be weighed against the risks to those infants. There are many different strokes that can be incorporated into the massage to alleviate specific health issues. Nurses can benefit from learning infant massage because they would be able to teach parents proper techniques. Nurses can teach parents how to recognize behavioral cues, so the parents will better understand the infant's needs. Nurses can support the care of infants through massage; this will help babies with physical health and psychological health. Infant massage is also important for the parents because they too can benefit, through increased emotional attachment and alleviation of postpartum depression (Reese, 2006). Through this evidence-based research project, I have concluded that infant massage should be incorporated into a regular routine because it can be beneficial for infants and their parents.

Kirsty Condon

Capstone mentor: Philip Sweet, Foreign Languages and Literatures

Could the UK benefit from Germany's Dual Training System?

The presence of a reputable national education system is a key component of the economic and social progress of a country. In order to guarantee a brighter future, the children of today must be equipped with the skills that will enable them to flourish as adults tomorrow. Furthermore, with intense competition in the job market, it is vital that individuals are aware of and understand the educational options available to them so that they can make the choice that will most adequately prepare them for their desired field. Germany, where a dual training education system is implemented, is renowned for its strong economy and low youth unemployment rate. On the other hand, the educational system in the UK faces considerable criticism, particularly due to the diminishing performance of students in the PISA (Programme for International Student Assessment) tests. Furthermore, the UK unemployment rate was 19.8% for 16-24 year olds in November 2013 – January 2014. This study evaluates both the benefits and drawbacks of the German education system and analyzes how dual training contributes to its strong economy. In addition, it compares and contrasts this system with that of the UK and highlights potential solutions for the modification of UK education.

Rachel DeBusk

Capstone mentors: John O'Connor and Ken Smith, Art

Emotion in Design

My capstone, Emotion in Design, explores the significance of the relationship of text and image and its ability to influence a viewer's emotional response to advertisements. As a graphic designer, my goal is to tell a story through images and illustrations that viewers can easily comprehend and ultimately have some emotional response to. Telling a story and communicating an idea is one of, if not the most critical aspect of successful graphic design and advertising. When a person views any material that has been designed for advertising or marketing purposes, the viewer expects to receive a message or understanding of the product or service being advertised. This project has allowed me to explore various approaches I can take to tell a story and communicate ideas through my work in my future career. In my discipline, playing upon emotion and manipulating the viewer to see the story within a piece is a central component to having successful work. Whether it be anger, happiness, seduction, or inspiration, each of my advertisements were created with the intent of triggering some feeling or emotion from their viewers. Art becomes obsolete without a deeper meaning or message, and I believe my project synthesizes the science behind graphic design because it is integrated around this concept.

Kayla Gardner

Capstone mentor: Sharla Cooper, Nursing

Water Birth in Current Practice

Water is important in every aspect of life from birth through death. Our bodies require it to function properly and water is important in the social and professional lives of many groups of people. Pregnancy and birthing are no exceptions. Water has been used during pregnancy and the birthing process throughout time. In the past as society has progressed the use of water in the birthing process has decreased, however in the past few decades more women are becoming interested in learning about the use of water during pregnancy and birth (Odent, 2000). As with any field of medicine the most modern and evidenced based practices are sought after. While the use of water during pregnancy and labor is not a new idea it is becoming popular and many mothers are interested in incorporating it into their personal pregnancy and labor experience. It is important that medical professionals are knowledgeable about this technique so that they are able to educate their patients about this technique and allow them to make informed decisions. There are many benefits associated with the use of water during pregnancy and labor. There are also some concerns associated with this birthing technique. In this presentation I will introduce these benefits and concerns as well as personal recommendations for incorporation into current practice.

John Grimes

Capstone mentor: Egan Green, Criminal Justice

Participation in Right Wing Radical Groups

For my honors capstone senior project, I decided to do research on the right wing extremist groups in America. The role domestic terrorism plays in the law enforcement field and the different domestic terrorist groups that are in America has always interested me. In conducting my research, my main mission was to look at criminological theories and determine which theories apply to the participation in these extremist groups, especially the more violent ones. I believe that in order to understand why people participate in these groups, I had to do research on the groups themselves. First I conducted history on the extremist groups, determining what constitutes as an extremist group as well as the different categories; white supremacists, anti government militia groups, sovereign citizens, and the various single issue groups. Once I determined the groups, who they were, and what they stood for, only then could I begin my research on which criminological theories best applied to explain the participation in these groups. I determined I could not explain the membership of these groups with just one theory, as I originally planned to do. Since membership and the philosophies are so different among the groups, I decided to use three theories to explain the membership. The theories I chose to focus on are Merton's Anomie Theory, Aker's Social Learning Theory, and Conflict Theory.

Ivette Herrera

Capstone mentor: Tammy Robinson, Design

An Examination of Chanel Advertisements from 1950-1990

Chanel is a global brand that is known for their high-end luxury products. The company's marketing and advertising is considered to be cutting edge and sophisticated. Therefore, it was determined an examination of the Chanel company and their advertising could be of interest to those in the marketing field. The objectives of this study are to research and examine Chanel advertisements in Harper's Bazaar magazine from the years 1950 to 1990. Harper's Bazaar was chosen because this magazine is a high-end magazine that focuses on the latest fashion products and trends. The research will look at how the advertising and marketing of Chanel products has changed through the selected years. The following information will be gathered: background on the Chanel company, influence of Chanel on the fashion industry, advertising and marketing of designer brands, and relevance of branding to the marketing of products. A classification instrument was developed and used as a guide in the examination of the Chanel ads. The instrument focused on the design, layout, and message of the ads. The September issue of Harper's Bazaar from every five years was selected for the study. The data will be compiled and analyzed to determine common elements and themes. Results will also be examined for similarities and differences. Descriptive statistics and frequencies will be used in the analysis.

Olivia Hilton

Capstone mentor: Jack Call, Criminal Justice

Perceptions of the Criminal Justice System: Law and Order

A collaboration of secondary and primary research to verify the idea that television, specifically crime television, shapes the mindset of its audience. When an audience member has little to no previous experience with the criminal justice system they are more likely to take what they see on the television as an accurate account. The 22 episodes of Law and Order during its second season in 1991 were analyzed based on positive and negative impressions of the police, prosecution, defense, and judges within the storyline.

Patricia Holland

Capstone mentor: Justin Anderson, Biology

The Effects of Pokeweed Antiviral Protein (PAP) on La Crosse Virus Infections in Mosquitoes

Pokeweed Antiviral Protein (PAP), a protein derived from *Phytolacca americana* (pokeweed), has been shown to be effective against many viruses such as HIV, influenza virus, and Japanese encephalitis. We are testing to determine if PAP will exhibit antiviral properties against La Crosse virus, an arbovirus found in the eastern United States that causes roughly 100 reported cases of encephalitis each year. We extracted PAP RNA from pokeweed leaves then used reverse transcription to obtain a DNA sample. The PAP segment has been cloned then transformed into a plasmid designed for transfection into insect cells, specifically Sf9 cells. We are currently testing infection rates of Sf9 cells and Sf9 cells transfected with PAP using plaque assays. We also plan to test infection rates in C6/36 Aedes albopictus cells. If successful, the overall goal would be to genetically modify mosquitoes to express PAP in order to prevent them from being infected by viruses and passing those viruses on to other species.

Sarah Hughes

Capstone mentor: Cynthia Thomas, Nursing

Exploring the Advanced Practice Roles of a Nurse Anesthetist and Nurse Care Coordinator

Students graduating from Radford University with a Bachelor of Science degree in Nursing (BSN) are eligible to take Registered Nurse state licensing boards. Upon successful completion of the state board, the graduate receives a license to practice as a professional registered nurse. While obtaining a BSN at Radford University, the educational focus tends to be predominately upon mastery of clinical skills and learning about disease processes along with their treatments. This tends to put the undergraduate nursing education focus on proper patient care and disease knowledge rather than future job roles. Because of this, many students graduating from Radford University with a BSN are just beginning to explore future opportunities, job positions, and their career in healthcare. Their time is not spent exploring specialized job positions and the education needed in graduate programs to become, for example, a Nurse Practitioner. Based on this observation, I chose to focus my research on two areas of specialty that I have an interest in; that of the advanced practice roles of both a Certified Registered Nurse Anesthetist and a Nurse Care Coordinator (known in some facilities as a Nurse Case Manager). Through literature reviews of scholarly articles in the library data bases, creating my own research tools- including job satisfaction surveys and interview tools approved by the Institutional Review Board (IRB), and job shadowing, I am exploring both advanced practice positions. My research focuses on job stress level, job expectations in comparison to the role they perform daily, role autonomy, professional education requirements, weekly work hours, stress load, and the transition that is made into both advanced practice job roles.

Brittany Hundman

Capstone mentor: Cassady Yoder Urista, Anthropological Sciences

Slaves at Stonebridge: Diet and Health at the Stonebridge Site, Virginia

The Stonebridge site in Midlothian Virginia is an unmarked African-American cemetery that dates from the mid to late 19th century. Although small with just six burials, its analysis represents an important addition to the growing body of information on the enslaved African experience in Virginia. This study uses stable isotope analysis of carbon and nitrogen from bone collagen to reconstruct diet, as well as evidence of antemortem pathologies to reconstruct the health of those interred at this cemetery. The health indicators employed here (enamel hypoplasias, dental caries, antemortem tooth loss, evidence of non-specific infection, and osteoarthritis) as well as the analysis of markers of occupational stress indicate that these individuals suffered from multiple episodes of stress and disease during their early developmental years and considerable musculo-skeletal stress during their adult years. The results of both the health and dietary analysis are then compared to other African-American cemetery samples from Virginia. While broadly similar, the diet and health of the Stonebridge individuals in comparison to other samples helps demonstrate the regional variability in diet and health in enslaved African- American populations in Virginia, and provides both a larger sample and a more comprehensive understanding of the experience in this dark period of American history.

Tessa Law

Capstone mentor: Boyoung Park, Teacher Education and Leadership

Making Connections Between the United States Naturalization Test and the Virginia Standards of Learning

The Virginia Standards of Learning stand as the minimal knowledge a student must know, while the United States Naturalization Test reflects the minimal knowledge a citizen is required to know. The purpose of this project is to uncover connections between the Virginia Standards of Learning and the United States Naturalization Test. The researcher will discover which grade level each naturalization test question refers to by looking at the SOL's. By looking at these results, the researcher can narrow in on which standards of learning and which grade level related content influences the questions asked on the United States Naturalization Test. The outcomes of this study, along with further research, will help the researcher answer questions such as:What knowledge do we want our students to know compared with those moving into the United States? What information should be included on the naturalization test? Do we or should we expect more out of our students? Do we or should we expect more of those moving into the United States? What can we do to better align our standards with the naturalization test? Does education in the United States better prepare immigrants for the naturalization test? Finding answers to these questions can help better prepare future and current teachers in the field of education. The rise of diversity in schools signals the need for cultural competent teachers. It is essential for educators to be familiar with resources for their students and their students' families. These resources build relationships between the educator and the student's family. Building connections between the Virginia Standards of Learning and the questions on the United States Naturalization Test can help support families in their transition into American schools and assist teachers in supporting these families. In addition, the knowledge provided by this research can further the teacher's ability to provide instruction in conjunction with these standards. The teacher will see these standards in a new light and recognize the importance of these standards across the nation. The hope is that this recognition will allow the educator to view a wider perspective of his/her's own teaching of social studies in the classroom.

Debra Lustig

Capstone mentor: Carlee Bradbury, Art

Altered Image: A New Look at the Art Surrounding the Identity of Charlemagne

Charlemagne is remembered as the quintessential king who crafted the foundations of what became modern Europe. What little is known about his life comes from his biographer and advisor Einhard, whose relationship with Charlemagne was quite close. Einhard, always gracious in his descriptions, tended to meticulously censor out negative views of his liege (with a few notable exceptions), leaving what little historical evidence we have partially painted with fabrication. Over time, ideas and even the history of his rule were warped to suit the political aspirations of later rulers until, at last, the true persona of Charlemagne was lost behind shrouds of fiction. In their hands, Charlemagne the idea eventually separated from Charlemagne the person, becoming an independent and distinctive entity. Was Charles the Great really the embodiment of ideals, or – as both a man and as a king – has he been twisted into something he was not? Employing both methodologies of traditional art history and new, interdisciplinary scholarship, I will investigate key examples of large-scale architecture, personal adornments, coins, and reliquaries to decode the character of Charlemagne and reveal the crisis of his identity. Previous scholarship in this area is broken down into studies of aesthetics (purely visual) and studies of historical and political characteristics from 770 to 814. I will unite the two and analyze both the art itself and the historical implications represented though the visual qualities of the evidence, focusing on iconography, semiotics, political events and figures, and cultural trends. This evidence originates from c. 800, as well as more recent times – the Gothic Period through the Early Modern Period – showing the diachronistic progression of Charlemagne's identity as it fell away from reality. Analyzing both historical texts and visual culture, I will present a new perception of his nature as both a monarch and as a man.

Heather Manias

Capstone mentor: Leigh Kelley, Communication

Networking for Nonprofits: Using Social Media for Good

The world of advertising is vastly changing. Social media is now a key component in almost any product's advertising plan. While big name companies are catching on to the tricks of the trade, where do nonprofit organizations stand? This project peers onto the other side of the computer screen at what multiple Virginia-branched cancer awareness nonprofit organizations have to offer via social media by unveiling what they have accomplished in their time on social media sites such as Facebook and Twitter.

Jenna McChesney

Capstone mentor: Niels Christensen, Psychology

Social Anxiety and Self-Regulation after Delay

At least 10% of all college students experience a fear of social situations to the extent that it interferes significantly with their normal routine, academic functioning, or social activities including relationships. Previous research from our lab found that socially-anxious individuals experience more self-control following a novel social encounter. A plausible explanation for this finding is that those who suffer from social-anxiety perceive all social interactions as failures even when these encounters are successful. Therefore, socially-anxious individuals may be motivated by their perceived failure when given a subsequent task. However, whether or not this initial burst of motivation wears off over time is left to be explored. The present research hypothesized that those with socially-anxious tendencies are not more self-regulated after a novel encounter but rather experience a motivation effect that decays over time. To test this hypothesis, eighty-two undergraduates were first given a series of questionnaires to assess their social anxiety levels. They were then assigned to one of three experimental conditions: "social-immediate", "social-delay" and a control condition. In the "social-immediate" and "social-delay" conditions, participants were asked to get to know each other for five minutes. The only difference between these two conditions is in the "immediate" condition participants were immediately given an impossible puzzle to assess their level of self-control; whereas participants in the "Delay" condition were not given the puzzle until 12 minutes after their interaction. In the control condition, participants did not have a social interaction and were only given the questionnaires and puzzle. In all conditions, the puzzle served as a measurement for self-control. Previous research has shown that the longer an individual persists on this impossible task, the more self-control they have. The results are discussed in terms of methodological problems and theoretical implications.

Danielle Moore

Capstone mentor: Beth Deskins, Social Work

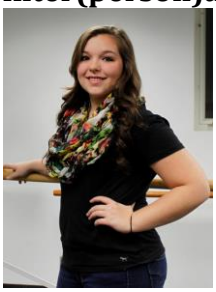
Barriers and Service Delivery in Rural Communities: Considerations for Working with Older Adults in Rural Communities

Service delivery in rural communities has been a continual problem throughout the years. Care providers and partners who strive to reach this population face layers of barriers in their mission to provide the services and resources in demand. Through a qualitative research study, information is gathered by a ten question interview. This interview is given to full-time professionals that provide a service, information and/or assistance to older adults, 60 years and older, on a daily basis. Conducting an interview with these professionals will give insight to the barriers and challenges that are faced in the service delivery in the New River Valley (NRV), VA. Information from rural areas pertaining to older adults is scarce, especially for our own community and the unique barriers that may be faced in the NRV. The professionals who work on a daily basis with this particular population have a wealth of knowledge to be gained. Their experiences in working with the elderly population from rural areas have been treasured and sought out within this study in hopes to improve the future of service delivery for older adults living in rural communities. I have learned through this study that there are a variety of overlooked barriers within the NRV service delivery. Yet, these barriers can be overcome with the coordination of professionals giving a "voice" for older adults in rural communities.

Kelsy Rupp

Capstone mentor: danah bella, Dance

inter(person)al progression



inter(person)al progression explores the growth and interaction within human relationships through dance. This evening length dance concert features the utilization of movement to further investigate how various relationships develop throughout time. The objectives above were achieved by investigating numerous perspectives on how relationships mature and their role in humanity. The creative projects disseminated in my final project will expose the traditional and personal research I have completed. A social psychology course I took during my junior year, which focused mainly on human interaction and groups of people within society, is what set my research in motion. I have always been interested in the human mind and the different ways people interact based on the relationship at hand, so I was naturally drawn to the subject. By looking at my own life and those of the people around me, I chose the six most common, yet emotionally complex human relationships I witnessed and sought to explain them. With that, my dancers and I explored these relationships through the choreographic process forming six works, each exploring one specific relationship, all together forming the entity, inter(person)al progression. This performance aims to demonstrate these relationships in unordinary lights and hopefully bring an understanding to why humans interact in the ways they do.

Victoria Scott

Capstone mentor: Judy Guinan, Biology

Back Into the Woods

"Nature Deficit Disorder" is a term coined by Richard Louv in his book The Last Child in the Woods, which describes the disconnect that currently exists between society and nature (Louv, 2009). In order to counteract this phenomena, I utilized a multidisciplinary approach incorporating education, biology, and technology. This was done by combining a smartphone app with an outdoor learning experience to appeal to the tech savvy youth of today. First, animal pawprint molds were placed throughout Wildwood park in Radford, VA based on the habitat of that animal. A smartphone app was created using FreshAir software that leads visitors to explore the park further while directing users through a series of questions. These questions were designed using Virginia's Standards of Learning to cover concepts such as habitat preference, food webs, and how humans affect living ecosystems. The objective is to help the user identify the animal while educating them and sparking their interest in the outdoors. A poster, displayed in a prominent location in the park, presents pictures, an answer key, and fun facts about the animals all in one location. The centralization of information allows those without smartphones to enjoy this activity. By giving children and adults a fun outlet to explore nature, I believe this project represents a first step in developing a more active Radford community. Government sites such as LetsMove.gov and the Center for Disease Control have laid out recommendations for developing more active communities, so this project will supplement these efforts.

Sarah Snowa

Capstone mentor: Diane Millar, Communication Sciences and Disorders

Effectiveness of Video Instruction on Programming an AAC Device

Although research supports the use of augmentative and alternative communication (AAC) devices for individuals unable to use speech as their primary means of communication, many individuals have chosen not to continue to use AAC devices. Researchers (Soto, Muller, Hunt & Goetz, 2001; McNaughton & Nelson-Bryen, 2007; Johnson, Inglebert, Jones &Ray, 2006) have interviewed different facilitators, parents, educators, and speech-language pathologists, to gain perspective on the abandonment of devices. Through qualitative measures, they found that many factors contribute to system abandonment. Angelo (2000) found family stress, frustration with professionals, and lack of training were key factors. This study investigated methods for improving individuals' understanding of programming AAC devices to better serve individuals who rely on AAC to communicate. Specifically, 20 individuals were recruited to learn how to use an AAC app on an iPad. They were randomly assigned to either the video instruction condition (i.e., they watched a short video demonstrating the use of the app) or the self-directed learning condition (i.e., they were provided with the instruction manual). Individuals were asked to complete a list of 13 skills. The number of steps completed correctly were totaled for each individual and averaged for each condition. The results of the study will be presented and recommendations for improving the training of individuals working with people who rely on AAC will be discussed.

Benjamin Thompson

Capstone mentor: Donna Boyd, Anthropological Sciences

A Comparison of Metric and Nonmetric Techniques Used in the Classification of Hispanic Ancestry

The goals of this poster are to: 1) evaluate and compare the accuracy of standard metric and morphoscopic techniques commonly used in the classification of Hispanic crania and 2) evaluate the impact of experience and familiarity with the sample population on these classification rates. A blind sample of 50 male and female White, Black, and Hispanic crania from the William M. Bass Donated Skeletal Collection was utilized in this study. Metric analysis of these crania consisted of discriminant function analysis (using Fordisc 3.11) utilizing a standard suite of 24 cranial measurements. Non-metric analysis centered on 14 morphoscopic cranial traits following definitions by Birkby et al.2, Hurst3, and Peacock and Zinni4 and the character state scoring method used by Hefner5. Metric and morphoscopic data were collected independently by two observers, one with considerable experience in assigning ancestry (Observer 1), the other with less experience but more familiarity with the sample population (Observer 2). Consideration of the morphoscopic traits resulted in correct classification of 71% (Observer 1) to 93% (Observer 2) of the Bass Hispanic crania. Using three-group classifications, Fordisc 3.1 was able to correctly classify a maximum of 29% of the Hispanic sample, although careful consideration of posterior and typicality probabilities increased its accuracy (to nearly 43%) and utility. When metric and morphoscopic features were considered together, correct classification of Hispanic crania rose to 88%. These results illustrate that although metric methods for Hispanic ancestry classification can be applied more objectively and replicated more easily in forensic anthropology, "subjective" morphoscopic features should not be dismissed. Correlation of morphoscopic methods with metric ones can potentially provide results not attainable by either alone. Familiarity with the sample population and experience with metric and morphoscopic analyses are important variables in the accurate identification of Hispanic crania.

Nicholas Sticinski

Capstone mentor: Wesley Young, Theatre

The Undiscovered Country

I will be presenting a one man show. The performance will contain monologues ranging from Shakespeare's Hamlet to the film Trainspotting, as well as musical numbers from Avenue Q and Aladdin. The material will be unified by the theme of people feeling lost at times in their lives. My hope is that my performance may speak to the audience, reminding them of times in their life when they felt lost. While the primary focus of the show is to showcase my talent as an actor/singer, it will also demonstrate my understanding of theatre in general.

LeeAnn Walker

Capstone mentor: Margaret Devaney, Dance

Fusion: A Study in Neoclassical Dance

Fusion: A Study in Neoclassical Dance is a twenty minute performance choreographed on eight dancers. The six different sections are interconnected through shared movement and together create a unified cohesive work that signifies the growth I have achieved throughout my dance career at Radford University. I began as a ballet dancer and have continued to develop into a versatile dancer with strong contemporary and modern technique. The choreography itself is an exploration of neoclassical ballet that fuses classical pointe and contemporary dance movements, incorporating achievements I have accomplished in various techniques, choreography, and performance. Throughout the choreographic process I pulled from different genres of dance and wove them together to create this new original work. An underlining theme in my capstone project is an expression of the transformation and growth I obtained in my identity during my college career. To create some of the movement, I pulled from my own reminiscences of life changing events as well as incorporating my love and passion for dance and its uplifting qualities. The finale section plays on relationships between the dancers, time, and space through continually changing formations. It creates an intriguing unexpected blend of movement representing a final triumph of victory. In addition to mastering skills in choreography I also furthered my knowledge in music selection, costume production, lighting, publicity, and program design and copy.

Jessica Wheeler

Capstone mentor: Margaret Devaney, Dance

Kaleidoscope of Math in Motion

The disciplines of mathematics and dance are seemingly polar opposites. Typically, math is thought of as logical and concrete while dance is thought of as creative and open-ended. This capstone project focused on investigating the commonalities between these two intriguing areas of study and integrating them together. The mathematical ideals became a driving force for my choreographic process as I utilized craft and intuition to create this dance work. Symmetry, pattern, and shape were just the beginning of various mathematical principles that are infused into my movement concepts to create a varying array of dances. This project shares my unique knowledge and passion for these two disciplines as I sought to create a performance presentation that bound them together.

Tuesday, April 22nd

Plenary Speaker; Dr. Matthew Dunleavy
Bonnie Auditorium 11:30am – 12:15pm

Nursing Research Poster Session
Heth 014 2:00pm – 4:00pm

Appalachian Studies Oral Presentations
Heth 016 4:00pm – 5:00pm

Advances in Chemistry Poster Session
Heth 014 5:30pm – 7:00pm

Biology Poster Session
Heth 043 5:30pm – 7:00pm

Plenary and Opening Speaker

Dr. Matt Dunleavy

11:30 am, Tuesday, April 22 in the Bonnie Auditoruim

Dr. Matt Dunleavy is an Interim Director in Academic Affairs and an Associate Professor in Instructional Technology at Radford University in Virginia. From 2006 to 2007, he was a postdoctoral fellow in learning technologies at the Harvard Graduate School of Education and the director of the Handheld Augmented Reality Project (HARP). Dr. Dunleavy received his Ph.D. in Educational Research, Statistics, and Evaluation at the University of Virginia, where he focused on the impact of ubiquitous computing on student learning and the classroom environment. Prior to completing his formal education, he lived overseas teaching English as a Second Language in Cameroon, Central Africa as a Peace Corps volunteer and then independently in Taiwan, Republic of China. He has been the principal investigator on a National Science Foundation grant and a Virginia Department of Education grant (http://gameslab.radford.edu/) totaling $2.2 million, both of which explored how mobile technology and augmented reality can be used to improve academic and socio-cultural skills for K-16 school students. In addition, Dr. Dunleavy is the CEO of an augmented reality development company called MoGo Mobile, Inc (http://playfreshair.com/).

Nursing Poster Session

Congestive Heart Failure Readmission Rates

Sarah Backof
Faculty Mentor(s): Leonita Cutright School of Nursing
Tuesday, April 22 Heth 014 2:00 - 4:00

The Affordable Care Act of 2010 shaped the establishment of the Hospital Readmissions Reduction Program, which will reduce payments to hospitals for certain chronic disease patients, readmitted within 30 days of discharge. A diagnosis of Congestive Heart failure (CHF) is one such chronic disease. According to the Centers for Disease Control, one million patients are admitted each year with this diagnosis. Congestive Heart Failure is the inability of the heart to pump enough blood to the rest of the body. Symptomatic patients often display difficulty breathing with the first response being a visit to the Emergency Department, often resulting in admission to the hospital. Recurrent admission to the hospital tends to have poor outcomes. Strategies aimed at improving outcomes for these patients are being driven by the new reimbursement measures. At Greater Baltimore Medical Center (GBMC), a two hundred and fifty-five bed community hospital outside of Baltimore, a transition program has been implemented utilizing a multidisciplinary team charged with prevention of re-admission for Congestive Heart Failure patients. The nurse's focus was to help the patients shift from an acute care hospital setting back to their homes. The team included nurses, social workers, physicians, long term care managers, pharmacists, physical therapists, hospice supervisors and care managers working together in an interdisciplinary group to implement self-care management strategies with this chronic disease population. These strategies include a thorough patient assessment, an educational program and follow up phone calls to guide management at home for the patient. The program allowed the transition RN to visit the patients selected for the program during the 30 day-interval after discharge. This created a personalized interaction, which the patients were able to ask questions and learn more in their home environment. The transition program has been in operation for a year and a half and has begun to show positive outcomes. The evidence reflected a decrease of re-admission rates. The results were obtained through monthly data analysis and usage of the Self-Care of Heart Failure Index tool. This model was beginning to be used for other chronic disease processes at the hospital. This model can serve as an example to other hospitals for Congestive Heart Failure patients.

Prevention of Hospital Falls Among Adult and Pediatric Patients

Erica Carter
Katelinn Allen
Carly Farmer
Casey Tench
Emily Horton
Regina Masters
Bowen Sheng
Faculty Mentor(s): Lynne Bryant School of Nursing
Tuesday, April 22 Heth 014 2:00 - 4:00

The prevalence of patient falls in the hospital setting can lead to sentinel events such as patient injury or death. Hospital falls are one of the top preventable injuries in acute care setting. The Joint Commission International has made prevention of falls one of the top safety goals for hospitalized patients in acute care settings. The purpose of this evidence-based project was to answer the question: Among hospitalized adult and pediatric patients, what are the factors that can help to reduce the number of falls in the acute care setting? A search of CINAHL, EBSCO host, ISI Web of Science, and MEDLINE using the keywords patient, falls, hospital, prevention, cost, acute, and nursing resulted in a total of 7 research studies from scholarly refereed publications. Six of these studies were appraised for evidence of practices that decrease the prevalence of patient falls. The most effective prevention strategies demonstrated were: keeping the bed in the lowest position, ensuring the call light is within reach, ensuring each patient has a current, accurate fall risk status, and educating the nursing staff on specific interventions. Nurses can be involved in translating these recommendations and statistics into practice by collecting data related to current use of fall prevention measures in their settings, reviewing and revising policies related to fall prevention strategies, and actively advocating for consistent adherence to effective fall prevention strategies.

Nursing Poster Session

Prevention of Musculoskeletal Injuries Among Healthcare Providers

Alexandra Derenzis
Savanah Bane
Chasity Campbell
Nikki Paculan
Kelsey Thomas
Kandice Kitchen
Katherine Cantereo-Ramos
Faculty Mentor(s): Rebecca Bryant School of Nursing
Tuesday, April 22 Heth 014 2:00 - 4:00

Patient handling is recognized as a major source of musculoskeletal disorders in healthcare providers who are employed in hospital settings. Lifting equipment is a main component of safe patient handling programs that aim to prevent musculoskeletal injury. The purpose of this evidence-based project was to answer the question: among healthcare providers employed in a hospital setting, what are the best practices for the prevention of musculoskeletal injuries? A literature search using the key words nurse injury prevention, patient handling, and musculoskeletal was conducted through the CINAHL, MEDLINE and PubMed databases. The search resulted in a total of ten studies from scholarly publications. Seven of these studies were evaluated for evidence of practices that attempted to prevent musculoskeletal injuries for healthcare professionals working in hospital settings. Evidence from these studies demonstrated that patients along with hospital personnel felt safer and more secure when assistive devices and body mechanics training were utilized. Hospitals that promoted programs on teaching staff the appropriate measures to take during patient handling had a lower number of injuries than hospitals that did not have such programs. Nurses can translate the evidence into practice by utilizing proper lifting equipment, along with appropriate body mechanics to reduce musculoskeletal injury. Implementation of programs on body mechanics, patient-handling devices and the utilization of lift teams resulted in a reduced number of musculoskeletal injuries among healthcare professionals.

Prevention of Central Line-Associated Bloodstream Infections

Cierra Falls
Nichole Jarrelle
Rachel Wiechecki
Alyssa Bello
Heather Wilburn
Ashley Jackson
Kara Ennist
Faculty Mentor(s): Rebecca Bryant School of Nursing
Tuesday, April 22 Heth 014 2:00 - 4:00

Central line-associated bloodstream infections are the source of many patient complications and death. Poor central line maintenance and improper insertion technique are the most common causes of infection. The purpose of this evidence based project was to answer this question: among critical care nurses, what are the best practices to reduce the occurrence of central line-associated bloodstream infections? A search using google scholar using the key words asepsis, central lines, prevention, education, and critical care resulted in a total of ten scholarly articles. Eight of these studies were appraised for evidence of practices to prevent central line-associated bloodstream infections. The preventative measures that were found to be effective included: education of staff, asepsis, daily maintenance, and implementation of a post-insertion bundle. Out of all the preventative measures, the implementation of the post-insertion bundle appeared to be the most effective in reducing the occurrence of central line associated infections in critical care units. Post insertion bundle implementation consisted of hand hygiene, daily inspection and care of insertion site, documentation of indication of catheter, application of a chlorhexidine-impregnated sponge at insertion site, and fifteen second alcohol scrub to the infusion hub prior to entry. When these strategies are implemented correctly, the rate of infection is dramatically reduced. Nurses can be involved in the prevention of central line infections by attending educational sessions about proper maintenance of central lines, implementing aseptic technique, and advocating for the patient's safety by overseeing the insertion procedure.

Nursing Poster Session

Prevention of Hospital-Acquired Pressure Ulcers

Meredith Farmer
Emily Howland
Jennifer Lacks
Marlaina Robertson
Hope Rea
Rana Bocanegra
Chelsea Anderson
Faculty Mentor(s): Rebecca Bryant School of Nursing
Tuesday, April 22 Heth 014 2:00 - 4:00

Hospital-acquired pressure ulcers are prevalent problems within hospitals today because they are a secondary diagnosis to an already present medical condition. Pressure ulcers are also putting excessive financial burden on hospitals. The purpose of this evidence-based project was to answer the following question: among hospitalized patients, what are the best practices for the prevention of hospital-acquired pressure ulcers? A search of CINHAL using the keywords nursing, pressure ulcers, hospital-acquired, prevention, interventions, and research resulted in 7 research studies from scholarly referred publications. Seven of these studies were appraised for evidence of practices that prevent hospital-acquired pressure ulcers. The most effective prevention strategies were: positioning, repositioning, air-fluidized beds, staff education, adequate nutrition and hydration, having a unit-based wound liaison nurse, involvement of the nursing assistants, and prevention of friction and shear. Nurses can be involved in translating these recommendations into practice by collecting data related to patient, repositioning every two hours, allowing adequate tissue perfusion, prevention of skin breakdown, reviewing prominent research for up to date interventions in preventing pressure ulcers, and patient education for prevention upon discharge.

The Prevention of Violence in the Healthcare Workplace

Kelsey Flynn
Kristen DiMarco
Kasie Grunau
Chris Dickman
Kayla Shahid
Catherine Howard
Christa Rockney
Faculty Mentor(s): Rebecca Bryant School of Nursing
Tuesday, April 22 Heth 014 2:00 - 4:00

In the hospital setting, violence is a common occurrence among employees, patients, and coworkers. The hospital is a vulnerable place for workplace violence due to the lack of standardized protocols used, lack of reported occurrences, or insufficient staffing. The purpose of this evidence-based project was to answer the question: among hospital nurses, what are the best practices for the prevention of violence? A search of Mosby's Index, PubMed, and MedLine databases using the keywords physical attack, threatening behavior, verbal violence, and workplace violence, resulted in a total of 33 research studies found from scholarly refereed journals. Among the 33 studies, eight were appraised for evidence of practices that prevent violence in the workplace. The most effective method to prevent workplace violence in the hospital setting is compliance with rules and regulations regarding violence. All employees at hospitals need to ensure that rules and safety protocol are in progress at all times. For instance, the use of surveillance cameras, security, and sufficient staffing during all hours of the hospital are a few ways to enforce a safer environment. Such compliance can also improve care provided to the patients, thus strengthening the nurse-patient relationship and satisfaction with patient outcomes. Nurses can implement these suggestions by following the rules and regulations and safety protocols. Similarly, nurses should report any form of violence (verbal, sexual, physical) immediately at the occurrence. Lastly, nurses should determine what may have caused or escalated the violence, and in what ways violence could have been prevented.

Nursing Poster Session

Prevention of Medication Errors Among Hospital Nurses

Kristina Henry
Melissa Johnson
Savannah Williams
Sally Ludeman
Karla Skidmore
Susan Gibbs
Kelsey Clay
Whitney Burgess
Faculty Mentor(s): Lynne Bryant School of Nursing
Tuesday, April 22 Heth 014 2:00 - 4:00

Medication administration is one of the responsibilities of the nurse that is at a high error-prone activity and accounts for one of the top five occurring sentinel events within hospital settings. Patients that receive medication errors are at a risk for not receiving the intended therapeutic effect, side effects from drugs they were not supposed to receive, and possible drug-drug interactions. The purpose of this evidence-based project was to answer the question: among hospital nurses, what are the best practices for the prevention of medication errors? A search of CINANL, MEDLINE, and EBSCOhost databases using the keywords: nursing medication errors, nursing drug errors, medication safety, and bar-code technology resulted in a total of 13 research studies from scholarly-refereed publications. Eight of these studies were appraised for evidence-based practice methods to prevent medication administration errors. The prevention strategies that we found were: electronic medication administration record (eMAR), bar-code scanning, requirement of two forms of patient identification, explanation of drugs to patients, supportive practice environments such as lower nurse-patient ratios, and distraction elimination methods. Nurses can be involved in translating these recommendations into practice by using the bar-code scanning method when administering medications, correctly identifying the patient and medication before administering the medication, and advocating for lower nurse-patient ratios in their practice.

Exploring the Advanced Practice Role of a Nurse Anesthetist and Nurse Care Coordinator

Sarah Hughes
Faculty Mentor(s): Cynthia Thomas School of Nursing
Tuesday, April 22 Heth 014 2:00 - 4:00

Students graduating from Radford University with a Bachelor of Science degree in Nursing (BSN) are eligible to take Registered Nurse state licensing boards. Upon successful completion of the state board, the graduate receives a license to practice as a professional registered nurse. While obtaining a BSN at Radford University, the educational focus tends to be predominately upon mastery of clinical skills and learning about disease processes along with their treatments. This tends to put the undergraduate nursing education focus on proper patient care and disease knowledge rather than future job roles. Because of this, many students graduating from Radford University with a BSN are just beginning to explore future opportunities, job positions, and their career in healthcare. Their time is not spent exploring specialized job positions and the education needed in graduate programs to become, for example, a Nurse Practitioner. Based on this observation, I chose to focus my research on two areas of specialty that I have an interest in; that of the advanced practice roles of both a Certified Registered Nurse Anesthetist and a Nurse Care Coordinator (known in some facilities as a Nurse Case Manager). Through literature reviews of scholarly articles in the library data bases, creating my own research tools- including job satisfaction surveys and interview tools approved by the Institutional Review Board (IRB), and job shadowing, I am exploring both advanced practice positions. My research focuses on job stress level, job expectations in comparison to the role they perform daily, role autonomy, professional education requirements, weekly work hours, stress load, and the transition that is made into both advanced practice job roles.

Nursing Poster Session

Prevention of Catheter Associated Urinary Tract Infections Among Hospitalized Patients

Rachel Leopold
Jim Cassidey
Rebecca Upson
Rebecca Uren
Rosa Obleas
Heather Burgoyne
Arielle Nicoletti
Faculty Mentor(s): Rebecca Bryant School of Nursing
Tuesday, April 22 Heth 014 2:00 - 4:00

The use of catheters in hospitalized patients causes a significant rise in patient risk of catheter associated urinary tract infection (CAUTI) development. CAUTI development leads to increased morbidity, mortality, economic costs and length of hospital stay. The purpose of this evidence-based project was to answer the question: among hospital nurses, what are the best practices to prevent CAUTIs? A search of the Cumulative Index to Nursing and Allied Health database using the key words: CAUTI, interventions, prevention, hospital-acquired, primary and cost-effective resulted in a total of seven research studies from scholarly, peer-reviewed publications. Six of these studies were appraised for evidence of practices that prevent CAUTIs. The most effective prevention strategies demonstrated were: removing catheters in shorter amounts of time, utilizing advances in materials such as silver-coated catheters, nursing compliance with aseptic technique and staff reminders. Nurses can be involved in translating these recommendations into practice by collecting data related to CAUTIs in their settings, reviewing and revising policies related to CAUTI prevention and actively reminding healthcare providers of sanitation standards.

Prevention of Needle-stick Injuries Among Healthcare Providers in the Hospital Setting

Misty Queen
Megan Honaker
Sarah Gray
Thea Carvalho
Alex Smith
Katie Hiers
Teresa Williamson
Lauren Cox
Faculty Mentor(s): Rebecca Bryant School of Nursing
Tuesday, April 22 Heth 014 2:00 - 4:00

In the hospital setting there are significant occurrences of needle-stick injuries (NSI) that put health care workers at risk for coming in contact with blood borne pathogens. Factors that contribute to NSIs include: difficult working conditions, unsafe devices, and lack of knowledge, training, enforcement, and reporting of injuries. The purpose of this evidence-based project was to answer the question: among healthcare providers in the hospital setting, what are the best practices for the prevention of needle-stick injuries? A search of Business Source Complete, Informit Health Collection, CINAHL, EBSCOhost and Science Citation Index databases, using the key terms needle-stick, prevention, injury and hospital, resulted in 23 studies from scholarly-refereed publications from 2009 to 2014. Eight of these studies were appraised for evidence of practices that aid in the prevention of needle-stick injuries. The most effective prevention strategies demonstrated were: using needle safe guards, education on handling sharps equipment in safe environments, proper use of personal protective equipment(PPE), participation in needle safety workshops, and reporting all needle-stick injuries that occur. In the hospital setting, policies can be put into place requiring all healthcare providers to attend semi-annual needle safety workshops that include proper use and handling of needles, information regarding the newest and safest equipment on the market, and proper use of personal protective equipment in order to prevent NSIs. Hospitals can implement the use of new equipment that has proper safety guards to aid in the prevention of needle-stick injuries.

Appalachian Studies Oral Presentation

Old Appalachia's New Coat

Brenna Ishler
Ryan Woodson
Brianna Kirker
Mary Dickerson
Victoria Curtis
Katy Pettit
Sarah Wood
Mary Ellis
Taylor LaPrade
Langley Looney
Faculty Mentor(s): Melinda Wagner Appalachian Studies
Tuesday, April 22 Heth 016 4:00 -4:45

Are you up to date with Appalachia's trends? As old Appalachian problems fade out, new fads that remind one too much of the past replaces them. Join us as we take an interdisciplinary look at how this region succumbs to the "fad" of issues of poverty, education, health, economy and media stereotypes by donning a new "coat" that can only add new style to the same issues. We will look at how these issues have been rebranded to disguise what is at their core, and we will discuss new possibilities to strip Appalachia of this façade in order to discuss real solutions. We will focus on the barriers which still influence Appalachia, without forgetting the many strengths which also exist. The Appalachian Events Committee (AEC) at Radford University is a student-run group that strives to educate and involve students in the activities and culture that surrounds them. We were inspired to take on this research by the theme of the 2014 Appalachian Studies Association conference: "New Appalachia: Known Realities and Imagined Possibilities." We are excited to explore the imagined possibilities of a "New Appalachia."

Advances in Chemistry Poster Session

Construction and Operating Principles of an Ultra-High Vacuum Cryogenic Scanning Tunneling Microscope

Joe Ashley
Kent Weidlich

Faculty Mentor(s): Shawn Huston Physics
Tuesday, April 22 Heth 014 5:30 - 7:00

Scanning tunneling microscopy (STM) is a powerful observational and analytical tool which scientists can use to resolve surface features of conductive materials at the nanoscopic scale. For their fundamental work on the design and construction of the first scanning tunneling microscope Heinrich Rohrer and Gerd Binnig were awarded part of the 1986 Nobel Prize in Physics. Thanks to their advances, objects such as individual atoms and molecules on crystal surfaces, DNA molecules, and viruses can now be visualized. Placing the microscope into an ultra-high vacuum (UHV) environment allows for controlled surface preparation and reduces complications present when operated in a "dirty" environment. Operating the microscope at cryogenic temperatures reduces the motion of individual molecules on the sample by "freezing" them in place, and reducing their kinetic energy. These conditions provide for a clear interpretation of atom-sized features of the sample. The operational principles of STM, including a discussion of ultra-high vacuum and cryogenic technologies will be presented. In addition, an overview of the microscope and chamber currently under construction in the Radford Physics Department will be given.

Mutagenic Analysis of the Oligomerization of E. coli β-glucuronidase

Charles Folsom
Gina Burchett

Faculty Mentor(s): Kimberly Lane Chemistry
Tuesday, April 22 Heth 014 5:30 - 7:00

β-glucuronidase is an enzyme that is present in many organisms. Deficiencies in the human form of β-glucuronidase can lead to the onset of Sly Syndrome, a lethal disease that results in aggregation of glycosaminoglycans causing organ damage; this disease has no current treatments. β-glucuronidase is a homotetramer that has an active site on each of its monomers. Previous studies have exhibited evidence that a stable dimer of the enzyme may exist. There are three possible dimeric forms of the enzyme, and it is not known which of these is observed. Our current study focuses on the subunit interfaces between the monomers, identifying possible point mutations to decrease electrostatic interactions to disrupt oligomerization, in an effort to identify the most stable dimeric form. WinCoot protein visualization software was used to locate salt bridges and interactions between subunits to predict feasible mutations for laboratory testing. We have designed several mutations, targeted to make the two possible dimeric forms of the enzyme which include E6A, E11A, K13A, R61A, Y517A, and D519A. These mutants will be tested by SDS-PAGE and native gels to determine subunit associations and enzymatic activity. Molsoft ICM-Pro modeling software will be used to determine the thermodynamics of subunit oligomerization to predict future possible mutants. A stable dimer could illicit further understanding of this enzyme that may be implemented in future cancer and other disease research.

Utilizing an unexplored N-H directed epoxide opening for Antidepressants

Jessica Mawdsley

Faculty Mentor(s): Christopher Monceaux Chemistry
Tuesday, April 22 Heth 014 5:30 - 7:00

Antidepressants are used to increase the level of neurotransmitters in the synapse to inhibiting the reuptake in the presynaptic cell. PRC 200 is antidepressant compound that is a triple reuptake inhibitor for serotonin, norepinephrine, and dopamine. We hope to form analogous compounds to the PRC 200 utilizing an unexplored N-H directed epoxide opening. This research 2-Iodoaniline was used as the starting material for N-H intramolecular hydrogen bond donor properties that may direct the epoxide opening.

Advances in Chemistry Poster Session

Mutagenic characterization of the bacterial loop of E. coli Beta Glucuronidase

Hannah Gullickson
Skye Hickling

Faculty Mentor(s): Kimberly Lane Chemistry
Tuesday, April 22 Heth 014 5:30 - 7:00

Beta glucuronidase is an enzyme found in many organisms. The bacterial form of beta glucuronidase is associated with severe side effects experienced during chemotherapy with the drug CPT-11. CPT-11 is a pro-drug for SN-38, a topoisomerase inhibitor. In the liver, the body converts SN-38 to the less-toxic SN-38G. The glucuronide group on SN-38G tags the molecule for excretion, releasing the molecule into the intestines. In the large intestines, the bacterial form of beta glucuronidase cleaves off the glucuronide group on SN-38G, reactivating SN-38 and causing gastrointestinal problems for cancer patients. Recently a new generation of inhibitors targeting the bacterial form of the enzyme has been discovered. These molecules interact with a loop found near the active site of the enzyme; this loop has been shown to be necessary for inhibitor binding. Phenylalanine in position 365, which is located in the bacterial loop, makes a direct stacking interaction with these inhibitors. To determine the importance of this amino acid in the binding of these inhibitors, this residue will be mutated to alanine, tyrosine, and leucine; these mutants will be tested for inhibitor binding. The results of this experiment will be used to gain insight into the binding of this family of inhibitors and will hopefully guide future structure based drug design.

The synthesis of various phenazine derivatives in the inhibition of La Crosse Virus

Nima Hami
Zachary Carpenter

Faculty Mentor(s): Christopher Monceaux Chemistry
Tuesday, April 22 Heth 014 5:30 - 7:00

The La Crosse Virus is a virus that is transmitted to humans via mosquitos, and can pose severe side effects to certain individuals. There are currently no vaccines or effective protocols useful in the treatment of the La Crosse Virus. During preliminary experiments, it has been found that the supernatant of several strains of *Pseudomonas* bacteria cultures can significantly inhibit the infection of cells by La Crosse Virus. The hypothesis is that the reason for the anti-viral effects observed are due to the phenazine molecules that are present in the supernatant. The *Pseudomonas* bacteria synthesize these phenazine molecules during their stationary phase of development. However, in order to determine that the phenazine molecules are the sole source of the anti-viral effect observed; phenazine molecules must be isolated and tested. Using copper- and palladium-catalyzed synthetic chemistry; we propose to synthesize various phenazine derivatives. Using nuclear magnetic resonance and high resolution mass spectrometry, the purity of the synthetic product will be determined. Once pure phenazine derivatives are synthesized, they can be assayed against the La Crosse Virus and the anti-viral effect verified.

Revealing the binding affinity of β-glucuronidase/Ligand complexes via Computational Chemistry

Dylan McKnight

Faculty Mentor(s): Timothy Fuhrer Chemistry
Tuesday, April 22 Heth 014 5:30 - 7:00

β-glucuronidase is an enzyme expressed in both human and bacteria cells that functions in the breakdown of carbohydrates. Irinotecan (CPT-11) is an approved chemotherapy drug that is used to treat metastatic colon or rectal cancer. Unfortunately, CPT-11 has harmful side effects that results from the buildup of a toxic byproduct (SN-38) during metabolism. Side effects include damage to the epithelial lining of the colon and severe diarrhea that restricts effective delivery of the drug. SN-38 is converted to a less toxin form, SN-38G, in the liver. In the intestines, SN-38G is converted back to toxic SN-38 by bacterial β-glucuronidase. Our focus is to develop inhibitors to deactivate bacterial β-glucuronidase activity. Computational chemistry software including: Gaussian, ArgusLab, MCPRO, MolSoft ICM Pro will be utilized to design inhibitors and model the effects of protein-ligand docking. We predict that computational calculations will be similar to the relative binding affinity determined via laboratory experimentation. Finding the most accurate and precise platform would allow us to rapidly screen for the ligand with the strongest binding affinity.

Advances in Chemistry Poster Session

Extraction and Analysis of Oils

Mehmed Pehlic **Morgan Lusk**
Faculty Mentor(s): Christine Hermann Chemistry
Tuesday, April 22 Heth 014 5:30 - 7:00

This research focused on the isolation of oil from peanuts and corn. The isolated oil was compared to store bought oils, using gas chromatography and mass spectrometry.. The corn oil was created by soaking the kernels in water and hexane for 7 days. A steam distillation was used to evaporate the hexane and water and then the leftover product was centrifuged to separate the product from the leftover water. The peanut oil is created by blending peanuts that have been removed from their skins and shells, and adding enough water to create a paste. This paste is then flushed with enough water to make a mixture, and put into test tubes at room temperature for 7 days. The content of the tubes are strained and filtered before the remaining product is boiled until the oil is all that is left. The oils will be converted to fatty acid methyl esters before being run through the gas chromatography mass spectrometer.

Forensic Analysis of Lipsticks

Cristina Spicher
Faculty Mentor(s): Dr. Cindy Burkhardt Chemistry
Tuesday, April 22 Heth 014 5:30 - 7:00

Transferred evidence such as cosmetics can be useful when determining if a suspect and victim had interaction or was at the scene of the crime. Therefore it may be necessary to analyze cosmetics during a criminal investigation. Lipstick samples were investigated for this study. The pigments were analyzed using Thin Layer Chromatography (TLC) and the waxes and oils were analyzed using Gas Chromatography-Mass Spectrometry (GC-MS). TLC resulted in different retardation factor values (Rf) for different pigments present in the lipstick sample. GC-MS resulted in the differentiation of samples. These techniques can be used to aid in the discrimination of lipstick traces.

Characterization and Development of Anti-Viral in Mosquito Larvacidal Phenazine Compounds Produced by *Pseudomonas* Bacteria

Kateland Tiller **Lyndsay Coker**
Faculty Mentor(s): Christopher Monceaux Chemistry
Tuesday, April 22 Heth 014 5:30 - 7:00

Pseudomonas chlororaphis is a bacterium that produces a desirable orange pigmented phenazine compound. This compound, 2-hydroxyphenazine-1-carboxylic acid (2OH-PCA), is suspected to have anti-viral properties against the La Crosse virus (LCV). Since this compound has promising uses, a procedure for obtaining 2OH-PCA needs to be established. Two different approaches are being taken to produce the phenazine compound. The first is the extraction of the compound from the bacterial producers. The bacterium is being grown in an agar plate and we are attempting to extract the 2OH-PCA from the P. chlororaphis agar. The second approach is a synthetic approach. The 2OH-PCA compound has proven to be very difficult to obtain synthetically. Therefore, in our synthetic approach we are targeting a simpler molecule that is easier to produce, 2-methoxyphenazine. Sometimes similar compounds can have the similar or enhanced effects, so if this compound yields the same results and is fairly simple to synthesize, then the focus could be turned to it. The compounds benzofuroxan and 4-methoxy phenol are combined with KOH in the Beirut Reaction to yield the N-oxide precursor to our desired product. A facile reduction will furnish 2-methoxyphenazine and will be sent for anti-viral testing.

Synthesis of a PRC-200 Analog (A gamma-amino alcohol) Featuring a Novel Directed Epoxide Opening

Brandon Johnson
Faculty Mentor(s): Christopher Monceaux Chemistry
Tuesday, April 22 Heth 014 5:30 - 7:00

Central nervous system (CNS) agents acting on seretonin, norepenephrine, and dopamine reuptake control are of high importance when considering treatment for CNS disorders. In light of the recently disclosed gamma amino alcohol triple reuptake inhibitor PRC-200, our lab is now involved in a novel approach to synthesizing derivatives of PRC-200 for potential treatment of depressive disorders. Accompanied with a Sonogashira cross-coupling reaction, a novel approach of using O-H directed epoxide opening should furnish an intermediate that can be used for synthesis of beta and gamma amino alcohol-based CNS ligands.

Biology Poster Session

Computational Modeling of the FASCIATA2 and ANTI-SILENCING FUNCTION 1 Proteins in *Arabidopsis thaliana*

Jillian Arzadon
Faculty Mentor(s): Tara Phelps-Durr Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

Arabidopsis thaliana is a plant native to Europe and Asia that is used as a model system for biological research. Mutations in the FASCIATA2 (FAS2) gene cause cellular and functional disorganization resulting in misshapen and irregularly spaced leaves. The ANTI-SILENCING FUNCTION 1 (ASF1) gene encodes a protein that is thought to physically interact with the FAS2 protein and together they determine if other genes are transcribed by assembling or disassembling chromatin. Neither the FAS2 nor ASF1 proteins have been crystallized; therefore, the exact structure of these proteins is unknown. Using online protein prediction programs, we determined the structure of the FAS2 and ASF1 proteins. The predicted structures were then analyzed by the ICM-Pro to determine what regions of FAS2 and ASF1 are likely to be involved in protein-protein interaction. ICM-Pro then used these sites to make models of how FAS2 and ASF1 physically bind together. Ultimately our goal is to crystallize the FAS2 and ASF1 proteins and determine the actual three-dimensional structure of these proteins and to experimentally verify that FAS2 and ASF1 physically interact. The computational predictions presented here will aid in the design of the bench work experiments to confirm the interaction between FAS2 and ASF1.

Expression of CYP4F3 in human liver cells

Cassandra Boerstler
Kristy Galloway
Faculty Mentor(s): Peter Christmas Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

Statins are widely used cholesterol-lowering drugs, but their mechanisms of action and side effects are still under investigation. Cytochrome P450 4F3 (CYP4F3) expression is induced 3-fold by statins in human liver cells, resulting in a 20-fold increased production of a bioactive lipid called 20-HETE. The consequences for statin users are unknown. The CYP4F3 gene is alternatively spliced, and generates two distinct enzymes that either generate 20-HETE (CYP4F3B) or modulate inflammatory responses by inactivating LTB4 (CYP4F3A). We are using real time PCR to measure changes in expression of the two splice forms in human liver cells in response to statins and inflammatory signals. We are also optimizing transfection methods for these cells, and will use mutant CYP4F3 gene constructs to identify factors that regulate transcription and splicing.

Survival of *Pseudomonas* Bacteria in Mosquito Digestive Tracts Following Ingestion

Cassie Bonavita
Faculty Mentor(s): Justin Anderson Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

Dengue virus is an acute systematic viral disease spread by mosquitoes; roughly 390 million people are infected annually with one of the four virus types. Currently there are no effective preventative or treatment methods for dengue virus. Our current research is based of the idea that intestinal bacteria may hold properties we can manipulate in order to prevent disease transition from mosquitoes to humans. Our previous work with the bacterial genus *Pseudomonas* demonstrates that they can reduce or eliminate infections by some mosquito-spread viruses, such as La Crosse virus. We infected adult *Aedes aegypti* mosquitoes with varying amounts and types of bacteria. The bacteria are combined with a 10 % sucrose solution, used by the mosquitoes for energy for flight, and placed on cotton balls in 5ml quantities. The mosquitoes were given the food for a 25-hour period, and then it is removed. At various time points post-exposure, digestive tracts from infected mosquitoes were dissected to determine survival and population size of the bacteria. We are investigating this as a means to expose mosquitoes to new methods to control mosquito-borne pathogens.

Biology Poster Session

Temporal variation in breeding success and corticosterone levels in eastern bluebirds, *Sialia sialis*

Emily Clark
Faculty Mentor(s): Judy Guinan Biology
Jason Davis Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

The breeding season for eastern bluebirds, *Sialia sialis*, stretches from March to August in southwestern Virginia. Factors such as food availability, temperature, and age of the female can affect when a female begins to nest. We looked to see if there was temporal variation in reproductive success throughout the season using data from a five year study on breeding behavior of eastern bluebirds. Four years of data on corticosterone, a stress hormone, were also examined to see if there was variation within the season and a correlation in levels between family members. We found that clutch size decreased as the season progressed, but that nesting, hatching, and fledging success did not vary throughout the season. Heavier females were found to have heavier offspring and to nest earlier in the season. Male corticosterone was found to decrease as the season progressed, but neither nestling nor female corticosterone showed any variation within the season. We found a strong, positive correlation between female corticosterone and nestling corticosterone and between female corticosterone and male corticosterone. No correlation was seen between male corticosterone and nestling corticosterone.

The Effects of Pokeweed Antiviral Protein (PAP) on La Crosse Virus infections in Mosquitoes

Nikki Holland
Faculty Mentor(s): Justin Anderson Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

Pokeweed Antiviral Protein (PAP), a protein derived from *Phytolacca americana* (pokeweed), has been shown to be effective against many viruses such as HIV, influenza virus, and Japanese encephalitis. We are testing to determine if PAP will exhibit antiviral properties against La Crosse virus, an arbovirus found in the eastern United States that causes roughly 100 reported cases of encephalitis each year. We extracted PAP RNA from pokeweed leaves then used reverse transcription to obtain a DNA sample. The PAP segment has been cloned then transformed into a plasmid designed for transfection into insect cells, specifically Sf9 cells. We are currently testing infection rates of Sf9 cells and Sf9 cells transfected with PAP using plaque assays. We also plan to test infection rates in C6/36 Aedes albopictus cells. If successful, the overall goal would be to genetically modify mosquitoes to express PAP in order to prevent them from being infected by viruses and passing those viruses on to other species.

Medical Transcriptionist: As Close as You Can be to being Inside a Doctor's Head

Morgan Lusk
Faculty Mentor(s): Justin Anderson Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

A Medical Transcriptionist in the Emergency Department goes into the room with the physician and does the medical charting. As a scribe, I write up a patient's HPI, history and present illness, where I record their pertinent medical history and their symptoms currently, including when they started. Lab, radiology and EKG results are also recorded into the note before typing up a final discharge summary. Through this job, I have learned how to make a differential diagnosis, where you predict the diagnosis based off the physical exam and symptoms only, and have learned how to read basic radiology. This is an amazing opportunity for anyone hoping to go into the health field because of the experience learning directly from physicians and the exposure to the way different problems present.

Biology Poster Session

Understanding the Structure and Function of Transcription Factors KN1 and KNAT1

Sheryl Manning
Faculty Mentor(s): Tara Phelps-Durr Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

The KNOX gene family encodes transcription factor proteins that control cell differentiation in the apical meristems of plants. Proper meristem function is critical for new growth of structures such as leaves and flowers. The KNOX proteins have a homeodomain region that bind a specific sequence of DNA. Homeodomain proteins are found in both plants and animals. The structure of the homeodomain consists of three alpha helices. The third alpha helix is the portion that binds DNA. The homeodomain proteins characterized in this study include KNOTTED1 (KN1) in maize and KNAT1 in Arabidopsis. Neither protein, KN1 or KNAT1, has been crystallized. It is known that the KN1 homeodomain binds the DNA sequence, TGACAGGT. This target DNA sequence is found in genes that regulate cell proliferation. In order to study KN1 and KNAT1, we use the online protein prediction program TASSER. Our goal is to model the interaction between KN1 and its target DNA sequence and to compare and contrast the structures of KN1 and KNAT1 using the software program ICM Pro. Ultimately, we hope to crystallize the KN1 and KNAT1 proteins. The computational analyses presented here will help determine what regions of the proteins should be targeted for future bench work experiments.

Identification and differentiation of species in the genus Echinostoma using simple molecular tools

Dan Metz
Faculty Mentor(s): Bob Sheehy Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

By coupling PCR amplification of specific loci with restriction digestion we have developed a rapid, inexpensive technique which allows differentiation among species in the genus Echinostoma. This technique requires as little as a single larva and is applicable to all life stages. We are currently exploring this approach for use in the screening of environmental samples, such as plankton and host feces, for identifying the presence of Echinostoma and assessing parasite diversity within ecological communities.

Animal Surveys at the Radford Army Ammunition Plant in Summer 2013

Nikohl Miller
Faculty Mentor(s): Karen Powers Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

During summer 2013, we completed biological surveys at the Radford Army Ammunition Plant on the Main Plant (Radford, VA) and the New River Unit (Dublin, VA). As an update to exhaustive biological surveys in 2003, we completed surveys for amphibians, reptiles, small mammals, birds and butterflies. Small mammals were surveyed using Sherman traps, snap traps, and pitfalls. We captured 150 individuals of nine species in 4533 trap-nights (trap success 3.3%). Capture of the pygmy shrew (Sorex hoyi) documented a new species occurrence on the properties. Following the protocol of the Virginia Frog and Toad Calling Survey, we noted seven species; four of these were newly discovered on the properties. Two bird surveys totaled 68 species, all of which were previously documented. Turtle hoop trapping on the New River Unit captured one painted turtle (Chrysemys picta), although box turtles (Terrapene carolina) also were observed on-property. A one-day salamander search across both properties identified seven species, of which four were new finds. Two butterfly surveys were conducted, directed toward finding the regal fritillary (Speyeria idalia), but none were found. Twenty-three species were observed, with the cabbage white (Pieris rapae), eastern-tailed blue (Cupio comyntas), and the clouded sulphur (Colias philodice) being the most common. Because prescribed fire is now being implemented on the New River Unit as a management technique, broad surveys like ours may provide valuable baseline data.

Biology Poster Session

Contributing to Fisheries Conservation in Knoxville, Tennessee

Fallon Parker
Faculty Mentor(s): Karen Powers Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

Fisheries management in Tennessee is not limited to stocking sport fish and fishing licenses. Rare or declining species in the region often require substantial efforts to stabilize or increase their populations. One of the management options for rare or endangered fish is captive breeding and subsequent restocking. As an intern at Conservation Fisheries, Inc. (CFI) in Knoxville, Tennessee, our goal was to help to preserve aquatic diversity through these breeding programs. My internship's main focus was on the breeding of the Barrens topminnows (Fundulus julisia) and the spring pygmy sunfish (Elassoma alabamae). The Barrens topminnow's conservation status is classified as endangered in Tennessee, due to habitat loss and the competition of non-native western mosquito fish (Gambusia affinis). The spring pygmy sunfish is classified as a threatened species in Alabama, endemic only to the Tennessee River drainage in Limestone Co., Alabama. At CFI, this isolated sunfish species is considered an "ark" population, bred in captivity in case of extinction in the wild. For both species, CFI works to supplement the local populations every summer. This process includes matching up compatible breeding pairs, finding and removing eggs from breeding tanks, monitoring hatching success, and transferring juveniles to an appropriate tank habitat. Adults of both species were either marked and released into locations of known populations or kept for further reproductive efforts that are imperative for the continued existence of some isolated fish species.

Use of Radford Army Ammunition Plant Magazines as Artificial Bat Hibernacula

J. Alex Pearce
Faculty Mentor(s): Karen Powers Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

White-nose syndrome (WNS) is caused by a fungus (*Pseudogymnoascus destructans*) in which in the skin of the muzzle, ears, and other areas of the body are affected. First discovered in hibernacula in 2006 in New York, WNS has spread throughout the eastern United States and affects seven bat species in Virginia. One possible option to help control the impact of WNS on local populations is to create artificial hibernacula, which would be readily available for use and cleaned each summer. We sought to determine if unused ammunition magazines at Radford Army Ammunition Plant (RFAAP) are suitable locations for bats to thrive during hibernation. If the magazines are suitable, based on temperature and humidity readings from November-February, then they could serve as WNS-controlled hibernacula. To monitor the suitability of these magazines, we placed temperature and relative humidity dataloggers inside two magazines, one with an open vent and one with a closed vent. Also, dataloggers were placed outside the magazines to monitor how the magazines were insulated relative to ambient temperature. The dataloggers record measurements every hour to monitor short- and long-term changes in microclimate. Although data collection is on-going, temperature measures from both magazines range from 4-14°from November-January. The temperature range for myotine bats in natural hibernacula is 2-14°C with ideal temperature ranges typically 5-11°C. Our preliminary findings suggest that these magazines may be suitable locations as artificial hibernacula for some bat species affected by WNS.

Introduction of *Pseudomonas* bacteria via diet into a Mosquito's lifecycle and how it transitions from larvae to adult.

Tony Torres
Faculty Mentor(s): Justin Anderson Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

Mosquito-borne viruses are an epidemic all over the world. La Crosse virus occurs in the Appalachian and Midwestern parts of the United States, with more recent cases spreading farther south. La Crosse virus causes flu-like symptoms and, in younger cases, severe neuroinvasive disease. Our lab has shown that certain pigments from the *Pseudomonas* bacteria can kill La Crosse Virus. We are determining whether we can use it to block viral transmission. The bacteria will be introduced via diet into the larval stages of the mosquito lifecycle, and we will observe what quantity survives through the metamorphosis to adult. Expecting that an acceptable amount of bacteria transition with the mosquitoes into maturity, we could use these results to design a way to introduce control mechanisms into wild mosquitoes.

Biology Poster Session

Computational 3D Modeling of FASCIATA1, FASCIATA2, and HISTONE REPRESSOR A proteins in *Arabidopsis thaliana*

Nathan Pirino
Faculty Mentor(s): Tara Phelps-Durr Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

Chromatin remodeling is a way to adjust how tightly the DNA is wrapped around histone proteins. DNA that is tightly wrapped around histones is not transcribed (gene off) while DNA that is loosely wrapped is transcribed (gene on). There are many proteins involved in chromatin remodeling. For example, FASCIATA2 (FAS2) is a protein known to bind to histone proteins and two other chromatin-remodeling proteins: HISTONE REPRESSOR A (HIRA) and FASCIATA1 (FAS1). All three of these proteins are found in *Arabidopsis thaliana*. HIRA is involved in the repression of KNOX genes while FAS1 and FAS2 bind to histones. Our goal is to computationally predict how these proteins interact with each other. One underlying problem with this work is that the crystal structures of these proteins have not been determined. Therefore, we used two methods to predict protein structure. The first method, called PHYRE, uses a method that relies upon comparing homologous sequences from the unknown protein with those of known proteins in a database. The second method is known as TASSER. It works off of known interactions between different amino acids and other molecules. Once the 3D structures were predicted, they were further analyzed using the program ICM-Pro. In ICM-Pro, the predictions were superimposed and comparisons were made between the structures obtained from PHYRE and TASSER. Comparing the accuracy of the TASSER estimate to the database of PHYRE helped determine the reliability of the TASSER method.

Back Into the Woods- reconnecting children with nature

Victoria Scott
Faculty Mentor(s): Judith Guinan Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

"Nature Deficit Disorder" is a term coined by Richard Louv in his book The Last Child in the Woods, which describes the disconnect that currently exists between society and nature (Louv, 2009). In order to counteract this phenomena, I utilized a multidisciplinary approach incorporating education, biology, and technology. This was done by combining a smartphone app with an outdoor learning experience to appeal to the tech savvy youth of today. First, animal pawprint molds were placed throughout Wildwood park in Radford, VA based on the habitat of that animal. A website was created, with the help of Radford University's technology department, which leads visitors to explore the park further while directing users through a series of questions and informational text. These questions were designed using Virginia's Standards of Learning to cover concepts such as habitat preference, food webs, and how humans affect living ecosystems. The objective is to help the user identify the animal while educating them and sparking their interest in the outdoors. A poster, displayed in a prominent location in the park, presents pictures, an answer key, and fun facts about the animals all in one location. The centralization of information allows those without smartphones to enjoy this activity. By giving children and adults a fun outlet to explore nature, I believe this project represents a first step in developing a more active Radford community. Government sites such as LetsMove.gov and the Center for Disease Control have laid out recommendations for developing more active communities, so this project will supplement these efforts.

Testing *Pseudomonas* Pigments for Reactive Oxygen Species Generation and Antiviral Activity

April Tingle
Faculty Mentor(s): Justin Anderson Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

The purpose of this research is to test if three *Pseudomonas* isolates can generate reactive oxygen species (ROS) and exhibit antiviral activity against La Crosse virus (LACV). La Crosse virus is transmitted by mosquitoes in the eastern United States and can cause encephalitis. *Pseudomonas* pigments have antibacterial and antifungal properties by creating a chemical reaction involving ROS to kill the bacterial and fungal cells. We predict that it will act in a similar way with viruses. In order to test its antiviral properties, we will use three isolates--*Pseudomonas aeruginosa, P. chlororaphis, and P. rhodesiae*--and place these isolates individually in mosquito cells with LACV and observe if ROS is produced. The findings will be useful because if *Pseudomonas* isolates can kill LACV, then these isolates can possibly be used to kill other viruses and prevent the spread of diseases.

Biology Poster Session

The relationship of average seasonal rainfall with provisioning and parental and nestling condition of eastern bluebirds (*Sialia sialis*)

Fionna Surette
Erin Dudley
Caitin Annear
Faculty Mentor(s): Judy Guinan Biology
Jason Davis Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

We were interested in examining the relationship between fluctuating weather conditions and the physiology, parental behavior and nesting success of eastern bluebirds (*Sialia sialis*) in and around Radford, Virginia within the breeding season. Over the course of five breeding seasons, we observed parental behavior during the nestling period to ascertain the frequency at which parents delivered food to nestlings. Daily weather data from the National Oceanic and Atmospheric Administration (NOAA) was obtained. We examined correlations of average seasonal temperatures and rainfall, with parental behavior and condition of both the nestlings and adults. We found that as average seasonal rainfall increased, nestling weight decreased significantly. Trends between seasonal rainfall, female weight and mean number of feeding trips conducted by parents per nestling were also found. As seasonal rainfall increased, female weight decreased and the mean number of feeding trips per nestling increased, though these analyses should be taken as preliminary due to the small sample size of the averaged data. We speculate that these findings could be explained by more difficult foraging conditions presented by the rain. Though provisioning trips per nestling seem to increase, it might not be enough to make up for the low amount of nutrition distributed to the nestlings overall.

Analyzing the Physical Interaction of AS1 and AS2 in Arabidopsis Through Computational Modeling

Katey Wickham
Faculty Mentor(s): Tara Phelps-Durr Biology
Tuesday, April 22 Heth 043 5:30 - 7:00

In Arabidopsis, the ASYMMETRIC LEAVES1 (AS1) and ASYMMETRIC LEAVES2 (AS2) genes are responsible for normal leaf development. Mutations in either AS1 or AS2 result in the downward curling of leaf blades, lobed leaves, and leaf blades that are shorter than normal. The AS1 gene encodes a protein that has a MYB-domain region. Myb domains are typically responsible for the binding of DNA; however, AS1 has not be experimentally shown to bind DNA. AS1 and AS2 have been shown to physically interact with each other in a yeast two-hybrid system; however, this system does not allow us to determine exactly what regions of the proteins are making contact. The AS1 and AS2 complex has been shown to regulate the expression of other genes but the exact mechanism of gene regulation is unclear. The goal of this work was to computationally analyze the binding of AS1 and AS2 and to model how these proteins might bind DNA. Since the AS1 and AS2 proteins have not been crystallized their structure was predicted using i-Tasser an online3-D protein structure modeling and simulation program. Once the protein structures were obtained, the interaction between AS1 and AS2 was modeled in ICM-Pro a protein modeling software package. In ICM-Pro, we also compared the normal structures of AS1 and AS2 with various mutant structures of AS1 and AS2 by superimposing the proteins and observing the structural differences. Ultimately, we would like to perform bench work experiments to confirm what regions of AS1 physically interact with AS2 and to verify that AS1 binds DNA. The modeling and simulation performed here will help us determine what regions should be targeted for future bench work experiments.

Wednesday, April 23rd

Innovations in Forensic Science
Heth 014 9:00am – 11:30am

Interdisciplinary Oral Presentations
Heth 014 12:00pm – 4:30pm

Art History Symposium
Heth 044 3:30pm – 5:00pm

Psychology Poster Session
Heth 016 & Heth 022 4:00pm – 6:00pm

Geology Poster Session
Heth 045 4:30pm – 6:00pm

Interdisciplinary Poster Session
Heth 014 5:30pm – 7:00pm

Biology Oral Presentations
Bonnie Auditorium 5:00pm – 8:30pm

Arctic Geophysics Oral Presentations
Heth 044 6:00pm – 9:00pm

Student Choreography Showcase
Peters B112 7:30pm – 9:00pm

Innovations in Foresic Science

Validation of Determining PMI with DNA Degradation in Tissues of Rats

Sheryl Manning
Faculty Mentor(s): Donna Boyd Forensic Science
Robert Sheehy Biology
Wednesday, April 23 Heth 014 9:00 - 9:10

Determining postmortem interval (PMI) or time since death, is an important part of a criminal investigation or unknown causes of death. PMI helps establish a timeline when retracing the events surrounding actual time of death. There are many methods that are used to determine PMI. Common practices are to use livor, rigor and algor mortis. Other methods employ chemical analyses or entomological aspects such as life cycles of certain insects. All of these methods are useful but only provide an eight hour window estimate. My goal for this project was to validate a new method, which utilizes DNA degradation in tissues. Validation of new techniques is required in forensic science to provide a better understanding of variables that may affect interpretation of results. I used agarose gel electrophoresis to quantify the size distribution of DNA fragments collected from muscle tissue. The degradation of DNA was evaluated by observing the changes in fragment sizes through this technique. DNA was collected from tissues harvested from rats maintained under various environmental conditions (time and temperature). Rats were incubated at three different temperatures (4˚, 24˚ and 37˚ Centigrade) and tissue samples were collected at 0, 6, 12, 24 and 48 hour PMIs. A positive correlation between postmortem interval time and the amount of degraded DNA was observed. A correlation between temperature and the rate of degradation was also observed. The next step in my project will be to quantify the degradation observed in my gel photos using data imaging software such as ImageJ.

Bath Salts: Recreational Drug or Unpredictable Killer?

Kayla Easter
Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 9:10 - 9:20

Bath Salts have only recently become a recreational drug of choice in southwest Virginia and the surrounding region. At the same time, concerns about their medical effect on the body have grown, resulting in what many researchers are referring to as a "Zombie Bath Salt Apocolypse." Bath salts have been implicated in numerous deaths, resulting in the regulation of these drugs federally and in Virginia in 2012. However, bath salts are still legal to purchase in many states and they are still quite easy to acquire even in regulated states. This paper focuses on the chemical make-up of bath salts and their effect on the body. It also examines their role in accidental death and the push for legislative control of the drugs to end the zombie apocolypse.

Differential Identification of Perimortem Blunt Force Trauma in Burned Human Remains

David Foley
Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 9:20 - 9:30

A common method of destroying evidence related to homicides involves the use of fire by the perpetrator. One of the greatest challenges faced in the analysis of burned human remains is the identification of perimortem trauma that was present before the fire. This research will investigate the unique identifying features of postmortem fire taphonomy and explore how these features can be differentiated from perimortem (Blunt Force) Trauma. Key components of perimortem Blunt Force Trauma and the effects of fire on bone will be examined in order to answer two questions: 1). Can the effects of perimortem Blunt Force Trauma and postmortem fire taphonomy be differentiated? and 2). Can the effects of fire alter the appearance of perimortem Blunt Force Trauma? A sample of porcine ribs will be inflicted with trauma, x-rayed, and then burned over an open flame. Once the ribs have been burned and de-fleshed, they will be x-rayed again and compared with the initial x-rays to examine any alterations that could be a result of the exposure to fire. This research will provide a preliminary analysis of the effects of fire on perimortem trauma .Understanding any alterations that may result from fire could ultimately provide information beneficial to assessing a set of remains that have been exposed to blunt force trauma and then fire.

Innovations in Foresic Science

Forensic Radiology: Interpreting Elderly Abuse through MRI's, CT scans and Roentgen Rays

Sara Franklin
Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 9:30 - 9:40

Abuse of elderly people by family members or others known to them, in their homes or in long-term care institutions, is a growing public health concern, principally due to the relative increase in the population segment older than 50 years of age. This worldwide population is predicted to rise from 542 million in 1995 to 1.2 billion in 2025, and senior citizens are expected to comprise 27% of Canada's population, for example, by 2025, up from 14% in 2009 (Krug, 2009). The purpose of this study is to examine the accuracy of diagnostic examinations on elderly patients through the use of magnetic resonance imaging (MRI), computed tomography scans and roentgen rays (X-rays). Characteristics include the gender of the patient, age, ethnicity, location of injuries and look at healing and eventual re-growth of bony injuries. We will be looking into examples of trauma such as hip-related fractures, fractures of the tibia and ankle, and skull-related trauma. The results of this analysis will allow a better understanding of the injuries that may be sustained to the elderly as a result of abuse or accidental injury.

A Profile of Bacteria Associated with Decomposition

Steve Gallas
Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 9:40 - 9:50

Little is known about the bacteria associated with decomposition. Research into the topic has shown that the sheer number of bacteria involved with decomposition is daunting. Complicating the issue further is that almost all the bacteria involved do not survive under laboratory conditions. Regardless, patterns can be observed including a migration of aerobic microbes in the GI tract observed during bloat stage decomposition. Staphylococcus bacteria are among the first aerobes that can be observed to have vacated the body followed by coliform bacteria. As the aerobic species of bacteria begin to move out of the body, the anaerobic species begin to take over. Specifically the Clostridium species account for a vast majority of species populating the corpse during bloat stage decomposition. Reasons for this shift can attributed to the lack of oxygen in the blood, creating a loss of redox potential for aerobic bacteria. To examine and create a profile for these bacteria, it is necessary to use mouse models and take bacterial samples from the rectum. Afterwards the samples will be grown under laboratory conditions; the use of pyrosequencing one or more variable region of the 16S rRNA gene will be explored as well. Using these methods the microbial communities associated with bloat will be investigated.

The Efficiency of DNA Polymerases in the Presence of PCR Inhibitors

Sara Lupino
Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 9:50 - 10:00

Most forensic DNA profiles are obtained from biological evidence found at a crime scene. This evidence is usually extracted from saliva, blood, semen, or hair samples. All of these natural sources of DNA contain PCR inhibitors, compounds in the biological sample that interrupt the amplification of DNA in the commonly used polymerase chain reaction technique. The function of polymerases used in PCR reactions is inactivated when inhibitors are present. These inhibitors are the cause of lost biological data that can produce error and false results, affecting the validity of forensic analysis of DNA profiles. Current research is in the process of validating new polymerases that are able to overcome the effects of inhibitors, producing more complete and reliable results. This study will describe the active inhibitory compounds commonly found in forensic samples, as well as present polymerase alternatives that can eliminate their PCR-inhibitory effects.

Innovations in Foresic Science

Issues in the Use of Body Temperature to Determine Time since Death

Michelle Donahoe

Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 10:00 - 10:10

In determining the time since death (TSD), there are a number of techniques that can be used from rigor mortis, stages of decomposition, chemical changes in the body, physical changes to the body, and the change in body temperature. At crime scenes, the medical examiner measures the temperature of the rectum to give a time since death to the investigators of the case. This can be affected by the change in ambient temperature, the coverage of clothes or other items and the change of temperature when transporting the body from the crime scenes to a dump site. This research focuses on the accuracy of determining TSD by body temperature, including the many variables that affect this estimation. The normal method of a rectum temperature in TSD determination is compared to the TSD methods using other known parts of the body to be used like the eyeball, the orbital soft tissue, the brain and the heart muscle. The goal of this study is to evaluate the accuracy of TSD estimations based on body temperature and investigate alternative methods for precise calculation of postmortem interval.

Fracture Propagation and Sequencing Blows in Cases of Blunt Force Trauma

Sharon Roller

Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 10:10 - 10:20

The sequencing of gunshot wounds based on fracture termination has been a practice for some forensic anthropologists for quite some time now, and although it has been noted that the same practice could be applied to blunt force injuries, there is very little exploration on this topic beyond that. This practice ties into the propagation of fractures, or the ability to trace a fracture back to the site of the blow. This has been a topic of hot debate in the anthropological community, as there is an uncertainty that all fractures caused by an impact actually radiate out from the particular site of the blow. This study seeks to answer two questions: 1) Is the propagation of fractures an accurate way to determine the impact site that caused them? and 2) Is it possible to determine the sequence of blunt force injuries based on fracture termination? These questions are addressed by experimentation using bone to test whether fractures actually radiate out from the source of impact, as expected, or form a different pattern. Experimentation involving fracture propagation will determine whether fracture termination is a useful way to determine the sequence of blows in cases of blunt force trauma. Validation of this method could prove to be very useful in homicide cases related to blunt force trauma including those relating to child-abuse.

The Use of Digital Surveillance in Criminal Investigations

Manan Shah

Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 10:20 - 10:30

This paper will examine the topic of digital surveillance in criminal investigations. It will also break down and explain the different mechanisms used in tracking the locations and movements of public citizens, such as CCTV cameras, GPS, Traffic Cameras, and other digital surveillance devices. This paper will also consider the question of legality and effectiveness of these different mechanisms in criminal investigations.

Innovations in Foresic Science

Are BPA Methods Reliable and Accurate?

Darcey Thompson
Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 10:30 - 10:40

Bloodstain Pattern Analysis (BPA) has become a critical issue in crime scene investigations that deal with violent deaths due to trauma that causes blood to be present. Bloodstain Pattern Analysis can be valuable as an explanatory guide to crime scenes. While this subfield and practice is becoming popular use in modern crimes scenes, there is little known and very sparse research done to prove that the methods are effective and reliable. A reconstruction of BPA at a crime scene can be seen as subjective. What one expert might interpret as a defensive blood cast, another expert might see as something else. This makes it difficult to determine whether the results gathered through the current methods used will be upheld in court as evidence. Methods of Bloodstain Pattern analysis can be interpreted differently across BPA experts. This research evaluates and validates Bloodstain Pattern methods currently used in an effort to discern the most accurate ones for use in court testimony.

DNA Fingerprint and Familial DNA: How Closely Related Are Relatives?

Alexandra Burns
Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 10:40 - 10:50

This paper will examine the topic of DNA Fingerprinting and Familial DNA. DNA fingerprinting is a technique used by forensic scientists to identify individuals based on their DNA profile. It follows the assumption that the more closely related individuals are, the closer their DNA fingerprint will be. But is this really the case? This research compares family tree and DNA data to investigate the relationship between DNA "matching" and familial relationships. It will also explore the misuse of this technique in criminal investigations.

The Effectiveness of Household Chemicals on Human Remains in Criminal Body Disposal

Brianne Dunnigan
Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 10:50 - 11:00

Immersion of human remains in household chemicals has been used as a method of criminal body disposal. This paper examines the effect of this practice by focusing on the different effects that household chemical products have on bone. Sixty samples of porcine bone, cut into 2-inch segments, are placed in separate containers containing readily-available household chemicals, including hydrochloric acid, sulfuric acid, and phosphoric acid. Samples are monitored over a period of 21 days; observations recorded included bone metrics like maximum length and width as well as bony signatures of chemical destruction. Samples are compared in terms of these signatures of chemical destruction in order to assess which chemicals are the most destructive and the amount of time that this destruction requires. Results will be applicable to criminal investigations involving chemical destruction of human remains.

Outdoor Variables Affecting Bloodstain Pattern Analysis

Sean Donahue
Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 11:00 - 11:10

Bloodstain pattern analysis (BPA) involves the interpretation of bloodstain dispersion, volume, and patterning at crime scene investigations in order to reconstruct perimortem events surrounding a crime. BPA depends on a knowledge of anatomy and physiology, geometry, and physics to reconstruct blood spatter angles and patterns. This research compares two different environments, indoor and outdoor, in terms of BPA analysis and interpretation. Because it is impossible to maintain a precise, undisturbed crime scene while in an outdoor area, it is hypothesized here that outdoor BPAs produce less accurate reconstructions compared to indoor ones. Two different environmental areas, one indoors and one outdoors, are subjected to a series of blood spatter trials and mock investigation of the BPA evidence. It is predicted that natural and human-related variables in the outside environment will limit successful collection of this evidence and ultimately compromise the admissibility of the evidence in court.

Innovations in Foresic Science

Infrared Spectroscopy for Alcohol Determination

Ethan Frederick
Faculty Mentor(s): Donna Boyd Forensic Science
Wednesday, April 23 Heth 014 11:10 - 11:20

Forensic toxicology is a vital area of study in the forensic science field that determines foreign chemical substances in the body of humans both live and deceased for courtroom proposes. New innovations in Atomic and Molecular Spectroscopy have the ability to provide more concrete evidence that can be used in a courtroom. There is an enormous category of toxic chemicals and drugs that have negative effects on the human body and it can be extremely difficult to determine what substance or substances a person has absorbed. A fast and accurate method for the detection of alcohol is Infrared Spectroscopy. IR uses radiation to detect the concentration of alcohol present within a person's breath or blood. This method is increasingly important for cases such as DUI's or acts of violence that involve alcohol. A person's metabolism is constantly breaking down the alcohol in the bloodstream making it very important for fast and accurate results. This research will investigate the use of IR in forensic alcohol investigations by exploring the issues associated with accurate identification and quantification of ethyl alcohol in criminal cases. The IR method has the ability to give more concrete evidence in an effort to reduce alcohol related incidents within our society

Interdisciplinary Oral Presentations I

Appalachian Teaching Project: Sustaining the Community Mind for Long-term Community Resiliency: Appalachian Values Assessment in Floyd County, Virginia

Kasey Campbell
Victoria Curtis
Taylor LaPrade
Langley Looney
Sarah Wood
Ryan Woodson
Misty Daniels
Charles Salyers
Faculty Mentor(s): Melinda Wagner Sociology
Wednesday, April 23 Heth 014 12:00 - 12:30

Floyd County Virginia's Land Policy Task Force found that "What Matters Most" to Floyd County residents was "preservation of rural character, Appalachian heritage, and community identity." This Appalachian Teaching Project (ATP) is researching what residents want to preserve and studying perceptions of potential threats to those values. Recent social science research has highlighted "narrative" and the identification of "core values" as critical elements that help sustain communities affected by cultural and economic change and persistent negative stereotyping. Better understanding Floyd County's history and heritage (and defining what residents mean by that) will buttress a foundation for a positive trajectory. In the words of the Floyd County Development Director, "it would allow for going beyond simply reacting to outside stressors as they arise. From a land planning and economic perspective, it would be valuable to know these answers." The Project and the course in which it is embedded is teaching student researchers the skills to become more effective community leaders who understand the importance of community values. As globalization and culture change continue apace in the region, long-term sustainability requires sophisticated culturally-aware leadership with the skills to assess the strengths and weaknesses of their communities and to predict the effects of changes. These future leaders will "strengthen the capacity of Appalachian people to compete in the global economy," in the words of the ATP sponsor, the Appalachian Regional Commission.

Imagining and Acting On Possibilities for Reforesting Abandoned Mountaintop Removal Sites: A Collaboration Between Green Forests Work, Radford University, and the Appalachian Regional Reforestation Initiative

Victoria Curtis
Chris Wilson
Taylor LaPrade
Faculty Mentor(s): Theresa Burriss Appalachian Studies
Christine Small Biology
Rick Roth Geospatial Science
Wednesday, April 23 Heth 014 12:30 -12:50

Since fall 2011 three Radford University (RU) faculty members (representing Biology, Geospatial Sciences, and Appalachian Studies) have partnered with the nonprofit organization, Green Forests Work, and the Appalachian Regional Reforestation Initiative, an initiative of the Federal Office of Surface Mining Reclamation & Enforcement in partnership with the seven Appalachian State Regulatory Authorities, to educate RU students about the forestry reclamation work occurring on abandoned mountaintop removal sites in Central Appalachia. The known reality of these MTR sites is environmental damage and destruction; yet the imagined possibility is one of healthy, productive hardwood forests. An alternative spring break trip to Eastern Kentucky in March 2013 allowed the students and faculty members to plant native hardwoods, including disease-resistant American chestnut seedlings, on a former mine site. The faculty members have received internal funding to lead another alternative spring break planting trip in March 2014. Not only do the students acquire scientific knowledge about the tree plantings, such as basic forestry and soil science concepts and mitigating adverse mine soil conditions, they also learn historical and cultural information in order to contextualize their tree planting activism.

Interdisciplinary Oral Presentations II

Analyzing Legal Writing for Law Students

Kaileigh Ashby
Faculty Mentor(s): Donald Samson English
Wednesday, April 23 Heth 014 1:00 - 1:20

This project will analyze the characteristics of effective legal writing, which is a field that most law and pre-law students struggle with upon entering law school. I will analyze what makes some legal writing better than other writing, and lay out guidelines for pre-law students to consider when merging into this difficult field. If I can pinpoint why law students have such a difficult time learning legal writing, and develop a simpler, more straight forward way to explain the exact guidelines required of these future lawyers, this will give me a leg up when I apply to and enter law school.

Could the UK benefit from Germany's Dual Training System?

Kirsty Condon
Faculty Mentor(s): Philip Sweet Foreign Language and Literature
Wednesday, April 23 Heth 014 1:40 - 2:00

The presence of a reputable national education system is a key component of the economic and social progress of a country. In order to guarantee a brighter future, the children of today must be equipped with the skills that will enable them to flourish as adults tomorrow. Furthermore, with intense competition in the job market, it is vital that individuals are aware of and understand the educational options available to them so that they can make the choice that will most adequately prepare them for their desired field. Germany, where a dual training education system is implemented, is renowned for its strong economy and low youth unemployment rate. On the other hand, the educational system in the UK faces considerable criticism, particularly due to the diminishing performance of students in the PISA (Programme for International Student Assessment) tests. Furthermore, the UK unemployment rate was 19.8% for 16-24 year olds in November 2013 – January 2014. This study evaluates both the benefits and drawbacks of the German education system and analyzes how dual training contributes to its strong economy. In addition, it compares and contrasts this system with that of the UK and highlights potential solutions for the modification of UK education.

Interdisciplinary Oral Presentations III

China and the United States: Cultural and Governmental Differences Among Two Superpowers

Zachary McCoy
Faculty Mentor(s): I-Ping Fu Foreign Language and Literature
James Radford Political Science
Wednesday, April 23 Heth 014 2:10 - 2:30

This paper is a 15-page document detailing the governmental and cultural differences between the United States and China. Things that will be included in this paper will include each government's system in relation to how the United States and China run their military, economy, taxation system, healthcare system, intelligence community, as well as each country's justice system. Things that will be talked about regarding the culture of the United States and China will include mannerisms/social norms, people's way of dressing, people's way of interacting with one another, differentiation between life in the major cities and life in the suburbs, as well as the moral standards the each country holds. The information presented in this paper is important because the continuous expansion and influence is having throughout the modern world will surely shape the world of things to come. This piece of writing compares and contrasts two of the biggest superpowers of the world and how each of them is making a play at reaching the top spot. It also compares and contrasts cultural differences because it is quite interesting and significant how people of different nationalities. Through this paper, one will have a better understanding of the fundamentals of American and Chinese background and goals, as well as their models for society.

Chinese Expansionism and Societal Norms

Zachary McCoy
Faculty Mentor(s): I-Ping Fu Foreign Language and Literature
James Radford Political Science
Wednesday, April 23 Heth 014 2:30 - 2:50

The research area that I am engaging in is regarding two topics. Those two topics are Chinese expansionism throughout the world and societal differences in China that differ from the United States. I am interested in researching Chinese expansionism because China is growing into such a superpower due to so many different actions they are taking. Because of this, they may very well pass the United States as the number one superpower of the country. I am interested in researching societal norms and differences from American society after people close to me visited China and informed of what a different world China is from America. So far, I have discovered that China has drastically increased the size of its navy in order to echo its commanding presence to the world, as well as investing lots of money into countries in Africa for energy purposes. They are expanding militarily and economically. When those close to me returned from China and told me of their experiences, I was stunned to hear societal differences such as the way people converse with each other and certain types of moral values. The findings that I have made thus far are very significant because at the rate the Chinese are expanding, it could permanently change the course of power in the world. It is also significant to understand the diversity of another major country. My future suggestions are for others to stay informed and value American power and society. It is important to research these significant characteristics about China and its effect on the world.

Interdisciplinary Oral Presentations IV

Reading Generalization Intervention

Molly Allen
Faculty Mentor(s): Eric Mesmer Psychology
Wednesday, April 23 Heth 014 3:00 - 3:20

The ability to read well is a task that can be taken for granted. Reading is a stepping stone to excelling in academics and life. To be able to read one must decode words, read fluently, and be able to comprehend text. Studies have shown that repeated reading interventions, such as recalling sight words, increases reading fluency and potentially comprehension (Burns, Kanive, Parker & Zaslofsky, 2012). One repeated flash card method that is frequently used is incremental rehearsal (IR). In a study conducted by Burns, Dean, & Foley (2004), results demonstrated that when using an IR intervention in which students learned key vocabulary words, student's scores for reading fluency and comprehension increased. The proposed study attempts to build on the Burns et. al results by examining the impact of learning high frequency words using the IR procedure on reading comprehension. In particular the proposed study will attempt to determine whether learning high frequency words in isolation, through the IR procedure, will result in generalized reading improvements (i.e. reading the high frequency words in a passage and comprehending questions that include the high frequency words). Our study proposes to include 4-5 third and/or fourth graders that have been identified with reading disabilities. Each student will read three passages and answer comprehension questions. For the intervention, each student will be taught unknown words with the IR procedure and read three different passages and answer comprehension questions. Word recognition, comprehension, and maintenance are three variables to be measured.

John Stuart Mill's Philosophy: An Old Take On Current Issues

Brittany North
Faculty Mentor(s): Margaret Hrezo Political Science
Wednesday, April 23 Heth 014 3:20 - 3:40

My presentation is going to be about John Stuart Mill's philosophy and what we can learn from it to create a more equal contemporary society. I will start out with biographical information and what was going on in his time of life so that the audience will grasp a better understanding of where he is coming from. I will then focus on his main works, such as On Liberty, The Subjection of Women, Utilitarianism and his other influential essays. One of the core ideas of John Stuart Mill's is finding the truth through extensive debate from every angle. Our society today seems to claim that the "truth" is something just convenient and easily accepted by the masses. Another main idea of Mill's is equality for all, despite gender, race, or where one comes from. Our society can learn much from this concept. Also, Mill's "General Overall Happiness" principle (the idea that the state should provide the most happiness for the greatest amount of people) is a concept that seems to be lost in the United States, which experts now call a nation of plutocracy instead of a democracy or a republic. Mill believed that the reason why governments have become corrupt is because the system is breeding non-individualistic citizens. My presentation will be about 15 minutes long as I go over John Stuart Mill's main political points and then elaborate on how they can make our society toady a better place.

Coming of Age, with Death: A Look into Death and Dying in Popular Literature

Misty Daniels
Marisa Fraley
Faculty Mentor(s): Susan Kwilecki Philosophy and Religious Studies
Wednesday, April 23 Heth 014 3:40 - 4:00

Death is a part of every human life. Part of the fabric that makes each culture is how they understand the components of the end of life, from coping with the death of a loved one to the complexities of accepting one's own fate. As we age and accumulate life experiences the way in which we understand death, the ultimate, and the after-life evolves and changes. In this dual presentation, the theme of death and dying will be discussed through the analysis of themes in books relevant to adults and young adults. Also, we will discuss why understanding the modern concepts presented about dying are important to those in religious studies and humanity as a whole.

Interdisciplinary Oral Presentations IV

Making Connections Between the United States Naturalization Test and the Virginia Standards of Learning

Tessa Law
Faculty Mentor(s): Boyoung Park School of Teacher Education and Leadership
Wednesday, April 23 Heth 014 4:00 - 4:20

The Virginia Standards of Learning stand as the minimal knowledge a student must know, while the United States Naturalization Test reflects the minimal knowledge a citizen is required to know. The purpose of this project is to uncover connections between the Virginia Standards of Learning and the United States Naturalization Test. The researcher will discover which grade level each naturalization test question refers to by looking at the SOL's. By looking at these results, the researcher can narrow in on which standards of learning and which grade level related content influences the questions asked on the United States Naturalization Test. The outcomes of this study, along with further research, will help the researcher answer questions such as:

What knowledge do we want our students to know compared with those moving into the United States?
What information should be included on the naturalization test?
Do we or should we expect more out of our students?
Do we or should we expect more of those moving into the United States?
What can we do to better align our standards with the naturalization test?
Does education in the United States better prepare immigrants for the naturalization test?

Finding answers to these questions can help better prepare future and current teachers in the field of education. The rise of diversity in schools signals the need for cultural competent teachers. It is essential for educators to be familiar with resources for their students and their students' families. These resources build relationships between the educator and the student's family. Building connections between the Virginia Standards of Learning and the questions on the United States Naturalization Test can help support families in their transition into American schools and assist teachers in supporting these families. In addition, the knowledge provided by this research can further the teacher's ability to provide instruction in conjunction with these standards. The teacher will see these standards in a new light and recognize the importance of these standards across the nation. The hope is that this recognition will allow the educator to view a wider perspective of his/her's own teaching of social studies in the classroom.

Art History Symposium

Panel Discussion: War Posters and Advertisements: The role of gender

Megan Ligday
Ciara Banks
Kenna Crane
James Garofalo
Debra Lustig
Dakota Townsend

Faculty Mentor(s): Roann Barris Art History
Wednesday, April 23 Heth 044 3:30 - 4:00

This panel brings together explorations by six students into the use of male and female imagery in posters for war and advertising posters. The approach used involved comparisons between the two types of posters as well as comparisons between three countries: Russia, Germany and the United States. The time frame for the posters included in the presentation was World War I and the decade after the war, and criteria for choosing posters specified that for each type,at least one poster featuring a male figure and one poster featuring a female figure had to be chosen. The bigger question we attempted to answer was the question of whether gender differences or national differences would be more significant in the design of the posters.

The Rosetta Stone: A Case for World Heritage

Debra Lustig
Megan Ligday

Faculty Mentor(s): Carlee Bradbury Art History
Wednesday, April 23 Heth 044 4:10 - 4:30

The Rosetta Stone is the subject of fiery debates between defenders of cultural property and those who support world heritage. Today, it resides in the British Museum, where it has been since the early 1800s. As the Stone carries both Egyptian and Greek scripts, showing interconnectedness in the ancient Mediterranean sphere, it represents cultural correspondence that stretches back thousands of years and belongs first and foremost to the world as a whole. It is the British Museum's right and responsibility as an encyclopedic institution to protect and display it as such. In this presentation, we will cover the arguments of proponents of cultural property and counter with historical and contemporary evidence that conclusively proves the Rosetta Stone's significance as an agent of world heritage and the legitimacy of the British Museum's claim of ownership.

Greek mythology and its presence in art

Kenna Crane

Faculty Mentor(s): Roann Barris Art History
Wednesday, April 23 Heth 044 4:30 - 4:50

Throughout time, mythology has been a familiar and favored subject in art. Each unique myth, regardless of subject matter, is capable of being easily modified through word of mouth, carefully molded throughout generations into a unique blend of fantasy and fact. It is this specific quality that makes myths such a surreal subject to attempt to depict in artwork. Often times, myths are the sole inspiration for a piece of work. What exactly is the difference between the portrayal of a myth in artwork and the drawing of inspiration from a myth? What makes this distinction so important? How has this inspiration from a myth affected other art throughout the years?

Psychology Poster Session

Does Strategic Management of Self-Regulatory Resources Prevent Weight Gain in Undergraduates? A Prospective Study

Emma Bennett
Michael Feeney
Faculty Mentor(s): Niels Christensen Psychology
Wednesday, April 23 Heth 016 4:00 - 6:00

Rising levels of BMI with age have become a prevalent health risk with an estimated 35.7% of adults in the US being obese (Ogden et al., 2012). The present research investigated whether individual differences in "metaregulation" would predict changes in BMI in a sample of undergraduate students. Metaregulation is defined as strategies designed to circumvent over-reliance on a person's self-regulatory resources (e.g., goal-setting, temptation avoidance, and formation of good habits). Since a person's resources available to exert self-regulation are limited and deplete with use (Muraven & Baumeister, 2002), using metaregulation strategies should become protective factors for making efficient self-regulatory decisions throughout one's daily life. Prior cross-sectional data from our lab indicated that endorsing metaregulatory strategies attenuated the relationship between age and BMI. That is, among "low metaregulators" older participants reported higher BMI than younger participants, however age was not a factor for the BMI of "high metaregulators." The current study adds a prospective design with two timepoints of data collection (M = 83 days apart). At both timepoints participants had their BMI objectively measured and reported on metaregulatory strategies (e.g., "I develop a plan so that I know what to do when temptations arise"). Regression analyses revealed that endorsing more metaregulatory strategies was associated with lower weight gain, $b = -0.28$, $t(70) = 2.07$, $p = .04$. Low metaregulators gained an average of 0.86 BMI points, whereas high metaregulators only showed a 0.24 increase.

A Look into Perception Manipulation and Risky Decision Making

Brandi Carper
Matthew Wheeler
Mariah Whitcomb
Molly Christopher
Jacqueline Manu
Faculty Mentor(s): Steven Sutherland Psychology
Wednesday, April 23 Heth 016 4:00 - 6:00

In comparison to society, college students are perceived as making riskier decisions. In the current class project, we examined risky decisions among the college students. For the purposes of this class project, we evaluated whether fear-based imagery had an effect on a student's decision to drink and drive. Participants were recruited from an online university database and asked to complete an online survey. In the study, participants were randomly assigned to one of three different versions of a survey. Each version had six vignettes accompanied with positive, negative, or no photos. Positive photos were of nice, undamaged, appealing cars. Negative photos were of cars that were wrecked and in poor condition. The participants were then prompted to respond to a number of questions. These questions pertained to assessing whether the character in the vignette should drive after consuming alcohol. In this study, the independent variable was which imagery version of the survey was received by the participant and the dependent variable was how likely participants were to make risky decisions based on the positive, negative, or no picture version of the survey they received. We expect to find that participants are less likely to select risky decision making behaviors when presented with fear-based imagery.

Psychology Poster Session

Effects of Lactational Cannabinoid Exposure and Sex Differences on Learning in Rats

Micaela Davidow
Jenna Long
Paul-Michael Lowey
Laura Robinette
Beth Wagner
Jessica Beam
Faculty Mentor(s): Pamela Jackson Psychology
Amanda Adams Psychology
Wednesday, April 23 Heth 016 4:00 - 6:00

This study focuses on the effect of a cannabinoid, CP55,490, via early post-natal exposure through lactation on rats' future learning ability. Long Evans rats (18 males, and 16 females) from Radford University's rat laboratory were used during the study with 19 that were exposed to the cannabinoid treatment and 15 that received a vehicle treatment. The rats were trained on an obstacle course, which included 5 acrobatic tasks with Froot Loop cereal as rewards. The study looked at differences in rats which were exposed to the CP treatment compared to the vehicle treatment and their overall performance on the obstacle course and subjective ratings of performance on the tasks. The study also looked at the differences between male and female rats and performance on the obstacle course. We expect to find that rats that were exposed to the CP treatment will perform worse on the measures and have lower body weights. We also expect to find a sex difference with females performing better than males due to smaller body size.

The Structured Sleeping Beauty: Is the Relationship Between Regulatory Focus and Sleep Quality Mediated by Regimented Sleep Patterns?

Jennette Delos Reyes
Britanny Price
Shaleese Wendell
Faculty Mentor(s): Niels Christensen Psychology
Wednesday, April 23 Heth 022 4:00 - 6:00

Sleep is increasingly recognized as important to public health, with sleep insufficiency linked to motor vehicle crashes, industrial disasters, and medical and other occupational errors. An estimated 50-70 million US adults have sleep or wakefulness disorder (Center for Disease Control and Prevention, 2014).The present research investigates whether broad individual differences in how people pursue goals ("regulatory focus") might predict successful sleep patterns. Regulatory focus theory states that some people are motivated by seeking pleasurable outcomes (promotion focus), whereas others are motivated by avoiding negative outcomes (prevention focus), We hypothesized that greater levels of prevention focus would predict structured sleep habits and, in turn, be connected to one's sleep quality (deep sleep, light sleep, and wakefulness). Participants (N=55) were undergraduate students from Radford University. All students completed a questionnaire assessing regulatory focus. Next, participants used the "SleepBot" application on a phone or tablet device for ten days. This application measures sleep habits and quality (deep sleep, light sleep, and wakefulness). Regression analyses will be used to test the mediational hypothesis. If the hypotheses are supported, the research's outcomes would suggest that prevention focus individuals have more deep sleep hours and higher average sleep hours because they have routine (i.e., sleeping and waking up the same time). Such findings could inform interventions designed to improve sleep quality by identifying motivational style most associated with poor sleep hygiene.

Psychology Poster Session

The Structure of Blame: the Influence of Sexism and Dominance on Rape Myth Acceptance

Savannah DeRoma
Mallorie Calvert
Stephanie Dorough
Faculty Mentor(s): Jeff Aspelmeier Psychology
Wednesday, April 23 Heth 022 4:00 - 6:00

This study investigated whether rape myth acceptance is predicted by dominance and sexism. The sample consisted of 100 undergraduate students at Radford University. The participants took an online survey using Qualtrics (Qulatrics Inc., Tallin, Estonia). The Illinois Rape Myth Acceptance Scale (IRMA; Payne, Lonsway, & Fitzgerald, 1999; McMahon & Farmer, 2011) was used to measure rape myth acceptance, the Ambivalent Sexism Inventory was used to measure sexism, and the Social Dominance Orientation Scale (Pratto, Sidanius, Stallworth, & Malle, 1994; Sidanius & Pratto, 1999) was used to measure dominance. It was expected that participants who report high levels of sexism would blame the victim more than those who report low levels of sexism. It was also expected that those who report a dominance orientation would show high victim blaming, compared to those who report a weaker dominance orientation. The joint influence of dominance and sexism on rape myth acceptance was evaluated using a multiple regression approach.

Does respect for authority predict better honesty after self-control depletion?

Brett Esworthy
Kiera McIvor
Gray Wilkinson
Faculty Mentor(s): Niels Christensen Psychology
Wednesday, April 23 Heth 016 4:00 - 6:00

Ethical principles are important not always enacted.as exemplified in cases of infidelity, crime, and academic dishonesty. Past research has shown people are more likely to exaggerate reports of their own performance following tasks that deplete self-control. The present research investigates whether this finding holds true across different types of people. Specifically, we wondered whether the relationship between self-control depletion and exaggerations of performance is moderated by a person's respect for authority. Participants were given a questionnaire to determine either their respect for authority. Upon completion they were divided into two groups. Participants in the "depletion" group wrote a, short story in which they could not use the letters "A" or "N," which requires suppression. The control group was given identical instructions, but could not use letters "X" and "Z." Next, participants completed as many math matrix problems as they could in four minutes. Participants were shown the correct answers and asked to report the number correct, which were later compared to the actual number of correct answers. We anticipate that participants with higher respect for authority will be less affected with exaggeration despite depletion. Whereas participants with lower respect for authority should report higher exaggeration when asked to recall the number of correct answers while depleted.

Does Gender Moderate Pluralistic Ignorance about Alcohol Consumption among College Students?

Melissa Flis
Sarah Spradlin
Torri Luebke
Faculty Mentor(s): Jeff Aspelmeier Psychology
Wednesday, April 23 Heth 022 4:00 - 6:00

The project explored the differences between college students ratings of their own acceptance of alcohol use and perceptions of their peers' acceptance of alcohol consumption. Approximately 100 undergraduate psychology students participated in an online survey study conducted through Qualtrics (Qualtrics Inc., Tallin, Estonia). Participants were asked a series of questions about their own comfort with alcohol consumption and their peers' comfort with alcohol consumption along with demographic background questions. It was expected that participants would perceive that their peers were more comfortable with excessive alcohol consumption than they themselves were, which is a form of pluralistic ignorance. It was also expected that gender would moderate the effects of pluralistic ignorance. Men were expected to show higher levels of pluralistic ignorance than women.

Psychology Poster Session

Mind Over Matter: Does Stress Mediate the Relationship between Noise and Self-Control?

Alejandro Garcia
LaNae King
Donovan Faloney

Faculty Mentor(s): P. Niels Christensen Psychology
Wednesday, April 23 Heth 022 4:00 - 6:00

A prevalent issue in society is ineffective self-control, with examples ranging from drug use, infidelity, procrastination, or unhealthy eating. Previous research suggests that the external environment, particularly noise, does have an effect on an individual's self-control. The current study investigates an explanation for why noxious external auditory stimuli reduces an individual's ability to exert self-control. We hypothesize that heightened stress is the mediator that underlies the noise and self-control relationship. Participants are undergraduates from Radford University who were randomly assigned to either a control condition (no noise) or experimental condition 60-70dBs of traffic noise). Both groups were asked to complete a computer version of the Stroop color-word test, which is a frequently used measure of self-control. In addition, participants provided a self-report of stress they experienced during the Stroop task. Consistent with past research, we predict that participants who were exposed to the auditory stimulus while completing the Stroop Color-Word Test will do worse than the opposite group completing the same task with no auditory stimulus. More importantly, we expect that this effect will be mediated by stress. Those in the noise condition will report higher levels of stress, which in turn will predict lower levels of self-control on the Stroop test. If these hypotheses are supported, the findings could be applicable to various settings including training in military, athletics, and driver safety.

RU Hooking Up: Does Sexism Moderate the link between Gender and Pluralistic Ignorance?

Avianna Goldman
Diamond Anderson
Anne Wright

Faculty Mentor(s): Jeffery Aspelmeier Psychology
Wednesday, April 23 Heth 022 4:00 - 6:00

The class project investigated gender differences in pluralistic ignorance about hooking up among college students. Participants were 100 undergraduate students, 18 years of age or older, who were enrolled in psychology courses at Radford University. In on online study administered through Qualtrics, participants reported their own attitudes about college hookups and reported their beliefs about their peers' attitudes about hookups. It was expected that gender differences would be observed in levels of pluralistic ignorance. Specifically, males were expected to show higher levels of pluralistic ignorance than females. Also, it was expected that sexism would moderate the link between gender and pluralistic ignorance by showing that pluralistic ignorance will be lowest among women reporting high levels of sexism, compared to all other participants. This pattern is expected to result because women, who endorse sexist beliefs, expect their peers to have negative attitudes toward hooking up.

Spirituality as a Route to Post-Traumatic Growth for Trauma Survivors

Bethany Hall

Faculty Mentor(s): Ruth Riding-Malon Psychology
Wednesday, April 23 Heth 016 4:00 - 6:00

Studies reveal that aspects of religiosity and spirituality can be of abundant value to people when in time of crisis, suffering or grief. This poster presents a review of the literature examining the connection between post-traumatic growth and spirituality. A PsychINFO search of published literature identified 17 empirical studies that reported links between the post-traumatic growth inventory and the key words religiosity and spirituality. The review begins by defining the construct of post-traumatic growth and discusses its relation to its effect on a person's spirituality. In addition, the author explores the construct of spirituality in regards to the influence that it, in turn, has on post-traumatic growth. The author presents the implications of the findings of the literature review.

Psychology Poster Session

Does a hurried mind facilitate stereotyping? The moderating effect of time pressure on attractiveness stereotypes.

Katie Helvey
Emily Goff
Maura Lesko
Faculty Mentor(s): Jeff Aspelmeier Psychology
Wednesday, April 23 Heth 022 4:00 - 6:00

The present study investigates the moderating effect of time pressure on attractiveness stereotypes. A sample of roughly 100 undergraduate psychology students completed an online study administered through Qualtrics. The study used a 3 (attractiveness conditions – within subjects) x2 (time pressure – between subjects) experimental design. To test these hypotheses, participants were shown three different photographs of women's faces in a random order. The photos varied in attractiveness of the target (Highly Attractive, Moderately Attractive, and Unattractive). After viewing each photo, participants rated the target on 10 trait dimensions using a 5-point semantic differential scale (e.g. friendliness, competitiveness, trustworthiness, and dependability). Half the participants were randomly assigned to a high time pressure condition where they were given limited time to complete their ratings. It was expected that more socially desirable traits would be attributed to the attractive target, compared to the moderately attractive and the unattractive targets. Also, less socially desirable traits were expected to be attributed to unattractive targets, compared to highly attractive and moderately attractive targets. It was also expected that time pressure would exacerbate the influence of attractiveness stereotypes on photo ratings.

Coping with Sexism: Does Sexism Mediate the Relationship between Self-Esteem and Rape Myth Acceptance?

Amy Keith
Jessica Stragand
Ashley Wilson
Faculty Mentor(s): Jeff Aspelmeier Psychology
Wednesday, April 23 Heth 022 4:00 - 6:00

The purpose of the study was to examine whether sexism mediates the relationship between of self-esteem and rape myth acceptance. In addition, this study examined whether gender moderated the mediating influence of sexism. Each variable was measured using an online survey administered through Qualtrics (Qualtrics Inc., Tallin Estonia). Self-esteem was measured using the Rosenberg's Self-Esteem Scale (Rosenberg, 1965). Sexism was assessed using The Ambivalent Sexism Inventory (Glick & Fiske, 1996). Rape myth acceptance was measured by using the Illinois Rape Myth Acceptance Scale (Payne, Lonsway, & Fitzgerald, 1999). It was hypothesized participants reporting lower self-esteem will report higher levels of rape myth acceptance than those who score higher in self-esteem. It was also hypothesized that sexism would mediate (or account for) the relationship between self-esteem and rape myth acceptance. When sexism was controlled for, the relationship between self-esteem was expected to be significantly reduced. It was also hypothesized that gender would moderate the mediating effect of sexism. That is, sexism would mediate the relationship between self-esteem and rape myth acceptance among male participants, but not among female participants.

Psychology Poster Session

Risk behaviors in groups versus individuals on a modified Iowa Gambling Task

Ashley Kinsey
Ashley Throckmorton
Derrick Southers
Rachel Lucsko
Faculty Mentor(s): Steven Sutherland Psychology
Wednesday, April 23 Heth 016 4:00 - 6:00

Risk and decision-making in the environment is inevitable. There are constant decisions individuals face from the time they wake to the time they go to sleep. These decisions encompass food options, driving situations, and group dynamics. Each decision that is made has a consequence with a possible element of risk in terms of the probabilistic nature of the outcome. The purpose of this class project was to investigate the difference in risk-taking behavior when one makes decisions alone as compared to when making decisions as part of a group in a college population. A modified version of the Iowa Gambling Task was employed utilizing marbles and brown paper bags, representing probabilities of safe and risky gambles. Two brown paper bags carry an expected value of +$100, being the safe bags and two brown bags carry an expected value of -$100, being the risky bags. The probabilities associated with the safe options were 10% (+$1000) and 90% (-$100), and 60% (+$350) and 40% (-$500), respectively. The probabilities associated with the risky options were 90% (+$100) and 10% (-$1000), and 60% (+$500) and 40% (-$350), respectively. We predicted that group decision-making would tend to be riskier, as assessed by the expected value of the options, on a modified Iowa Gambling Task than individual decision-making.

Neurological Alterations following the combined use of Alcohol and Nicotine

Ryan Lingg
Christopher Hartless
Faculty Mentor(s): Dayna Hayes Psychology
Wednesday, April 23 Heth 016 4:00 - 6:00

Excessive alcohol use and the chronic use of nicotine are associated with drastic impairments in neurological functioning. Research has shown that either binge alcohol use or chronic use of nicotine results in multi-faceted damage to the hippocampus, a brain region involved in spatial learning and memory. Specifically, this damage includes increased levels of cell death and decreased expression of cell proliferation. As alcohol and nicotine are the most commonly co-abused substances, further elaboration regarding the neural mechanisms of their combined use is critical. To that end, Sprague-Dawley rats were administered injections of a nicotine solution (0.3 mg/kg) every 8 hours for 10 days. For the final four days of exposure, rats also received intragastric intubations of an ethanol-containing diet (25% EtoH in nutritionally complete diet) on the same schedule as the nicotine injections. Brains were analyzed for Ki67 immunoreactivity, a marker of cell proliferation. Consistent with previous reports, results indicated a significant reduction in progenitor cells among animals receiving ethanol treatment. Furthermore, in keeping with established research, exposure to nicotine also resulted in significant reductions in cell proliferation. Importantly, the animals that received the dual ethanol/nicotine treatment exhibited substantially reduced numbers of proliferating cells as compared to all other groups. Thus, the dual exposure to alcohol and nicotine resulted in profound deficits to hippocampal integrity, suggestive of enhanced neurodegenerative effects when compared to single drug exposure. Therefore, individuals whom consistently report concurrent abuse of alcohol and nicotine may exhibit dramatic cognitive impairments indicative of extensive brain damage.

Psychology Poster Session

Social Anxiety and Self-Regulation after Delay

Jenna McChesney
Emma Bennett
Cynthia Wenger

Faculty Mentor(s): Niels Christensen Psychology
Wednesday, April 23 Heth 016 4:00 - 6:00

At least 10% of all college students experience a fear of social situations to the extent that it interferes significantly with their normal routine, academic functioning, or social activities including relationships. Interestingly, previous research from our lab found that socially-anxious individuals experience more self-control following a novel social encounter. A plausible explanation for this finding is that those who suffer from social-anxiety perceive novel social interactions as failures and therefore, might be motivated to restore competence on subsequent tasks. However, it is unclear whether this initial burst of motivation wears off over time. We hypothesized that those with social anxiety will experience better self-control immediately after a novel encounter than when the self-control task is delayed. To test this hypothesis, eighty-two undergraduates completed questionnaires to assess their social anxiety. They then were then assigned to one of three experimental conditions: "social-immediate", "social-delay" and a control condition. In all conditions the dependent variable (self-control) was measured as persistence on an impossible puzzle. Previous research has shown that the longer an individual persists on this impossible task, the more self-control they have. In the "social-immediate" and "social-delay" conditions, participants were asked to get to know an unacquainted student for five minutes. The only difference between these two conditions is in the "immediate" condition participants immediately completed the measure of self-control, whereas participants in the "delay" condition were not given the measure until 12 minutes after their interaction. In the control condition, participants did not have a social interaction and were only given the self-control measure. The results are discussed in terms of methodological problems and theoretical implications.

Snack attack: Does regulatory focus moderate the relationship between exposure to body images and resistance to tempting food?

Brittany Nipper
Alex Weikel
Lynesha Womble
Matthew Mathews

Faculty Mentor(s): Niels Christensen Psychology
Wednesday, April 23 Heth 016 4:00 - 6:00

Obesity is a problem in the United States, with the Centers for Disease Control reporting that, more than one-third of U.S. adults (37.5%) are obese (Ogden, 2012). One possible factor underlying this problem is self-control. The current research utilizes regulatory focus theory (Higgins, 1997) to investigate how people's eating behaviors are stimulated or inhibited by body images. Regulatory focus theory incorporates the hedonic principle by contending that, some people are more motivated to pursue reward (promotion focus) and others are motivated to avoid negative events (prevention focus). The current research proposes that regulatory focus moderates the relationship between exposure to healthy/unhealthy body images, and resistance of tempting foods. Undergraduates from Radford University (N = 60) were asked to rate 20 images that could be used in potential advertisements, with half of the participants viewing healthy body images and the other half viewing unhealthy body images. Then participants completed a questionnaire that assesses regulatory focus. During the study, pre-measured snacks were made readily available for participants, which permitted the assessment of eating behaviors. There are two hypotheses. First, if individuals are promotion focused then exposure to healthy body images decrease the amount of tempting food consumed. Second, if individuals are prevention focused then viewing unhealthy body images will lead to more resistance of tempting food.

Psychology Poster Session

Mother's milk: Effects of perinatal cannabinoid exposure on object recognition and anxiety

Matthew Ostrander **Micaela Davidow**
Faculty Mentor(s): Pamela Jackson Psychology
Wednesday, April 23 Heth 022 4:00 - 6:00

Maternal cannabinoid use is one of the most frequent drug issues during pregnancy. Perinatal exposure to marijuana has been responsible for learning deficits, especially spatial behavior (Robinson et al., 2007), as well as increases in anxiety-related behaviors (Arévalo et al., 2001). We are using Long-Evans rats from three different groups: control, yoked (malnourished) and experimental (exposed to CP 55,940 during lactation). The rats will participate in an object recognition task where the rat will be familiarized with the open-field before having objects placed in the field and moved between sessions to determine whether cannabinoids or malnourishment have any effect on the rat's spatial memory. We expect the cannabinoid and yoked rats will investigate the moved object significantly less than the control group with the cannabinoid rats investigating the novel object movement the least. In addition, increased anxiety on the task is expected in the drug group compared to the controls. This study will provide data to aid in determining the effect that maternal marijuana use on offspring while compensating with a control group of malnourished rats due to malnourishment often accompanying cannabinoid use.

Framing and Ethical Decision Making

Cecilia Smith **Timothy Chesnakas**
Ryan Bedwell **Carl-Rodney Mocarski**
Faculty Mentor(s): Steven Sutherland Psychology
Wednesday, April 23 Heth 016 4:00 - 6:00

The impact of decisions made in the face of ethical dilemmas can affect peoples' lives. These dilemmas fall on a continuum from the mundane scenarios we encounter to possible life and death situations. The ways in which situations are framed have been shown to have a significant influence on the decisions people make. The purpose of this research project is to examine the possible effects of positive and negative attribute framing on ethical decision making. Positive attribute framing emphasizes the favorable aspects of a given decision, and negative attribute framing emphasizes the negative aspects. An example of this concept is posing a gamble in terms of the probability of success (positive attribute framing), versus the probability of failure (negative attribute framing). This particular project involved two nineteen-question surveys, one with situations framed positively and the other with the same scenarios framed negatively. The surveys were distributed via Radford University's SONA system to voluntary participants, who then used a five-point Likert scale to indicate how likely they would be to take action when presented with an ethical decision. We hypothesized that situations framed as having the potential for a positive outcome would increase the likelihood of participants taking action, while those framed as having potentially negative results would decrease that likelihood.

Rate It

Lauren Stanley **Kate Elmer**
Sylvia Addison **Ashley Osborne**
Faculty Mentor(s): Steven Sutherland Psychology
Wednesday, April 23 Heth 022 4:00 - 6:00

When making decisions individuals are faced with varying levels of uncertainty. To reduce uncertainty, decision makers utilize advice from decision aids, experts, and others who have faced similar situations. Students are faced with course selection decisions and choices regarding from which professors to take those courses. Students sometimes rely upon other students' online informal evaluations about courses and professors, such as Rate My Professor. For this class project, we manipulated two factors (the overall ratings of the professors' teaching and positive vs. negative written feedback) that prior research suggest students take into account when deciding how likely they would be to select a particular professor's course. Seventy students from Radford University took part in a survey created and administered using Qualtrics. Participants read three pieces of written feedback and the overall ratings of 12 professors and stated how likely they would be to take a course from each professor. We predicted that written feedback would have a larger influence than overall ratings on students' decisions. A multiple regression analysis will be conducted to determine the how the independent variables affect likelihood judgments.

Psychology Poster Session

Childhood Victimization and Poly-Victimization in College-Aged Females

Brianna Pomeroy
Rachel Turk
Lora Wagner
Analise Roccaforte
Brittany Nipper
Marco Pomposini
Faculty Mentor(s): Ann Elliott Psychology
Thomas Pierce Psychology
Jeffery Aspelmeier Psychology
Wednesday, April 23 Heth 016 4:00 - 6:00

With a sample of 342 undergraduate females, the question examined in this study concerns the relationship between poly-victimization (i.e., high cumulative levels of victimization) and the 6 different categories of victimization measured by Finkelhor et al.'s (2005) Juvenile Victimization Questionnaire (JVQ). This correlational study uses hierarchical regression to first examine the proportion of variance in psychological distress that is accounted for by property crime, physical assault, peer/sibling, witnessed/indirect, sexual victimization, child maltreatment and poly-victimization. Measures of psychological distress include the Symptom Checklist 90-R and the Trauma Symptoms Inventory-2. Consistent with studies conducted by Finkelhor (2007) with child participants, the current study with female college participants examines whether poly-victimization contributes any significant variance, beyond that accounted for by each of the six individual categories. A first set of regression analyses revealed that poly-victimization is a significant predictor of psychological distress, beyond the proportion of distress predicted by any of the six categories of childhood victimization alone. A second set of regression analyses revealed that the categories of childhood victimization predicted very little of scores for psychological distress beyond that predicted by poly-victimization. These preliminary results are consistent with Finkelhor's studies with children and emphasize that studies which examine only one category of victimization in isolation (such as sexual abuse), rather than multiple categories simultaneously (such as the six categories assessed by the JVQ), may lead to overly simplistic and misleading conclusions about the impact of victimization on psychological distress.

Same Old Routine: Does Self-regulatory Depletion Increase the Habit-Intention Relationship for Exercise Behaviors?

Caitlin Webb
Kevin Ebrahimzadeh
Sierra Johnson
Brittney Brogan
Faculty Mentor(s): Peter Christensen Psychology
Wednesday, April 23 Heth 022 4:00 - 6:00

According to the CDC, fewer than half of American adults, aged 18 or older, are getting the recommended physical activity as defined in the Physical Activity Guidelines (CDC, 2011). Research suggests that lower levels of self-control inhibits a person's ability to persist on effortful tasks and, therefore, might partially explain some failure to maintain exercise over time. The present research examined whether past exercise frequency moderates any relationship between self-control depletion and exercise intentions. It is hypothesized that when habitual exercisers have their self-control depleted, their intentions to exercise will increase. Conversely intermittent exercisers will decrease their intentions following depletion of self-control. Undergraduates came into a campus lab and completed a measure of their past exercise behavior. Participants in the experimental group completed the Stroop word-color test, which has been shown to deplete self-control. The control group was given a simple task that did not require self-control. After completing the experimental manipulation, participants completed an exit questionnaire about their intentions of exercising in the future. If the hypotheses are supported, the research would provide additional evidence for the benefits of habits for enacting healthy behaviors.

Psychology Poster Session

Males or Females: Is There an Association Between Gender and Aggression, Victim Blaming, and Rape Myth Acceptance?

Lindsey White
Kyle Maziarski
Laura Phelps

Faculty Mentor(s): Jeffery Aspelmeier Psychology
Wednesday, April 23 Heth 022 4:00 - 6:00

The purpose of this study was to examine whether gender moderates the relationship between aggressive personality traits and victim blaming. Participants were approximately 100 undergraduate students enrolled in psychology classes at Radford University. Participants completed an online survey consisting of 85 questions concerning demographic information, aggression (Aggression Questionnaire; Buss & Perry, 1992), victim blaming (Attitudes Toward Rape Victims Scale; Ward, 1988), and rape myth acceptance (Illinois Rape Myth Acceptance Scale; Payne, Lonsway, & Fitzgerald, 1999; McMahon & Farmer, 2011). A positive association was expected between aggression and victim blaming, and rape myth acceptance, among males, but not among females.

Does the Early Bird Get the Worm?: Class Time, Study Time, and Subjective Well-Being

Lori Witt

Faculty Mentor(s): Pamela Jackson & Ryan Lingg Psychology
Wednesday, April 23 Heth 022 4:00 - 6:00

Howell, Digdon, Buro, and Scheptycki (2011) have suggested that those who choose later bedtimes, as well as later rise times, have more overall problems with behavioral self-regulation. Additionally, those who have an evening time preference tend to have personality traits such as poor self-regulation, low-stability, and high procrastination. Preckel et al. (2013) conducted research that suggested a statistically significant relationship between chronotype and academic achievement. For the present study, a survey was created in the fall of 2013 by students enrolled in a statistics course that consisted of 75 questions addressing aspects of student life, which included Komza and Stones' (1980) MUNSH scale of happiness. It was hypothesized that those students who preferred class times before noon would be more likely to feel a greater sense of subjective well-being than those students who preferred to have class after noon. It was also hypothesized that those who preferred to have class before noon would study more throughout the course of a week than those who preferred to have class after noon. The results were consistent with the researcher's hypotheses, demonstrating an association between undergraduate college students' preference for class time and their subjective sense of happiness. Additionally, the amount of time students studied was shown to be important as well, those with a preference for class before noon showed trends of studying more over the course of a week than those who had an evening preference.

Food for Thought: The Effects of Stress and Sleep Deprivation on Food Choice

Ivan Zuidhoek **Analise Roccaforte**
Paul-Michael Lowey **Jenna McChesney**
Ashley Light

Faculty Mentor(s): Jeffrey Willner Psychology
Wednesday, April 23 Heth 016 4:00 - 6:00

College students are negatively impacted by stress, sleep deprivation, and poor food choices. Prior research has shown positive correlations between sleep deprivation and preference for high calorie foods, and between sleep deprivation and stress (Guastell et al., 2006; Kilgore et al., 2013). The present study investigated the relationships among all three of these variables at the same time, with a hypothesis that high stress levels are associated with high calorie food choices, and that lack of sleep mediates the relationship between stress level and food choice. A total of 262 students registered at Radford University (193 females, 65 males, 4 of unknown gender, Mean age 19.02 years) completed a survey examining their preferences for different types of foods, the Perceived Stress Scale, an exercise questionnaire, and the Pittsburg Sleep Quality Index. Correlational analyses showed a significant positive correlation between participants' preference for high calorie food and stress levels, and a significant positive correlation between sleep deprivation and stress levels. The correlation between sleep deprivation and preference for high calorie foods was not significant, however, contradicting our hypothesis. Possible explanations for these results and some limitations of the present study will be presented.

Geology Poster Session

A Case Study Looking at the Practical Use of Lidar for Detecting Discontinuity Orientations, and a Comparison to Traditional Methods

Nicholas Aitcheson
William Wilson
Faculty Mentor(s): Skip Watts Geology
Wednesday, April 23 Heth 045 4:30 - 6:00

Light detection and ranging has developed into a viable source of collecting vast amounts of data relatively quickly. Individual points with their own spatial location are collected using a laser, and assembled into a point cloud. By identifying points which fall on the same plane in space, structural information about the rock slope such as dip and dip direction can be obtained. These properties of the slope control its stability, and the likely hood of a failure occurring. The study location of this survey was on Price Mountain, a double plunging anticline located northeast of Radford Virginia. Data was collected using both the LiDAR scanner along with more traditional hand collection methods. Data processing of the point cloud concurred using Cyclone and Split- FX software's in order to obtain the necessary spatial properties. Stereonets where produced using Rock Pack software to view the orientations of the different discontinuity sets present. Comparisons of the data obtained from both methods followed to check for accuracy and validity. The similarities between these methods show that LiDAR is an acceptable method collecting discontinuity orientation data. Limitations with the LiDAR method were also identified at our survey location and will be discussed. Using the information shown on the stereonets the structural integrity of the rock slope is inferred, and the possible failure types are identified.

Redefining Boudaries in the Neoproterozoic Lower Mount Rogers Formation Through Detailed Mapping of Rhyolite Contacts

Melissa Brett
Raymundo Balderas
Matt Sublett
Faculty Mentor(s): Elizabeth McClellan Geology
Wednesday, April 23 Heth 045 4:30 - 6:00

The Mount Rogers Formation (MRF) in SW Virginia records Neoproterozoic volcanism and sedimentation during intracontinental rifting of the eastern Laurentian margin of Rodinia at ~760-750 Ma, with the opening of the Iapetus Ocean occurring ~200 Ma later. The MRF nonconformably overlies Mesoproterozoic basement granitoids, formed during the Grenville orogeny. The MRF is divided into two distinct units; the upper MRF consists of rhyolites and ash flow sheets, while the lower MRF consists of interbedded bimodal volcanic rocks and clastic sedimentary alluvial fan deposits. Our previous mapping has focused on differentiating the stratigraphy of the lower MRF. The current project extends the previous mapping to the northeast. Abundant conglomerates around Grayson Highlands State Park become less evident to the northeast and rhyolites dominate as the outcrop belt of the lower MRF narrows into the Stone Mountain fault. This study focuses on the contacts between the upper and lower MRF, and the lower MRF and Mesoproterozoic basement. Evidence for deformation along the basement contact proves consistent with our previous interpretations of the basement-cover contact as a sheared unconformity. Between rhyolites of the lower and upper MRF we found an undescribed rhyolite, herein called the Bearpen rhyolite. This rock consists of a light to dark maroon matrix with abundant K-feldspar phenocrysts and lesser quartz and plagioclase. K-feldspar phenocrysts form unique clusters, with flow banding at the outcrop scale. This research will describe the contact relationships between the lower MRF and the Bearpen rhyolite, as well as characteristics of deformation along the contact.

Geology Poster Session

The Application of 3D Photogrammetry to Rock Slope Stability

Brian Havens
Adam Szyikowski

Faculty Mentor(s): Chester Watts Geology
Wednesday, April 23 Heth 045 4:30 - 6:00

The authors compared the accuracy, availability and viability of 3D photogrammetry when applied to structural analysis. While it is imperative to include traditional methods of data collection and analysis in the study for rock slope stability controlled by geologic structure, emerging technologies are being utilized frequently today in all aspects of geological study. Advancements in smart phones, tablet computers, cameras, and software have made possible the collection and analysis of geological structure data faster, cheaper and safer than methods available a decade ago. Having already been taught the traditional methods, the authors explored various new methods on a small scale rock slope stability project. Specifically this research explored the accuracy and functionality of 3D photogrammetric methods with regards to geological data collection and slope stability analysis. The authors shot a series of digital photographs that were uploaded into photogrammetry software capable of automatically matching points to generate a single series of overlapping photographs suitable for processing into 3D point clouds. To establish a more comprehensive comparison, small sets of photos (2-5) were selected by the researchers and matched using the software before structural analysis. The point clouds generated using this photogrammetric technique were then transferred to Split-FX software, capable of extracting strike, dip and dip directions of discontinuity surfaces that appear as planar patches within the point clouds. Results were then evaluated using RockPack III software to provide kinematic stereonet analysis of rock slope stability as controlled by the geologic structure.

Simple Direct Shear Testing Techniques for Rock Slope Stability Analyses

George Ritter
Kelsey McGee
Vic Taylor
Cameron Baumgardener
Emily Luketic

Faculty Mentor(s): Chester Watts Geology
Wednesday, April 23 Heth 045 4:30 - 6:00

To determine the shear strength parameters of cohesion and friction angle for the Price Formation of Mississippian age in Montgomery County, Virginia, simple unconventional direct shear tests were performed on both natural and saw-cut rock sample surfaces. Three structural domains were identified within a road cut along Stroubles Creek Road where rock slope stability analyses were to be performed in the Price Formation. Low normal stresses were found to exist along the discontinuities of interest allowing for direct shear testing to be performed using a machine normally used for soil testing. The natural shear test surfaces produced higher friction angle results compared to the saw-cut surfaces, as expected. The saw-cut surfaces were expected to provide lower-limit values similar to residual shear strengths. The test results were then used to perform kinematic stereonet analyses followed by safety factor calculations, together providing an overall evaluation of rock slope stability conditions adjacent to Stroubles Creek.

Geology Poster Session

A Micro-Cultural Analysis of the Introduction of Hydraulic Fracturing to the Dan River Basin, North Carolina, USA

Tess Rogers

Faculty Mentor(s): Parvinder Sethi Geology
Wednesday, April 23 Heth 045 4:30 - 6:00

The rapidly expanding industry of hydraulic fracturing has begun to show interest in devel-oping relatively small deposits of Marcellus Shale in rural areas along the eastern piedmont, such as the Dan River Basin in North Carolina. This study presents the oft-omitted, socio-economic and micro-cultural effects of introducing fracking into the Dan River Basin. Geo-logical evaluation, combined with economic overview and a survey of local opinion, consti-tute the study's findings. The prominent focus is aimed at the controversy of whether the benefits of fracking such proportionally-smaller deposits outweigh the probable and location-specific negatives that accompany the introduction of hydraulic fracturing to the Dan River Basin. Location-specific findings compared to larger scale and more established operations direct the ulti-mate results. Ideally these results will become a comparable foundation of quality research, through which areas similar in geology and demographics to the Dan River Basin can make informed decisions on the admittance of hydraulic fracturing.

Characterization of the Bearpen Rhyolite, a Previously Undescribed Unit in the Mount Rogers Formation

David Sublett
Raymundo Balderas
Melissa Brett

Faculty Mentor(s): Elizabeth McClellan Geology
Wednesday, April 23 Heth 045 4:30 - 6:00

The Neoproterozoic Mount Rogers Formation (MRF), located in the Blue Ridge of SW Virginia and NW North Carolina, represents an intracontinental rifting event that occurred ~760-750 Ma during the first of two pulses that led to the formation of the Iapetus Ocean. The MRF is divided into two parts. The upper MRF consists of the Buzzard Rock, Whitetop, and Wilburn Rhyolite Members. The lower MRF comprises bimodal volcanic rocks, including the Fees Rhyolite Member, interlayered with coarse siliciclastic deposits. Each of the rhyolite bodies in the upper and lower MRF can be distinguished by: 1) its distinct phenocryst assemblage; and 2) its textures that indicate emplacement by either flows or pyroclastic processes. Our recent mapping in Grayson County VA, reveals a distinctive, and previously undescribed, phenocryst-rich rhyolite that rests stratigraphically between the Fees Rhyolite and the upper MRF rhyolites. For its prominent exposures on Bearpen Ridge, we refer to this unit as the Bearpen rhyolite. It is distinguished by 3-5 mm bright pink K-feldspar phenocrysts that tend to accumulate in clusters and vary in amount between outcrops. Other phenocrysts are quartz +/- plagioclase. The dark gray matrix shows flow characteristics and contains dark gray clasts, which appear to be phenocryst-poor Bearpen, possibly formed by autobrecciation. Flow banding is occasionally present at the outcrop scale. Due to the position of the Bearpen between the lower and upper MRF rhyolites, a more detailed study may help to better define the contact between the lower and upper MRF.

Interdisciplinary Poster Session

Cultural Characteristics of The United Arab Emirates

Chloe Baskin
Faculty Mentor(s): James Radford International Studies
Wednesday, April 23 Heth 014 5:30 - 7:00

I will be doing my presentation at the 23rd Annual Radford University Student Engagement Forum on cultural characteristics and cultural crossing of the United Arab Emirates. My brother is currently living is Abu Dhabi and I will be visiting after graduation, and I thought this would be a great opportunity to exam the culture, and do's and don'ts of the United Arab Emirates. I'll be doing a Poster Presentation to display my research over the course of the semester. I'll be discussing greetings, communication style, gestures, taboos, and the gender issues present in the United Arab Emirates. My research style stems primarily from my anthropology class I took my junior year of college. I learned how to examine different cultures, and how not to. I'll also be providing pictures of the culture to give my audience a visual of what their values consists of. I believe this presentation will give everyone new insight on the culture, and has also doubled at helping me learn more about the area before I visit. I have been working with the International Studies advisor, Dr. Radford, throughout the semester to monitor the progress of my research. I'm very excited about my findings and I'm sure everyone will learn a great deal about how to accept other ways of life, and dispose of their own ethnocentrism. The United Arab Emirates is filled with rich beliefs and tradition and although very different from the way of life in America, it's still important to research cultures which are different from our own.

Infant Massage in Current Practice

Morgan Bohannon
Faculty Mentor(s): Sharla Cooper School of Nursing
Wednesday, April 23 Heth 014 5:30 - 7:00

Infant massage is becoming very common among caregivers. There are many physical and emotional benefits to infant massage including improved infant weight gain, relief of colic, gas, and constipation, as well as increased emotional attachment and bonding (Heath & Bainbridge, 2004). Infants who are medically unstable, such as infants on ventilators, should be provided as gentle handling as possible because massage can produce too much stimulation and cause physiologic and behavioral disorganization, which adds to the stress of being in the ICU (Browne, 2000). The benefit of massage should carefully be weighed against the risks to those infants. There are many different strokes that can be incorporated into the massage to alleviate specific health issues. Nurses can benefit from learning infant massage because they would be able to teach parents proper techniques. Nurses can teach parents how to recognize behavioral cues, so the parents will better understand the infant's needs. Nurses can support the care of infants through massage; this will help babies with physical health and psychological health. Infant massage is also important for the parents because they too can benefit, through increased emotional attachment and alleviation of postpartum depression (Reese, 2006). Through this evidence-based research project, I have concluded that infant massage should be incorporated into a regular routine because it can be beneficial for infants and their parents.

Interdisciplinary Poster Session

Appalachian Teaching Project: Sustaining the Community Mind for Long-term Community Resiliency: Appalachian Values Assessment in Floyd County, Virginia

Kasey Campbell **Victoria Curtis**
Taylor LaPrade **Langley Looney**
Sarah Wood **Ryan Woodson**
Misty Daniels **Charles Salyers**
Faculty Mentor(s): Melinda Wagner Sociology
Wednesday, April 23 Heth 014 5:30 - 7:00

Floyd County Virginia's Land Policy Task Force found that "What Matters Most" to Floyd County residents was "preservation of rural character, Appalachian heritage, and community identity." This Appalachian Teaching Project (ATP) is researching what residents want to preserve and studying perceptions of potential threats to those values. Recent social science research has highlighted "narrative" and the identification of "core values" as critical elements that help sustain communities affected by cultural and economic change and persistent negative stereotyping. Better understanding Floyd County's history and heritage (and defining what residents mean by that) will buttress a foundation for a positive trajectory. In the words of the Floyd County Development Director, "it would allow for going beyond simply reacting to outside stressors as they arise. From a land planning and economic perspective, it would be valuable to know these answers." The Project and the course in which it is embedded is teaching student researchers the skills to become more effective community leaders who understand the importance of community values. As globalization and culture change continue apace in the region, long-term sustainability requires sophisticated culturally-aware leadership with the skills to assess the strengths and weaknesses of their communities and to predict the effects of changes. These future leaders will "strengthen the capacity of Appalachian people to compete in the global economy," in the words of the ATP sponsor, the Appalachian Regional Commission.

Spatial Distribution of Artifacts and Ecofacts at a 13th Century Late Woodland Period Site

Thomas Dows **Daniel Riegel**
Faculty Mentor(s): Charles Boyd Anthropological Sciences
Wednesday, April 23 Heth 014 5:30 - 7:00

In the summer of 2013, the Radford University Archaeological Field School conducted a week-long investigation of site 44PU72 on the Radford Army Ammunition Plant in Pulaski County, VA. The goal of this project was to better define the boundaries and integrity of this 13th century Late Woodland site. This poster presents the results of the extensive shovel tests and test units excavated in 2013 and previously in 2011, showing the spatial distribution of recovered lithic and ceramic artifacts, bone and shell ecofacts, and the extent of the site midden.

Physical Therapy: From Leeches to Robots

Hannah Duff
Faculty Mentor(s): Carolyn Quinn Interdisciplinary
Wednesday, April 23 Heth 014 6:00 - 7:00

The medical world is becoming even more technology-based in order to facilitate convenience for both doctors and patients. This push for new tools in the health society is enabling for the rehabilitation stage of treatment to become more virtual as well. Physical therapists are beginning to use laser therapy, robotics, and even video games in order to treat patients in their rehabilitative state of an injury. Many ethical factors come into consideration as technology becomes more prominent in the medical domain. Physical therapists must be sure that the new use of technology is still in the patient's best interest. Robotics is allowing patients to be guided through their treatment, especially when the patients are not strong enough to support themselves. Video games are popular in society, and now physical therapists are using them to enhance restoration processes. Gaming systems such as Wii and Dance Dance Revolution are proving to be helpful in terms of treatment of injuries. Low-level laser therapy is proving to decrease pain intensity during physical activity after treatment. This type of technology is sweeping therapeutic medicine. Technology is rocking the world in many aspects, and it is now making its way into physical therapy. Patients can use technology to regain movement and recuperate strength. Low-level laser therapy, robots, and video games are just several ways in which patients are using technology to do so. New mechanisms are proving to be both helpful and motivational in bringing variation to health careers like physical therapy.

Interdisciplinary Poster Session

Communications: Cultural Interactions

Melissa Foor
Faculty Mentor(s): Lisa Baker-Webster School of Communication
Wednesday, April 23 Heth 014 5:30 - 7:00

This study is based on my experience as a volunteer in Ghana, Africa. The purpose of this study is to critically analyze my experience in Ghana as an American female relating to intercultural communication. It also examines the diversity issues I observed from an intercultural communications perspective. This study emphasizes the importance of volunteerism in today's society not only as a means to better the lives of others but to enhance the life of the volunteer, as well. In preparation for this study, while volunteering in Ghana, I kept a journal to record my experiences interacting with Ghanaian people. While this study is primarily based off of my own auto ethnography it also includes research from credible outside sources such as articles and interviews.

Water Birth in Current Practice

Kayla Gardner
Faculty Mentor(s): Sharla Cooper School of Nursing
Wednesday, April 23 Heth 014 5:30 - 7:00

Water is important in every aspect of life from birth through death. Our bodies require it to function properly and water is important in the social and professional lives of many groups of people. Pregnancy and birthing are no exceptions. Water has been used during pregnancy and the birthing process throughout time. In the past as society has progressed the use of water in the birthing process has decreased, however in the past few decades more women are becoming interested in learning about the use of water during pregnancy and birth (Odent, 2000). As with any field of medicine the most modern and evidenced based practices are sought after. While the use of water during pregnancy and labor is not a new idea it is becoming popular and many mothers are interested in incorporating it into their personal pregnancy and labor experience. It is important that medical professionals are knowledgeable about this technique so that they are able to educate their patients about this technique and allow them to make informed decisions. There are many benefits associated with the use of water during pregnancy and labor. There are also some concerns associated with this birthing technique. In this presentation I will introduce these benefits and concerns as well as personal recommendations for incorporation into current practice.

An Examination of Chanel Advertisements from 1950-1990

Ivette Herrera
Faculty Mentor(s): Tammy Robinson Interior Design and Fashion
Wednesday, April 23 Heth 014 5:30 - 7:00

Chanel is a global brand that is known for their high-end luxury products. The company's marketing and advertising is considered to be cutting edge and sophisticated. Therefore, it was determined an examination of the Chanel company and their advertising could be of interest to those in the marketing field. The objectives of this study are to research and examine Chanel advertisements in Harper's Bazaar magazine from the years 1950 to 1990. Harper's Bazaar was chosen because this magazine is a high-end magazine that focuses on the latest fashion products and trends. The research will look at how the advertising and marketing of Chanel products has changed through the selected years. The following information will be gathered: background on the Chanel company, influence of Chanel on the fashion industry, advertising and marketing of designer brands, and relevance of branding to the marketing of products. A classification instrument was developed and used as a guide in the examination of the Chanel ads. The instrument focused on the design, layout, and message of the ads. The September issue of Harper's Bazaar from every five years was selected for the study. The data will be compiled and analyzed to determine common elements and themes. Results will also be examined for similarities and differences. Descriptive statistics and frequencies will be used in the analysis.

Interdisciplinary Poster Session

Perceptions of the Criminal Justice System: Law and Order

Olivia Hilton
Faculty Mentor(s): Jack Call Criminal Justice
Wednesday, April 23 Heth 014 5:30 - 7:00

A collaboration of secondary and primary research to verify the idea that television, specifically crime television, shapes the mindset of its audience. When an audience member has little to no previous experience with the criminal justice system they are more likely to take what they see on the television as an accurate account. The 22 episodes of Law and Order during its second season in 1991 were analyzed based on positive and negative impressions of the police, prosecution, defense, and judges within the storyline.

Exploring the Effect of Mental Health Issues on State Level Gun Homicide and Suicide

Cheryl Johnson
Faculty Mentor(s): Nicole Hendrix Criminal Justice
Wednesday, April 23 Heth 014 5:30 - 7:00

The current study explores the geographic pattern of firearm death, and more specifically, on homicide and suicide. While the geographic typology does play a significant role in this relationship, it would be unwise to state that it is the sole cause. It has been suggested that increased firearm sales could result in a higher death rate; however, little research examines the complex relationship between firearms and issues of mental health. A more complete understanding as to the relationship between firearms, geography, and gun death serves as the ultimate goal for this and future research. Additional research into the interconnectedness of geography and gun-related homicides and suicides need to be conducted in order to gain a better understanding of this concept. The current study examines data from the National Instant Check System (NICS) as well as state level data on gun death drawn from the Centers for Disease Control (CDC), and mental health information from the Substance Abuse and Mental Health Services Administration (SAMHSA).

Technological Advancements on the Diagnosis and Treatment of Spina Bifida

Corbin Martin
Faculty Mentor(s): Carolyn Quinn English
Wednesday, April 23 Heth 014 5:30 - 7:00

Technology is always constantly advancing in many fields of study but in particular the medical field. With this advancement in technology, the treatment and diagnosis of spina bifida has greatly increased. Spina bifida is a defect that forms when the neural plate drops and the neural tubing fails to form properly. This incomplete formation of the neural tube leads to a host of problems. Most people who suffer from spina bifida tend to have paralysis, ranging from slight paralysis to severe paralysis, and mental retardation. Paralysis is usually do to the exposure of the nerves and spinal cord to the amniotic fluid in the sac through the incomplete formation of the neural tube. Mental retardation is also due to this formation. Spinal fluid will leak through the incomplete formation in the tube and result in the hindbrain dropping to stop the excess of spinal fluid that is leaked. This drop of the hindbrain causes a buildup of spinal fluid on the brain resulting in mental retardation. There is no cure for spina bifida directly. Through technological advancements doctors have been able to treat and diagnosis spina bifida more efficiently and have found a way to perform surgery in utero. Focusing on these advancements and how spina bifida patients have benefited long term we know that technology has made living with spina bifida a more comfortable life despite these daily struggles.

Interdisciplinary Poster Session

How Do Elementary Students Experience Skype Sessions in Making Real World Connections to Barrow, Alaska?

Erica Martin
Taylor Hardwick
Victoria Holdaway
Faculty Mentor(s): Mythianne Shelton Physics
Wednesday, April 23 Heth 014 5:30 - 7:00

This presentation discusses the research findings relating to how elementary students experience Skype sessions in making real world connections to Barrow, Alaska. The researchers wanted to learn if Skype was a resourceful tool that could be used in classrooms to help students experience the world around them. This study involved two classes of fifth grade students. The research focused on how the students initially felt about science and what they thought a scientist looks like. Prior to Skype sessions being conducted from Barrow, Alaska, the participating students were asked to draw a picture of Cinderella so that the researchers could investigate the participants' understanding of the Inuit culture.

Barriers and Service Delivery in Rural Communities: Considerations for Working with Older Adults in Rural Communities

Danielle Moore
Faculty Mentor(s): Elizabeth Deskins School of Social Work
Kerry Vandergrift School of Social Work
Wednesday, April 23 Heth 014 5:30 - 7:00

Service delivery in rural communities has been a continual problem throughout the years. Care providers and partners who strive to reach this population face layers of barriers in their mission to provide the services and resources in demand. Through a qualitative research study, information is gathered by a ten question interview. This interview is given to full-time professionals that provide a service, information and/or assistance to older adults, 60 years and older, on a daily basis. Conducting an interview with these professionals will give insight to the barriers and challenges that are faced in the service delivery in the New River Valley (NRV), VA. Information from rural areas pertaining to older adults is scarce, especially for our own community and the unique barriers that may be faced in the NRV. The professionals who work on a daily basis with this particular population have a wealth of knowledge to be gained. Their experiences in working with the elderly population from rural areas have been treasured and sought out within this study in hopes to improve the future of service delivery for older adults living in rural communities. I have learned through this study that there are a variety of overlooked barriers within the NRV service delivery. Yet, these barriers can be overcome with the coordination of professionals giving a "voice" for older adults in rural communities.

Deer Antlers in Treatments

Hunter Westmoreland
Faculty Mentor(s): Carolyn Quinn English
Wednesday, April 23 Heth 014 5:30 - 7:00

Deer antlers have been used for thousands of years for medicinal purposes, and have gained in popularity of the past few years. The common deer antlers used in medicines come from the Red and Sika deer, native to china where they were first used. Antlers grow at a rate of over three quarters of an inch each day and are the only other thing know to grow as fast as a cancerous tumor. Factors that influence antler growth are age, testosterone, sunlight, nutrition and genetics. Today two parts of the antler are used to produce medicines or solutions for treatments, antler velvet and base. Prior to this only velvet was used due to the bases hardness and difficulty to extract minerals and properties. Current studies using antlers for medicine have been tested on breast cancer, osteoporosis, bacteria, viruses and fatigue. Suspensions injected into breast tumors of mice showed reduction in size and weight, and seemed to get rid of the bad epithelial cells in the glands. The studies done on osteoporosis proved to increase bone mass and strength along with declining the effects of the disease. The test done on bacteria showed reduction bacteria growth by measuring zone of inhibition. All of the test conducted and results collected came back positive giving more reason for scientists and medical professionals to continue research on antler properties.

Biology Oral Presentations

Intraspecific and interspecific display behaviors by the crested anole (*Anolis cristatellus*) on St. John, U.S. Virgin Islands

Kelsey Wessman
Faculty Mentor(s): Jeremy Wojdak Biology
Karen Powers Biology
Wednesday, April 23 Bonnie Auditorium 5:00 - 5:15

The island of St. John, in the US Virgin Islands, has three different species of anole lizard (*Anolis cristatellus, A. stratulus, and A. pulchellus*). The Puerto Rican crested anole (*A. cristatellus*) is the largest species of the three, and thus I hypothesized that it would be the dominant when confronted by individuals of the other two smaller species. Also, I was interested in 1) how this species would act when it confronted another of the same species, 2) whether body size would predict dominance behavior, and 3) if the display behaviors (dewlap extension, pushups, tail wagging) would be the same as when they confronted different species. I spent three days (March 13 – 15, 2014) observing *A. cristatellus* respond to intra- and interspecific challenges. I used a video camera to record any interactions between lizards (n=25). I recorded each lizard for ten minutes and then moved on to the next individual. I recorded how many pushup, dewlap displays, and tail wagging events happened during those ten minutes. Also, I noted whether the observed anole would fight or flee from the other anole. Conclusions await further data analysis.

Analysis of *Agave missionum* population density and plant condition after known introduction of the agave snout weevil (Scyphophorus acupunctatus).

Allyse Fritz
Matti Hamed
Charles Ryan
Faculty Mentor(s): Jeremy Wojdak Biology
Christine Small Biology
Wednesday, April 23 Bonnie Auditorium 5:15 - 5:30

Agave missionum, commonly called corita, maguey, or the century plant, is found only on Puerto Rico and the British and US Virgin Islands. The agave produces nectar that provides a food source to local birds, insects, and bats. The plant is also used by locals as an ornamental plant, Christmas tree, and historically as a source for strong fibers. Previous studies indicate *A. missionum* populations are in decline, probably because of the invasive agave snout weevils (Scyphophorus acupunctatus). Snout weevils burrow near the base of the plant and promote bacterial growth that turns plant material into a brown paste on which their larvae feed. We sought to investigate the current abundance and condition of *A. missionum* plants on St. John in the US Virgin Islands. Data were collected on Yawzi Point, Lower Lameshur Bay, and Upper Lameshur Bay trails near the Virgin Islands Environmental Resource Station. Each area represented one of three distinct habitats: arid scrub/shrubland (Yawzi Point), disturbed dry forest (Lower Lameshur), and intact dry forest (Upper Lameshur). In order to detect the presence of weevils, insect traps were placed near the base of randomly selected agave plants. Size of living plants was determined by measuring leaf diameter (m), stalk height (cm), and diameter of the stalk base (cm) of living plants. Size of dead plants was determined by measuring the diameter of the remaining stalk base. We also determined the density of plants in large plots along each trail. Hemispherical canopy cover photographs were taken to determine if *A. missionum* condition depended on canopy openness. We observed no visual evidence of weevils, and in general plants were in good condition. Statistical analyses of results are still in progress.

Biology Oral Presentations

Small Indian mongoose (*Herpestes auropunctatus*) behavior and population structure on St. John, US Virgin Islands

Alex Pearce
Nikohl Miller

Faculty Mentor(s): Karen Powers Biology
Wednesday, April 23 Bonnie Auditorium 5:30 - 5:45

The invasive small Indian mongoose (*Herpestes auropunctatus*) was introduced to the Virgin Islands to exterminate the black rat. Instead, they became a predator of endemic anoles, birds, and sea turtles. Over a four day period in March of 2014, we live trapped on St. John, U.S. Virgin Islands, using Tomahawk live traps for behavioral surveys of mongoose, setting them in 10-m intervals at three locations on the island. At each trap site (N=23), two traps were set-up in different formations: L-shaped, parallel, and straight-line with openings facing away from each other, to determine if trap orientation increases or decreases trapability of one or two mongoose in the paired traps. We also set trail cameras at each trap site to take real-time pictures of mongoose trapping and subsequent interactions. Thirty-eight individual mongoose (25 male, 13 female), were captured in approximately 90 hours of trapping, with 26 recaptures observed. Of those captures, 52 were caught singly in traps, and 12 were captured in paired traps. Twenty-two camera sites were functional throughout the study, and depicted interactions between mongoose individuals and between mongoose and invasive black rats (Rattus rattus). Using chi square analyses we will determine if any of the three trap formations were more successful than the others either overall or at catching two mongoose simultaneously. Also, unexpected changes in the mongoose population, due to recent removal trapping efforts in the area, will allow us to look at demographic shifts (age structure and gender ratios) when compared to previous trapping efforts.

Monitoring the status of Gray bats (Myotis grisescens) in Virginia, 2009-2013, since the onset of White-nose Syndrome

Brenna Hyzy

Faculty Mentor(s): Karen Powers Biology
Wednesday, April 23 Bonnie Auditorium 5:45 - 6:00

The gray bat (Myotis grisescens) is a federally endangered species whose summer colonies occur throughout the upper Tennessee River Basin. Given the advance of White-nose Syndrome (WNS) into the Commonwealth in recent years, we initiated yearly surveys in 2009 to monitor the health of known populations. In 5 years of surveys, we examined 2,496 grey bats at 5 sites. For each bat, we calculated body mass index (BMI; length of forearm/weight) as a measure of relative health, and photographed wings (2010-2013 only) to estimate ectoparasite mite (Spinturnix banksi) loads. We also recorded age (adult/juvenile) and sex of each individual bat. Using these measures, we examined both BMI and parasite loads across sex and age groups, and examined trends across sites and years to document any progression of WNS. We found no difference in BMI across sites or years, and only weak trends between BMI and ectoparasite loads. Preliminary analysis of our entire dataset suggested that juveniles in the population declined post-WNS (2012-2013). However, when limiting our dataset to bats that we could definitively determine age through photo analysis, the juvenile trend was not supported. During the time of this study (Aug-Sept), accurate determination of age can only be obtained through photo analysis, and standardization of photo taking in the field needs to occur to avoid loss of crucial data. Continued monitoring of this species is required to track its ongoing response to WNS in this region.

Biology Oral Presentations

An investigation of intraspecific behavior in the pearly-eyed thrasher, *Margarops fuscatus*

Tanya Schulz **Emily Clark**
Faculty Mentor(s): Jeremy Wojdak Biology
Wednesday, April 23 Bonnie Auditorium 6:00 - 6:15

The pearly-eyed thrasher, *Margarops fuscatus*, inhabits most of the Caribbean, Puerto Rico and the Bahamas, and has distinct white rings around its piercing black eyes. This bird feeds on fruits, insects, lizards, and the eggs and nestlings of other birds. M. fucatus is known to be aggressive in nature; males have been observed killing other male opponents over territory. We wanted to further explore the extent and context of intraspecific aggressive behaviors among pearly-eyed thrashers. Over the span of two days, on the island of St. John in the U.S Virgin Islands, we observed the pearly-eyed thrasher at VIERS (Virgin Islands Environmental Resource Station) and the surrounding trails. We quantified "aggressive" behaviors such as chasing or flying at other birds, and "peaceful" behaviors included feeding near conspecifics and communicating vocally. Other behaviors noted were cleaning and hopping near the focal bird. We performed focal observations, in the morning and afternoon, on 75 birds either alone or in the vicinity of two or more birds for ten minutes, or until the focal bird flew from sight. Observed behaviors will be analyzed to see if the pearly-eyed thrasher is generally aggressive or conciliatory when confronted with others of the same species, particularly while feeding.

Habitat and depth preference of adult and juvenile *Strombus gigas* in Greater Lameshur Bay, St. John, US Virgin Islands.

Kristy Galloway **Timothy Hartless**
Michelle Maurer **Timothy Stevenson**
Faculty Mentor(s): Jeremy Wojdak Biology
Wednesday, April 23 Bonnie Auditorium 6:15 - 6:30

Stombus gigas, a marine gastropod commonly known as the queen conch, has long been desired for both its meat and its shell for the tourist trade, leading to overfishing and declines in abundance throughout the Caribbean. Therefore, in 1990, the species was placed under international protection from over harvesting, by implementing limits of the number and size of conch that can be harvested per person per day. We investigated the abundance, size distribution, and habitat preferences of the queen conch in Greater Lameshur Bay of St. John, US Virgin Islands. Data was collected in both morning and evening in both sea grass and sand habitats. We recorded the water depth where each individual was found, the habitat type, and the animal's shell length. We also noted the proportion of conch shells occupied by *S. gigas*, by hermit crabs, or that were empty. We expected to find a higher density of conch found in the sea grass due to better supply of food and shelter from predation. Also, we also expected juveniles and adults to have the same habitat preferences. Because the population is subject to harvesting of large individuals (>22.9cm), we expected a size distribution skewed towards younger, smaller individuals with few mature adults.

Stress as a modulator of immune function and sickness behavior in Passer domesticus

Dylan McDaniel
Faculty Mentor(s): Jason Davis Biology
Wednesday, April 23 Bonnie Auditorium 6:30 - 6:45

In response to an external stressor, the Hypothalamic-adrenal-pituitary (HPA) axis releases glucocorticoids (GCs), ostensibly in order to allow the animal to better cope with that stressor. The primary GC for birds is known as corticosterone (cort). During a stress response, various systems within the animal are affected depending on the length of the response. The immune response in particular has been suggested to be sensitive to stress and can be either up regulated or down regulated. Chronic, or long term, exposure to stress has been shown to down regulate the immune response, whereas acute exposure has been shown to cause up regulation. Lipopolysaccharide (LPS) is a component of the cell wall of gram-negative bacteria and is commonly used in the lab to stimulate the immune system. We hypothesized that house sparrows pretreated with cort and then given LPS would have a weaker immune response and less sickness behaviors than birds given LPS alone. After comparing the change in the heterophil:lymphocyte (H:L) ratios of different treatment groups, we found that birds pretreated with cort and then given LPS, actually had a stronger immune response than birds given LPS alone. However, birds given cort without LPS did in fact have a weaker immune response.

Biology Oral Presentations

Mutagenic Analysis of the Oligomerization of E. coli β-glucuronidase

Gina Burchett **Charlie Folsom**
Faculty Mentor(s): Kimberly Lane Chemistry
Wednesday, April 23 Bonnie Auditorium 7:00 - 7:15

β-glucuronidase is an enzyme that is present in many organisms. Deficiencies in the human form of β-glucuronidase can lead to the onset of Sly Syndrome, a lethal disease that results in aggregation of glycosaminoglycans causing organ damage; this disease has no current treatments. β-glucuronidase is a homotetramer that has an active site on each of its monomers. Previous studies have exhibited evidence that a stable dimer of the enzyme may exist. There are three possible dimeric forms of the enzyme, and it is not known which of these is observed. Our current study focuses on the subunit interfaces between the monomers, identifying possible point mutations to decrease electrostatic interactions to disrupt oligomerization, in an effort to identify the most stable dimeric form. WinCoot protein visualization software was used to locate salt bridges and interactions between subunits to predict feasible mutations for laboratory testing. We have designed several mutations, targeted to make the two possible dimeric forms of the enzyme which include E6A, E11A, K13A, R61A, Y517A, and D519A. These mutants will be tested by SDS-PAGE and native gels to determine subunit associations and enzymatic activity. Molsoft ICM-Pro modeling software will be used to determine the thermodynamics of subunit oligomerization to predict future possible mutants. A stable dimer could illicit further understanding of this enzyme that may be implemented in future cancer and other disease research.

Mutagenic characterization of the bacterial loop of E. coli Beta-Glucuronidase

Skye Hickling **Hannah Gullickson**
Faculty Mentor(s): Dr. Kimberly Lane Chemistry
Wednesday, April 23 Bonnie Auditorium 7:15 - 7:30

Beta glucuronidase is an enzyme found in many organisms. The bacterial form of beta glucuronidase is associated with the severe side effects experienced during chemotherapy with the drug CPT-11. CPT-11 is a pro-drug for SN-38, a topoisomerase inhibitor. In the liver, the body converts SN-38 to the less-toxic SN-38G. The glucuronide group on SN-38G tags the molecule for excretion, releasing the molecule into the intestines. In the large intestines, the bacterial form of beta glucuronidase cleaves off the glucuronide group on SN-38G, reactivating SN-38 and causing gastrointestinal problems for cancer patients. Recently a new generation of inhibitors targeting the bacterial form of the enzyme has been discovered. These molecules interact with a loop found near the active site of the enzyme; this loop has been shown to be necessary for inhibitor binding. Phenylalanine in position 365, which is located in the bacterial loop, makes a direct stacking interaction with these inhibitors. To determine the importance of this amino acid in the binding of these inhibitors, this residue will be mutated to alanine, tyrosine, and leucine; these mutants will be tested for inhibitor binding. The results of this experiment will be used to gain insight into the binding of this family of inhibitors and will hopefully guide future structure based drug design.

Expression of Arsenic Resistance Genes in Environmental Bacteria

Gavin Smith **Nate Frisch**
Faculty Mentor(s): Georgia Hammond Biology
Wednesday, April 23 Bonnie Auditorium 7:30 - 7:45

Our study uses bacteria isolated from an abandoned arsenic mine in Floyd County, VA, and focuses on genetic characterization of their arsenic resistance genes. Using PCR analysis we have previously determined that each of the bacteria that we have isolated from our study site have the gene arsC that converts arsenate to arsenite. Arsenate and arsenite are the two abundant forms of arsenic in the environment. The arsenate reduction reaction provides the bacterial cell with the metabolic capability of oxidizing organic compounds for energy production. We examined the expression of the arsC gene using both PCR for qualitative expression and Real-Time PCR to obtain quantitative expression data. Preliminary results using both methods indicate that in cultures raised without arsenate, there is little to no arsC expression. In cultures raised in the presence of microgram quantities of arsenate, we see high levels of arsC expression, relative to other housekeeping genes. Our data contribute to the understanding of the role of environmental bacteria in the distribution of toxic forms of arsenic.

Biology Oral Presentations

Identifying bacteria that live in high concentrations of arsenic

Jessica O'Grady
Michelle Donahoe

Faculty Mentor(s): Georgia Hammond Biology
Wednesday, April 23 Bonnie Auditorium 7:45 - 8:00

Bacteria are exceedingly abundant and diverse in the environment and most have not been identified. Our research focus is on characterizing and identifying bacteria capable of metabolizing arsenic, a heavy metal. We obtain soil samples from an abandoned arsenic mine in Floyd County, Virginia. Erosion at this site has caused arsenic to leach into a headwater stream nearby, potentially contaminating downstream river systems. According to our previous research, bacteria isolated at this site are able to live in arsenic rich environments because they contain arsenic resistance genes, and these genes are expressed at high levels when pure lab cultures of bacteria from the site are grown in arsenic. Our goal is to characterize these bacteria down to the genus and if possible, species level using the 16s rRNA gene. This gene sequence is highly conserved among bacteria; however, it contains variable regions with point mutations that can be used for identification purposes. To accomplish this, we isolated DNA from pure cultures of the bacteria, amplified the 16s rRNA genes with a PCR reaction, purified the PCR product, and sequenced the DNA. We then put the sequences into databases to compare our sequence data with known ribosomal subunit sequences of identified bacteria. Our results contribute to knowledge regarding bacteria capable of surviving in environments containing the heavy metal, arsenic.

Identification of Environmental Bacillus

Dylan McKnight
Vincent Gentilcore

Faculty Mentor(s): Georgia Hammond Biology
Wednesday, April 23 Bonnie Auditorium 8:00 - 8:15

Bacteria are normally identified using the DNA sequence of the small subunit rRNA gene. Many environmental Bacillus species cannot be identified with this method. In our study we focused on methods to identify members of the genus Bacillus using specific genes. Bacillus species have a number of genes devoted to making endospores when growth conditions become unfavorable. These genes are conserved and unique to the Bacillus genus. Using DNA sequences from Bacillus subtilis, we have developed PCR primers for endospore-specific genes. Our goal is to use these primers in PCR reactions to identify unknown environmental Bacillus.

Development of a Real-Time Bacterial Killing Assay

Jordan Hamden

Faculty Mentor(s): Joy Caughron Biology
Jason Davis Biology
Wednesday, April 23 Bonnie Auditorium 8:15 - 8:30

A better understanding of the immune systems of competing species could give us insight as to why invasive species seem to be able to adapt to new environments so readily, and allow us to determine if a communal species has a stronger immune response than that of a non communal species. The methods currently used for determining immune responses (phytohemagglutinin assay (PHA) and bacteria killing assays (BKA)) are problematic and limited. We have developed a new BKA assay that can accurately and efficiently assess immune responses by exposing growing bacteria to the antibodies and complement contained in blood plasma and measuring that growth in real time using optical density. Briefly, fresh plasma is introduced to early stationary phase Escherichia coli (1x106 (CFU)/mL) suspended in 0.85% NaCL in a 96-well plate. This mixture is incubated at 37°C and 500rpm for one hour before reducing the pH to 4 with HCl in order to stop the bacteriocidal activity of complement and antibodies in plasma. The pH is subsequently neutralized using KOH just prior to subculturing the E. coli into a new 96-well plate containing nutrient broth only. The subcultured E. coli are allowed to grow (37°C, 500rpm) and their optical density (650 nm) is monitored using a plate reader. In principle, the more bacteria killing caused by complement and antibodies in plasma, the longer it will take to observe growth in the E. coli. In contrast to previous BKAs our version takes a relatively short amount of time to conduct, is cost effective, allows for statistical analysis, and is useful for a wide range of vertebrates and invertebrates.

Arctic Geophysics Oral Presentations

Sea Ice Thermodynamics and Temperature-Measuring Equipment

Jessi Basham
Jesse Dodson
Faculty Mentor(s): Rhett Herman Physics
Wednesday, April 23 Heth 044 6:00 - 6:20

This talk will detail the thermodynamic properties that led to the creation of "Whistler" as well as describe the inner workings of the device itself. A simplistic thermodynamic model of heat transport suggests that thinner ice over relatively warm seawater will lead to more heat being transferred through the ice. This leads to the assumption that thicker ice will have a lower surface temperature while the thinner ice, which is closer to the seawater, will have a noticeably higher temperature. Whistler is the name given to the device created to measure the ambient temperature of the air above, and the temperature of a small section on the surface of the ice. It was designed by Dan Blake of both the Southwest Virginia Governor's School and Radford University. The Whistler unit incorporates a custom Arduino microcontroller board, an ambient temperature sensor, and an IR temperature sensor mounted to a mobile SmartCart™. An odometer wheel that could be read by Whistler was designed and fabricated based on neodymium magnets and a Hall Effect magnetic field sensor. This allowed the Arduino board to log the horizontal locations along the line at which the temperature data were obtained. The temperatures were analyzed to test for a possible correlation of surface temperature and sea ice thickness.

Data Collection and Analysis with Whistler

Cameron Baumgardner
Ashley Jordan
Faculty Mentor(s): Rhett Herman Physics
Wednesday, April 23 Heth 044 6:20 - 6:40

In our Arctic research we postulated that the warm water beneath the Arctic sea ice would lead to a higher temperature over thinner ice and a lower temperature over thicker ice. This talk will detail the collection and analysis of the temperature of both the surface of the ice and the air temperature right above the ice. A home-made device nicknamed Whistler was used to record these two temperatures, as well as the horizontal location of the data obtained. We discovered that a number of issues arose with the data collection. These included the fact that footprints affect the data by leaving a thermal "afterimage" and thus the operator would walk beside the Whistler cart as a precaution. Shadows cast from the uneven ice also affected the data. We analyzed the data using a spreadsheet, calculating the average temperature of 30 data points obtained at a spot on the ice approximately 25cm in diameter. These graphs can be compared to models of the ice obtained with resistivity surveys, as well as with ice drill data. This was used to determine whether or not the surface temperature of the ice correlates with the thickness of the ice. The correlation between surface temperature and ice thickness could potentially be useful because a simple thermal imager flown over the ice may be able to quickly determine ice thickness.

How Do Elementary School Students Experience Skype Sessions in Making Real World Connections Relating to Barrow, Alaska?

Erica Martin **Taylor Hardwick** **Victoria Holdaway**
Faculty Mentor(s): Mythianne Shelton Physics
Wednesday, April 23 Heth 044 6:40 - 6:55

This presentation focuses on the scientific research experiences of elementary school student teachers from Radford University. The research concentrated on how elementary school students experience Skype sessions in making real-world connections to Barrow, Alaska. The Quarterly Review of Distance Education states, "The human brain processes information more effectively through short, focused lectures, followed by engaging activities that allow for reflection" (Kovach & Revere, 2011). Electronic programs such as Skype are tools teachers can use to ensure their lessons fall under this category. The student teachers conducted a two-week long study to evaluate the changes of the sea ice, communicate with their students via Skype, and evaluate the affects of the Skype sessions on classroom instruction. Collaboration experiences such as this have lasting advantages for both the investigators and the students involved by raising educational aspirations relating to science.

Arctic Geophysics Oral Presentations

Using an Ohm Mapper resistivity array in Barrow Alaska: equipment and data modeling

Melissa Brett
Nicholas Aitcheson

Faculty Mentor(s): Rhett Herman Physics
Wednesday, April 23 Heth 044 7:00 - 7:20

The OhmMapper is a capacitively coupled electrical resistivity array used in a recently completed sea ice research effort near Barrow, Alaska. The data obtained by the OhmMapper may be used to construct a cross sectional image of the electrical properties of the sea ice. This image may be refined to create a realistic cross sectional image of the ice itself in the manner of a medical CT cross section. This technique is shown to be particularly useful for sea ice studies due to the large contrast between the resistivity's of the overlying sea ice and the saltwater beneath. This allowed our research group to construct approximate cross-sectional images of the sea ice in the Chukchi Sea, just offshore of Barrow. These images revealed the thickness, or rather the surprising thinness, of the sea ice in a number of locations. This talk will discuss the operation of the OhmMapper, and how the geometry of the OhmMapper's components led to a number of challenges that the research team had to overcome. The abilities and limitations of the equipment will be presented. Two primary pieces of software, Res2dinv and MagMap2000, were used to process the raw data. The benefits, drawbacks and limitations of the software will be discussed, including illustrative examples of the output of each piece of software. Final images will be presented showing attendees the structure of the sea ice made from our surface measurements.

Troubleshooting Resistivity and Thermal Scans

Andrew Cohen

Faculty Mentor(s): Rhett Herman Physics
Wednesday, April 23 Heth 044 7:20 - 7:30

This talk aims to explain the data collection process of the OhmMapper capacitively coupled resistivity system and the challenges that the research team had to overcome. Some of the issues faced on the arctic sea ice were the low temperatures that caused hardware failures, batteries draining much quicker than in a warmer climate, and the OhmMapper transmitter and receiver cables losing contact with the ice due to the rough surface. This last issue seemed to have a particularly clever solution to this particular problem through the implementation of the "Swifter." We also deduced which of the 5 receivers and 12 batteries were more or less temperature sensitive through a careful process of elimination. Finally, we discovered through data analysis that the unexpectedly thin ice itself was the main source of data loss. We attempted to correct for this by moving further out on to the ice. The problems that were encountered over the two week period were overcome; however, it did take a toll on the amount of usable data obtained.

How Do Elementary Students Experience Skype in Making Real World Connections to Barrow, Alaska?

Taylor Hardwick
Victoria Holdaway
Erica Martin

Faculty Mentor(s): Mythianne Shelton Physics
Wednesday, April 23 Heth 044 7:30 - 7:45

This presentation focuses on how a Radford University elementary student teacher experiences scientific research and how those experiences can help foster K-12 students' understanding of research being conducted in Barrow, Alaska. During a two-week research study of changes in sea ice, a student teacher and a science educator participated in literature and science research activities while communicating with students via Skype. The presentation will also highlight the influence of conducting Skype sessions on the books read by students.

Arctic Geophysics Oral Presentations

Software Modeling OhmMapper Data with Res2DMod

Sarah House
Faculty Mentor(s): Rhett Herman Physics
Wednesday, April 23 Heth 044 7:45 - 7:55

Res2DInv is a piece geophysical modeling software that reads two-dimensional subsurface data recorded by the OhmMapper, calculates the electrical resistivity of pseudosections, and creates an image of the subsurface based on electrical resistivity. The electrical imaging generated by the software provides researchers with a visual depiction of the undersurface of arctic sea ice. The software discussed in this talk, Res2DMod, allows researchers to set boundaries of resistivity data, and remove miscommunications of signals from the OhmMapper which result in unrealistic electrical imaging. Some of the data collected by the OhmMapper was lost due to loss of signal in the highly-electrically conductive ocean water beneath the ice. This resulted in images that had the ice extending off of the over-2-meter extent of the graphing area. Since we confirmed with an ice drill that ice was not thicker than 2 meters, we knew that Res2DInv needed to be supplemented by Res2DMod. The contribution of Res2DMod to the further analysis of the sea ice resistivity data will be presented.

Data Analysis from Ohmy

Jordan Eagle
Austin Owen
Faculty Mentor(s): Dr. Rhett Herman Physics
Mythianne Shelton Physics
Dan Blake Physics
Wednesday, April 23 Heth 044 8:00 - 8:20

Data were collected in a just-completed study of the arctic sea ice and tundra near Barrow, Alaska. The equipment used included the OhmMapper capacitively coupled resistivity array. Final analysis of the OhmMapper data relies on the software Res2dinv. Results of processing this data will be presented, showing the ability of the software to generate realistic cross sectional images of the sea ice. As with all modeling software, some ground trothing was required in order to ensure that the images generated from the data accurately depicts the sea ice. Thus our team deployed a specialized ice drill in multiple locations to determine the proper modeling parameters to set within Res2dinv. Images that most accurately present the sea ice will be presented. Our results will be discussed in the context of the surprisingly-thin sea ice cover on this trip. On the tundra our goal was to possibly image the boundary between the active layer and the permafrost. While on the tundra we also saw that there was ground water under the permafrost. These findings will be also be discussed in this presentation.

How Do Elementary Students Experience Skype in Making Real World Connections to Barrow, Alaska?

Victoria Holdaway
Erica Martin
Taylor Hardwick
Faculty Mentor(s): Mythianne Shelton Physics
Wednesday, April 23 Heth 044 8:20 - 8:30

This presentation is part of the research project How Do Elementary Students Experience Skype Sessions in Making Real World Connections to Barrow, Alaska. The presentation focuses on their understandings of different cultures. During the study, the students were read different versions of Cinderella and skyped with their student teachers from Barrow, Alaska. The students were then asked to draw what they believed Cinderella would look like if she lived in Barrow.

Arctic Geophysics Oral Presentations

Investigating correlations between resistivity & thermal data on the arctic sea ice

Sarah Montgomery
Corey Roadcap
Faculty Mentor(s): Rhett Herman Physics
Dan Blake Physics
Wednesday, April 23 Heth 044 8:30 - 8:50

Our presentation focuses on comparing electrical resistivity data from the OhmMapper resistivity array to thermal data from the Whistler sensor cart deployed on the arctic sea ice. We will use this comparison to draw conclusions about a possible correlation between the thickness of the arctic sea ice and the temperature of the surface of the ice. We used an ice drill to determine the true ice thickness in order to set the parameters that allowed the OhmMapper software to more accurately model the sea ice. The results from Whistler's thermal data will be compared with images of the sea ice generated from resistivity data. We will discuss a survey we performed in collaboration with a staff scientist from the US Army Corps of Engineers' Cold Regions Research & Engineering Laboratory (CRREL). We will present ideas generated by this trip that may lead to new custom equipment or alternative data-collection techniques for the 2016 research trip. These ideas include the development of an Arduino-based device to measure the depth of the snow lying on top of the ice, along with a temperature array to obtain much greater information about the air temperatures above the ice and how these determine the overall thermal balance of the ice.

Thursday, April 24th

Communications Leadership Poster Session
Heth 014 9:30am – 10:45am

Geospatial Science Poster Session
Heth 022 1:00pm – 3:00pm

Gender Studies Symposium
Heth 014 2:00pm – 5:00pm

Communications Poster Session
Heth 044 3:00pm – 3:30pm

Communications Oral Presentations
Heth 044 3:30pm – 5:00pm

Business & Technology Oral Presentations
Heth 022 5:00pm – 6:30pm

Student Choreography Showcase
Peters B112 7:30pm-9:00pm

Leverageing Research Experiences
Heth 014 5:30pm – 6:10pm

SURF Alumni Panel and Closing Reception
Heth 014 6:10pm – 7:15pm

Communications Leadership Poster Session

Thursday, April 24 Heth 014 9:30 - 10:45

This session will feature a series of posters highlighting the leadership accomplishments of history's most enduring leaders. The faculty mentor is Sandra French and the student presenters are:

Vince Lombardi
Chris Carter

H.J. Heinz
Andie Fescemyer

Nelson Mandela
Missy Foor

Pastor, Martyr. Prophet, Spy: Dietrich Bonhoeffer
Hannah Lindquist

Mahatma Gandhi
Brigitte Linkous

Pat Summitt
Lauren Martin

Machiavelli: Still Leading Five Centuries Later
Michael Moraco

Katelyn Morrill

Mary Kay
Sheena Palmer

Mighty Be Our Power: Leymah Gbowee
Gabrielle Pidal

Geospatial Science Poster Symposium

Contribution of Nonpoint Source Pollution to Water Quality of Crab Creek, Montgomery County, Virginia

Devin Dalton
David Doherty
Jamie Jordan
Abbey Humphreys

Faculty Mentor(s): Richard Roth Geospatial Science
Thursday, April 24 Heth 022 1:00 - 3:00

Crab Creek, a tributary of the New River, has its headwaters in Christiansburg, VA and flows west through Montgomery County. The Virginia Department of Environmental Quality (DEQ) has identified Crab Creek as an "impaired water" due to high levels of sediment and bacterial pollution. Our study will focus on the nonpoint source contribution of pollution, particularly that of fecal coliform bacterial pollution, to the stream. Nonpoint source pollution occurs when precipitation and surface runoff transport pollutants from the land to a receiving stream and is, therefore, most prominent during wet periods. We will collect data on several water quality parameters (fecal coliform bacteria, turbidity, pH, and temperature) at a specified point on Crab Creek using accepted methods separately during a wet and dry period. These data sets will be compared to determine any significant differences that may allow us to draw conclusions about nonpoint sources of pollution in the creek. Comparing our data to the 2004 Total Maximum Daily Load (TMDL) and other literature and geospatial data sets existing on Crab Creek, we will draw conclusions about likely sources of pollution and make recommendations for mitigating these sources.

Are There Certain Geographic Locations That Have a Higher Susceptibility To Hydraulic Fracturing Accidents?

Stephen Holt

Faculty Mentor(s): Andrew foy Geospatial Science
Thursday, April 24 Heth 022 1:00 - 3:00

Hydraulic Fracturing has become a growing environmental concern due to the increasing number of accidents and the environmental degradation from these incidents. The objective of this research is to use geospatial methods to look for correlations between well failures and environmental factors using spatially weighted regression. Various landscape variables were explored using spatial analysis techniques to look for any correlations and patterns in hydraulic fracturing accidents. Using JMP and Arc Map to create maps and statistical graphics to explore what variables are more likely cause hydraulic fracturing accidents

A Spatial and Temporal Analysis of Summer Month Harmful Algal Bloom Activity Through the Use of Remote Sensing from 1990 to 2010

Christian Kagarise

Faculty Mentor(s): Andrew Foy Geospatial Science
Thursday, April 24 Heth 022 1:00 - 3:00

Evidence can be found from the Chesapeake Bay Watershed (CBW) to the Inland Sea of Japan that links the over-loading of nutrients, such as nitrogen and phosphorous into coastal waters to the development of large algal blooms. This creates toxic waters that are detrimental to human health, fisheries, and all surrounding ecosystems. The objective of this study is to measure summer algal blooms over a 25-year period using remote sensing techniques to determine whether their spatial distribution is expanding in the Potomac River. Imagery collected from the satellite Landsat TM 4-5 in five-year increments (1995-2010) was used in ERDAS 2013 to compute the normalized difference vegetation index (NDVI) values for the Potomac River. The NDVI index was used to map the extent of algal blooms, which were analyzed in ArcGIS. Results show larger algal bloom patterns as the years advance. Algal blooms are successfully detectable through remote sensing techniques, which can help water quality assessments. Visual evidence of algal bloom activity can be used by programs such as Chesapeake Bay Foundation or Environmental Protection Agency (EPA) in efforts to restore health to the CBW.

Geospatial Science Poster Symposium

Plume Modeling Risk Assessment for the City of Radford

Victoria Kirkpatrick

Faculty Mentor(s): Andrew Foy Geospatial Science
Thursday, April 24 Heth 022 1:00 - 3:00

Each day hundreds of railcars travel through the City of Radford carrying a variety of chemicals, most of which are unknown to the community. This study was conducted to identify areas with a high fatality risk that should be evacuated immediately in the event of a railway- based chemical spill, for example an ammonia tank leak. Multiple chemical plume models and maps highlighting the areas of potential danger were produced using ArcGIS 10 and ALOHA. These maps allow for emergency response personnel to plan according given any situation and condition. Even though Radford City has not had a minor spill or leak, let alone a major one, the potential is always present. The results of this project include maps that indicate high, medium and low risk of fatality from chemical spills along the railway.

Sustainable Practices of Radford University Students

Conrad Lucas

Faculty Mentor(s): Andrew Foy Geospatial Science
Thursday, April 24 Heth 022 1:00 - 3:00

Sustainability is a multi-disciplinary, utilitarian practice with a wide range of applications and potential that grows parallel to advances in technology. Adapting to an increasingly globalized society, humans have a necessary responsibility to build sustainable infrastructures, ensuring the longevity of people and the environments in which they live. The purpose of my research is to gather, analyze, and present survey data regarding the sustainable practices of Radford University students to better understand how they practice sustainability. This information may be useful to Radford City and Radford University for decision making processes regarding the implementation of sustainable practices.

Poultry Farm Operation Density Contribution to Shenandoah River Fish Kill

Jordan Laughlin

Faculty Mentor(s): Andrew Foy Geospatial Science
Thursday, April 24 Heth 022 1:00 - 3:00

In recent years major fish kills have taken place on the Shenandoah River. It has been suspected that point source pollution from poultry farms is a large contributor to the fish kills. The objective of this study is to explore spatial distribution of poultry farms and other geographic variables to look for correlations between these variables and the fish kills. The spatial relationship between clusters of poultry farms and their proximity to past fish kills were investigated using GIS. Land cover and other landscape variables were examined for those areas directly surrounding the fish kill locations. One finding was that fish kill sites are all located downstream of major clusters of poultry farming operations, but other variables still need to be explored. The results from this research will allow people and environmental organizations to visualize the spatial relationship between fish kill locations and poultry farms. This could further prevent future fish kills from occurring on the Shenandoah River.

Geospatial Science Poster Symposium

Retrospective Modeling of the Distribution of Improvised Explosive Device (IED) Attacks in Afghanistan, 2004-2009

Brett Meyn

Faculty Mentor(s): Andrew Foy Geospatial Science
Thursday, April 24 Heth 022 1:00 - 3:00

The first recorded improvised explosive device (IED) attack on foreign troops in Afghanistan occurred in 2004. Since then, the number of attacks has almost doubled every year, wounding and killing thousands. This study was conducted with the objective of using retrospective modelling to predict the locations of IED attacks. The focus of the study was the period from the first IED strike in 2004 to the peak of IED violence in 2009. The locations of every recorded IED incident in Afghanistan during this time were obtained and analyzed using GIS. Identifying the major patterns of distribution was the first step in building the foundation for the model. From 2004 to 2009 7,553 IED's were reported, of which 6,200 were clustered in two main regions of the country. The southern region contained 3,300 of the attacks, most of which were concentrated in the triangular area connecting the provincial capitals of Lashkar Gah and Kandahar to the Sangin valley. The eastern border region experienced 2,900 incidents clustered in the area between Gardez, Khost and the capital city of Kabul. Areas with major population centers and transportation routes appear to be at the highest risk of an IED attack. Once these patterns were confirmed, the data from 2004 to 2008 was entered into the model and an output predicting the locations of the attacks in 2009 was produced.

Influence of riparian corridor land use/land cover on stream health in Crab Creek, Montgomery County, Virginia.

Andrea Thomas
Victoria Kirkpatrick
Andrew Foxx
Daniel Huneycutt

Faculty Mentor(s): Richard Roth Geospatial Science
Thursday, April 24 Heth 022 1:00 - 3:00

A riparian corridor is the area between land and a stream that grows various types of vegetation. The health and overall condition of a riparian corridor can greatly affect the habitats within the stream channel including those of both aquatic and associated riparian species. We will compare two separate sections of Crab Creek; one for which the riparian corridor is relatively free of human impacts, and another for which the riparian corridor shows more evidence of human alterations. Sites will be chosen in order to control for the effects of other water shed variables in order to isolate the effects of one variable: riparian corridor land cover/land use. We will then assess stream condition by measuring the health of the benthic community and by direct measures of habitat condition in the stream channel. We hypothesize that the steam segment with a relatively unimpacted – i.e., forested – riparian corridor will have a healthier community of macroinvertebrates, as measured by a widely-used protocol, compared to stream segments with either agriculture or urban land uses in the riparian corridor. Options for mitigation or restoration of impacted areas will be explored.

Geospatial Science Poster Symposium

Land Use and Water Quality in the Crab Creek Watershed

Erik Webb
Stephanie Leahy
Brian Conners

Faculty Mentor(s): Richard Roth Geospatial Science
Thursday, April 24 Heth 022 1:00 - 3:00

Crab Creek, located in Montgomery County, Virginia, is listed as impaired by Virginia's Department of Environmental Quality(DEQ) based on water quality standards for benthic life and for fecal coliform bacteria. The creek's impaired status means that it is ecologically degraded and also unsafe for water contact by humans. The creek runs from Christiansburg to the New River, and is heavily impacted by both agriculture and urbanization. This project will examine the water quality impacts of agriculture on the waters of Crab Creek. Agriculture is a known contributor of both sediment and pathogens in watersheds nationwide. Land use change since a 2004 watershed study conducted by DEQ will be examined using field surveys and geospatial analysis to determine changes in the extent and intensity of agriculture in the watershed. Based on interviews and literature review, we will identify best management practices for mitigating the water quality impacts of agriculture, and make recommendations.

Crime Density Mapping of Radford University

Andrew Foxx

Faculty Mentor(s): Andrew Foy Geospatial Science
Thursday, April 24 Heth 022 1:00 - 3:00

There has been much debate among the Radford University student population over whether certain areas (for example. "Light side" vs. "Dark side" and Greenhill vs. Copper Beach) areas surrounding campus are safer than others to live. Local crime data was used to analysis the spatial distribution and frequency of crimes based on the types of crime to determine which area have the least number of incidents. Drug, alcohol, and violent crimes were obtained from the City of Radford for the years 2011-2013. Using ArcGIS and spatial kernel density methods, the crime data was used to create a series of hot spot maps that show the safest places to live in Radford.

Gender Studies Symposium

Is She Worth Less? Planning a Gender Pay Gap Workshop

Kasey Campbell
Faculty Mentor(s): Hilary Lips Psychology
Thursday, April 24 Heth 014 2:00 - 2:25

"What is the average pay for men and women in my field?" "How do I negotiate my salary?" "What are the signs of workplace discrimination?" Questions like these are important considerations for female college students preparing to transition to professional workplaces, given the statistics on the gender pay gap. Today, a woman earns, on average, 77 cents for every dollar a man makes. Because of this, a woman loses $434,000 in income over her lifetime. To bring awareness to income inequality on Radford University's campus, "Is She Worth Less? Gender Pay Gap: A Day of Talks and Workshops" on March 31, 2014, was the objective of a collaborative interdisciplinary effort through an applied gender studies independent study. This presentation will discuss the process of planning the event and how it contributed to further knowledge about the current disparity.

Posttraumatic Growth among Breast Cancer Patients and Survivors: The Role of Giving and Receiving Social Support

Jaclyn Mullins
Faculty Mentor(s): Sarah Hastings Psychology
Thursday, April 24 Heth 014 2:25 - 2:50

Past research exploring the factors that contribute to posttraumatic growth (PTG) among breast cancer survivors has yielded mixed results, particularly regarding the role of social support. Some studies have found a positive correlation between social support and PTG (e.g., Schroevers et al., 2010) whereas other studies have found no relationship at all (Cohen & Numa, 2011; Weiss, 2004). Furthermore, some research suggests that certain subtypes of social support (e.g., emotional vs. instrumental) may contribute to the development of PTG more so than others (Nenova et al., 2013). Additionally, little is known about the relationship between the provision of support to others and PTG. While research has found that providing social support to others is associated with less depression, greater self-efficacy, and higher scores on measures of overall well-being (Piferi & Lawler, 2006), there have been no quantitative studies to date that have specifically examined the relationship between providing social support to others and PTG. This presentation will provide an overview of the theoretical construct of posttraumatic growth and the existing literature related to PTG among breast cancer patients and survivors. The presentation will also discuss the relevance of this writer's current research with regards to addressing the relationship between received emotional and instrumental support and PTG as well as the relationship between giving emotional and instrumental support and PTG in the breast cancer population.

Gender Studies Symposium

Childhood Victimization, Poly-Victimization, and Psychological Distress in College-Aged Males

Rachel Turk **Brianna Pomeroy** **Brittany Nipper**
Marco Pomposini **Lora Wagner**
Faculty Mentor(s): Ann Elliott Psychology
Thomas Pierce Psychology
Jeffery Aspelmeier Psychology
Thursday, April 24 Heth 014 3:05 - 3:30

This correlational study examines the relationships among poly-victimization (i.e., high cumulative levels of victimization), six aggregate categories of childhood victimization (property crime, physical assault, peer/sibling, witnessed/indirect, sexual, child maltreatment), and psychological distress in 153 male undergraduate students attending a southeastern U.S. university. Using hierarchical regression, the first question addressed in this study concerns the relative contributions of poly-victimization and individual categories of childhood victimization in predicting psychological distress, as measured by the Symptom-Checklist-90-revised and the Trauma Symptom Inventory-2. Second, the study examines whether poly-victimization contributes any significant variance, beyond that accounted for by the combination of all six aggregate categories. Preliminary regression analyses revealed that a) poly-victimization accounts for a significant proportion of variability in scores for psychological distress, beyond that accounted for by any of the six categories of childhood victimization alone, and b) the categories of childhood victimization contribute little to no variability beyond that accounted for by poly-victimization. Findings emphasize the importance for clinicians and researchers to comprehensively assess multiple categories of childhood victimization and poly-victimization when evaluating a client's psychological adjustment.

Rural Lesbians' Perceptions of the Impact of Coming Out Within Family Relationships: A Qualitative Investigation

Jennifer Glass
Faculty Mentor(s): Sarah Hastings Psychology
Tracy Cohn Psychology
Thomas Pierce Psychology
Thursday, April 24 Heth 014 3:30 - 3:55

Disclosure of sexual orientation to family members is one of the most difficult challenges lesbians and gay men face; furthermore, coming out often changes several aspects within the family system, as relationship dynamics, alliances, roles, expectations, and boundaries may shift. Previous research has mainly examined the perspectives of urban and metropolitan dwelling family members when they learn someone is gay or lesbian and neglected the unique experiences of rural individuals. This study aims to explore changes that occur within a family system after disclosure of sexual identity, specifically for rural and nonmetropolitan lesbians through a qualitative approach. Utilizing semi-structured interviews, genogram construction, and grounded theory analysis, the author will identify the main themes that arise in rural families once individuals reveal their status as a sexual minority.

Gender Studies Symposium

Keynote Speaker: Dr. Cheryl Travis, University of Tennessee Knoxville

The Women's Health Movement & Health Disparities

Thursday, April 24 Heth 014 4:00 – 5:00

Dr. Cheryl Travis is a full professor and associate department head of psychology and, separately, is Chair of the Women's Studies Program for the University of Tennessee Knoxville campus. She is a recipient of the Carolyn Wood Sherif Award from the Society for the Psychology of Women. She has served as president of the Society for the Psychology of Women, Chair of the American Psychological Association Board of Scientific Affairs, and more recently, as a member of the APA Board of Educational Affairs. She is the author / editor of books on Women's Health Psychology, on Feminism, Sexuality and Society, and on Evolution, Gender, and Rape. She also has published papers on equity and the Gender Pay Gap. She has received the Chancellor's Angie Warren Perkins award for Excellence and is actively involved in the University Commission for Women. In her spare time, she and her husband are avid hikers.

Her research has focused on gender and race in the treatment of heart disease. Her research draws on national hospital patient discharge records and encompasses over a decade of information. Today her presentation will focus on The women's health movement & health disparities, with particular attention to heart bypass surgery.

Communications Poster Session

Networking for Nonprofits: Using Social Media for Good

Heather Manias
Faculty Mentor(s): Leigh Kelley School of Communication
Thursday, April 24 Heth 044 3:00 - 3:30

The world of advertising is vastly changing. Social media is now a key component in almost any product's advertising plan. While big name companies are catching on to the tricks of the trade, where do nonprofit organizations stand? This project peers onto the other side of the computer screen at what multiple Virginia-branched cancer awareness nonprofit organizations have to offer via social media by unveiling what they have accomplished in their time on social media sites such as Facebook and Twitter.

Comparing Digital Fonts: An Eye Tracking Study

Evan Taylor
Faculty Mentor(s): Leigh Kelley School of Communication
Thursday, April 24 Heth 044 3:00 - 3:30

Changes in how people get information, disseminate information and consume media, combined with technological advances, have created new opportunities and challenges in measurement. Sometimes it is the little details that can make a marketing communication effort successful or can leave a campaign destined for failure. This study examines how eye-tracking technology is used to measure an audience's behaviors and tendencies in interpreting information. The specific focus is how readers interact with different digital fonts. Fonts compared in this study include Droid Serif Pro, PT Serif, and Myriad.

An Investigation of Risk Behaviors and Experiences of Self-reported Bullies in a Rural Community

Raven Sullivan
Alexis Steptoe
Kellie Clark
Savannah Seeley
Faculty Mentor(s): Melissa Grim Health and Human Performance
David Sallee Health and Human Performance
Thursday, April 24 Heth 044 3:00 - 3:30

The problem of bullying in schools has received much attention from parents, school officials, and the media. Though there are programs to try to prevent bullying and procedures in place to try to help victims of bullying, little is known about the risk factors for becoming a bully. To discover the potential relationships between perceived parental beliefs and bullying, students in a rural community were surveyed using a modified version of the Youth Risk Behavior Survey. Bullying questions were included as a part of the survey. One question that identified students participating in bullying behavior was compared to questions regarding perceived parental beliefs regarding health behaviors. Students who reported having bullied someone were more likely to report parents having favorable attitudes towards the following behaviors: smoking cigarettes (OR=3.0), drinking alcohol regularly (OR=2.1), smoking marijuana (OR=3.26), using prescription drugs to get high (OR=3.76) and breaking the law (OR=5.5). Self-reported bullies were also less likely to report parents having clear rules about drug abuse(OR=1.5), having an adult in their life to encourage/listen to them (OR=1.1), or perceiving that their parents knew where they were when not at home (OR=1.95) than students not reporting having bullied another person. Though this is an exploratory study, it helps practitioners better understand the perceptions of self-reported bullies regarding parental beliefs about health behaviors. Further research focusing on understanding experiences and behaviors of bullies seems to be an important factor to consider for the creation of comprehensive prevention programs.

Communications Oral Presentations

The Effect of Open Parental Communication Styles Concerning the Pre-College Talk on Students Promiscuity and Healthy Sexual Behaviors

Beth Keibel
Laura Shearin
Logan O'Dell-Hippeard
Alissa Chapman
Faculty Mentor(s): Colin Baker School of Communication
Thursday, April 24 Heth 044 3:30 - 3:45

The purpose of this study is to examine the effectiveness of the pre-college "talk" between future students and their parents to see if there was any effect on the student's sexual responsibility or promiscuity while in college. Included in the variables that will be tested are: the effect of traditional and non-traditional family backgrounds, ethnicity, religious background, and how the topic is approached by the parents- whether it is approached as a black and white issue that is to be avoided until marriage, or if the topic is approached in a way in which the child feels comfortable asking questions. The methods that will be used include anonymous surveys and group conversations lead by a singular researcher. The surveys will include both the Likert scale as well the Osgood Sematic Differential scale. The main focus of this study is to analyze certain family communication styles on their effectiveness of leaving an impression on their children. However, we believe that the ramifications of this study will reach farther and be able to answer multiple questions, such as the prevalence of certain types of STDs in college, why promiscuity is higher in some people and not in others, and whether or not alcohol abuse is the most prevalent factor in causing sexual situations.

Confrontation Style

Emma Paulsen
Bryan Foley
Elizabeth Brobeck
Nicholas Leporatti
Brielle Warner
Faculty Mentor(s): Colin Baker School of Communication
Thursday, April 24 Heth 044 3:45 - 4:00

Technology affects every type of communication, including conflict and confrontation. Our goal with this research is to study the different ways that people handle confrontation. To measure the effects of technology on confrontation we will be using surveys. In the surveys we will create scenarios for our subjects to react to in order to understand their confrontation styles. We will create scenarios such as a friend skipping dinner and never offering an excuse or apology, or a classmate publicly berating someone in class. Hopefully our participants will be able to react to these types of scenarios and help us better understand how people handle confrontation and why they choose certain methods. Our expectations are to show how the increased use of technology in communication affects how we handle confrontation. People now use text messages, emails and phone calls to avoid face-to-face confrontation. While only some people use technology to handle confrontation we will look at other styles, such as face-to-face, passive-aggressive behavior and completely avoiding confrontation. Based on information we have found, many people use technology to avoid dealing with stressful situations face to face. With our research we hope to show that people use technology to avoid one of those stressful situations, confrontation.

Communications Oral Presentations

Get Active: The Role of Physical Activity on Confidence and Positive Communication Behaviors

Carly Ramsey
Sidnie Mason
Kalen James
Jake Wenzel
Kelsey Burnett
Faculty Mentor(s): Colin Baker School of Communication
Thursday, April 24 Heth 044 4:00 - 4:15

The article discusses how physical activity leads to self-confidence, which positively correlates with friendliness, impression leaving, and openness in communication. Physical activity releases chemical in the brain, called endorphins, they help produce a positive mood. The positive mood creates feelings of confidence and subsequent positive affect toward others in their communication behaviors. The article will also touch on how the lack of physical activity will not boost confidence; therefore the communication one gives off will not be affective. Friendliness, openness, and impressions will be the areas of affective communication the researchers focused on. The researchers used Norton's Communication Style Measure along with other survey questions to measure confidence and physical activity. The researchers distributed surveys in classes at Radford to collect our information and also use secondary research such as scholarly articles. The researchers hope the results read that physical activity does positively correlates with communication. It has been discovered through history that physical activity leads to confidence and confidence leads to affective communication. Affective communication is the key to having positive outcomes throughout society.

What are the levels of comfort between I know and I think an individal is a lesbian, gay, bisexual, or transsexual?

Victoria Rathweg
Lauren Keating
Thomas Carter
Faculty Mentor(s): Colin Baker School of Communication
Thursday, April 24 Heth 044 4:15 - 4:30

This study is investigating the levels of comfort participants from Radford University feels when they interact with another individual in class while they are either aware or unaware if that individual is a lesbian, gay, bisexual or transsexual. After we acquired the appropriate permission from instructors we informed our participants of our study. Then, we administered approximately one hundred and twenty anonymous surveys to six Radford University Communication courses to inquire how comfortable students feel about when they either think or know a fellow student is a lesbian, gay, bisexual or transsexual. The surveys provided us with an understanding of the students' opinions while they either think or know if that individual is a lesbian, gay, bisexual or transsexual. We split the surveys into two categories of I think and I know statements. We tried to differentiate between the different relationships that people might have regarding the various orientations. Our observations have led us to believe that people would respond differently depending on the gender and the specific orientation rather than measuring the LGBT Community as a whole. We aimed to understand how comfortable people are when they are aware of the sexual orientation or not. These surveys provided us with measurable data that allowed us to analyze the different opinions of students at Radford University. According to our hypothesis, we believe that when the participants think that their fellow students are a lesbian, gay, bisexual or transsexual then they would be uncomfortable and when participants know that their fellow students are a lesbian, gay, bisexual or transsexual they will be comfortable.

Communications Oral Presentations

Tattoos perceived in the workplace

Susan Owens
Cody Coffey
Mike Kenefick
Tyler Smith
Faculty Mentor(s): Colin Baker School of Communication
Thursday, April 24 Heth 044 4:30 - 4:45

Judging someone's tattoos may cause issues in the way they socially perceive others. The purpose of this research is to understand how people view tattoos in today's society. The goal is to see how or if at all, tattoos affect perceived credibility. To test this, an experiment was performed, asking participants to make judgments on a photo of someone with or without tattoos. Participants were subsequently asked to identify the credibility of the photographed person. Questions were then asked in the semantic differential scale style about competency. Results are expected to show what people consider socially acceptable and credibility. Limitations and future research will be discussed.

The Effect of Facebook on Romantic Relationships

Courtney Tayloe
Katherine Fitzgerald
Barrett Kirby
Matthew Parr
Faculty Mentor(s): Colin Baker School of Communication
Thursday, April 24 Heth 044 4:45 - 5:00

The research that will be conducted will study the effect of Facebook on romantic relationships. Technology has become a huge part of the world we live in today, which has caused social media usage to also increase. Facebook has become one of the most popular, and widespread used forms of social media. While many use Facebook to stay in touch with friends and family, and reconnect with old friends, it also has caused many negative effects within intimate relationships. Facebook popularity has given both partners in the relationship many options that can lead to distrust in the relationship including; becoming friends with past partners, sending messages without the other person knowing, or becoming friends with someone they find attractive. Does Facebook cause more conflict in relationships than benefits? Is this one of the main reasons divorce rates have increased in our world today? Does Facebook usage cause amounts of intimate time spent together to decrease? By handing out surveys to study various individual college students as well as faculty members, we will analyze different variables including Facebook usage (perceived and personal), the perceived quality of the relationship, and the level of trust in the relationship to find a correlation between Facebook and relationship quality and trust.

Business & Technology Oral Presentations

An Overview of the Student Managed Investment Portfolio Organization

Raymond Boisvert **Curtis Allman**
Faculty Mentor(s): Abhay Kaushik Accounting, Finance and Business Law
Steven Beach Accounting, Finance and Business Law
Clarence Rose Accounting, Finance and Business Law
Thursday, April 24 Heth 022 5:00 - 5:20

The Student Managed Investment Portfolio Organization (SMIPO henceforth) gives Radford students the opportunity to manage a portfolio of over $1 million invested in the stock market on behalf of the University's endowment fund. Through SMIPO, business students apply the theoretical knowledge they gain in the classroom to the real world endeavor of investing money for a client. We are a midcap-value portfolio, meaning our goal is to identify and purchase medium to large sized companies that our analyses indicate are worth more than the value they currently trade for in the market. After those securities appreciate to achieve their fair value we sell for a profit. Currently SMIPO has 20 student analysts who cover 11 sectors and more than 40 companies. The portfolio holds several companies that are familiar to college students like; Foot Locker, Shentel, Molson Coors, and IAC/InterActiveCorp – the parent company of brands like CollegeHumor, Match.com, and Tinder. Using a disciplined value approach to investing, we have been able to generate consistently positive returns – over 30% in 2013. A crash course in personal responsibility and decision making, SMIPO develops the skills employers are looking for while simultaneously enriching its members' educations by taking textbook knowledge off the page and into the market.

The Brand of Universities Through Athletics: Target Marketing or Target Missing?

James Bradley **Caitlin Gerig**
Faculty Mentor(s): Kevin Ayers Health and Human Performance
Thursday, April 24 Heth 022 5:30 - 5:50

Branding a university is a necessary step to help market it to prospective students. Branding is the process of differentiating the products and services of one organization from another. For a university, it is a promise to a prospective student. Considered by many opinion leaders as the "front porch" or most visible unit, many universities choose to brand themselves through their athletic departments. The question proposed is, "should universities brand themselves primarily through their athletic programs?" We examined data from surveys administered to freshmen university students asking why they elected to attend that particular institution. We also examined retention data from students who elected to leave a particular institution and attend another. The data indicates that students do not weigh the prominence of an athletic program in their decision to attend a university or when deciding to transfer. This information is important because the branding of a university is a critically important function of administrators. If the needs and wants of the students (consumers) are not being addressed appropriately, universities who brand primarily through athletics programs may be missing primary target markets.

Business & Technology Oral Presentations

Implementation of Hadoop and MapReduce on Mobile Base Station Cloud in Wireless Sensor Network

Andrew Wilson
Faculty Mentor(s): Hwajung Lee & Andrew Ray Information Technology
Thursday, April 24 Heth 022 6:00 - 6:20

A base station (BS) in a traditional wireless sensor network (WSN) is a single stationary node, which makes a decision based on the collected data from the WSN, However, the institution of a mobile cloud BS gives way to much greater computational power than that of a single node BS through way of distributed computing, extends the lifetime of the network by moving each node to the optimal location, and the ability to physically restore the sensor motes of the network. Thus, in this paper we propose a mobile BS cloud. We have developed a cloud network comprised of Raspberry Pi powered Lego Mindstorm NXT robots which have been flashed to run LeJOS – a Java based firmware replacement. The physical aspect of a mobile robot not only gives us the ability for the base station to move – such as in a mobile wireless sensor network (MWSN) – but also the ability for an individual node of the base station cloud to physically recover a lost mote or node of the network. In addition, in this cloud network, we will employ Hadoop and MadReduce to solve a linear optimization problem pertaining to the maximization of the cloud network's lifetime. Implementing a WiTricity charging protocol would then drastically increase the network lifetime. Further, the institution of a cloud network allows us to distribute computing of a large data collection from the sensor motes of our WSN to the multiple nodes – giving way to much greater computational power.

Student Choreography Showcase

Two Sides to Goodbye - Caitlyn Clark

Faculty Mentor(s): Deborah McLaughlin Dance
Wedneday and Thursday, April 23 & 24 Albig Studio Theatre, Peters, B112

Two Sides to Goodbye…is a sincere memoir of the choreographer's recollection of saying her final goodbyes to her grandfather and sending her brother off to war. Her dances represent the emotional battle people endure when saying goodbye. Whether it is the final goodbye or sending a loved one off to war, these pieces aim to take the audience on an emotional journey that people experience when saying their goodbyes. In her solo piece, the choreography explores the different emotions, both positive and negative, felt when dealing with the passing of her grandfather. The larger group piece reflects the emotional struggle families face as well as the emotions those in armed forces may encounter when serving our country. The choreographer intends to use the power of movement to express and move the audience through these shared life experiences.

Shannon Comerford

Faculty Mentor(s): Deborah McLaughlin Dance
Wedneday and Thursday, April 23 & 24 Albig Studio Theatre, Peters, B112

As a choreographer I try to bring out a musicality and an attention to details in my dancers. I use every beat and undertone in the music and layer them so I expect my dancers to have rhythm and an ability to pick out the nuances in the music therefore creating dynamics. I do this by mixing fluidity with intricate, percussive movements. In some of my creative work, I also like to include historical elements. I'll use a specific time period or historical figures to give the dancers imagery and a reference point to use while performing. My newest venture and then there were six… pulls inspiration from King Henry VIII and his six wives. The piece focuses on the ghostly presence of Henry's six wives and the transition of his psyche as he reflects on his past marriages. In a three part dance, Henry's demeanor changes from that of denial to depression and then finally to downright remorse. The six wives act as ethereal figures going from docile to hauntingly distant and ending in aggressive seduction. The main purpose of this piece, while tying in historical elements, is to imagine a world where Henry VIII truly felt bad for the wives he had treated poorly and how it affected him mentally. Using detailed movements, repetition and dynamics I plan on creating a dance that exemplifies my purpose and brings my vision to life.

Kelsy Rupp

Faculty Mentor(s): Deborah McLaughlin Dance
Danah Bella Dance
Wedneday and Thursday, April 23 & 24 Albig Studio Theatre, Peters, B112

The current research I am presenting is an exploration of the psychology of relationships. Most of the research has been personal created in collaboration with the dancers. The work strives to challenge society's views of very basic everyday relationships. The piece, Groups of 4…Maybe 5, is exploring the stereotypical relationships between girls in a school setting. However, this work also challenges the audience to see that these relationships do not only exist in high school, but for women, often exist throughout their entire lives. My solo, how I learned to love my mess, is a personal exploration of my life. I am using this piece to present the personal gain and struggles I have undergone. The subjects which served as inspiration are my awesome, but sometimes annoying, type A personality, a divorced family, and all that comes with a life which includes several jobs, moving, a heavy dance schedule, full time student work; a messy, busy life. For this work my main goal and challenge would be having the audience connect with my work and take away some personal understanding. I feel that everyone has a story and many of us never realize all that we have in common. Each of us has a mind, body, and soul, all capable of movement and should remember to acknowledge our connections on multiple levels. Through dance I hope to bring this to the forefront of the audiences minds.

Student Choreography Showcase

LeeAnn Walker

Faculty Mentor(s): Deborah McLaughlin Dance
Margaret Devaney Dance
Wedneday and Thursday, April 23 & 24 Albig Studio Theatre, Peters, B112

Transitions, a solo performance, is an expression of the transformation and growth I obtained in my identity throughout my college career. To start my choreographic process for this piece, I chose to draw from some of my own reminiscences of life changing events, in addition to incorporating my love and passion for dance and its uplifting qualities. The dance takes a journey through different obstacles that arose and the process to make it through and grow from these hurdles in life. Some of the specific arm and hand gestures within the choreography represent my development into an individual not self-absorbed but instead growing in faith and openhandedly giving to others. Throughout the piece I hope to inspire the audience to understand that even when times get hard there is a light at the end of the tunnel. You Won't Fall Again, a piece set on seven dancers, is a continuous dynamic and surprising play on relationships through time and space. The choreography is an exploration of neoclassical ballet that fuses classical pointe and contemporary dance movements. In addition the dance represents the advancements I have achieved during my dance career in various techniques, choreography, and performance. Throughout my choreographic process I pulled from different styles of dance and wove them together to create a new original work. The relationship between the dancers and continually changing formations creates an intriguing unexpected blend of movement.

Dara Watson

Faculty Mentor(s): Deborah McLaughlin Dance
Wedneday and Thursday, April 23 & 24 Albig Studio Theatre, Peters, B112

My choreography as a whole is well thought out and focuses on strong technique and artistry. Being a classically trained dancer, my choreography often involves a lot of suspension, well-placed lines, and graceful qualities and dynamics. Though I use a lot of those aspects, I constantly push myself to find new and diverse movement. My work is not only meant to entertain but to also tell a story or reflect a specific emotion. My first piece, "Style", features five mannequins coming to life after the closing of a retail store and is a look into what might happen when they come to life. The mannequins are quirky and awkward, though they remain emotionless. The movement in this piece pushes outside of my usual comfort zone by sometimes being awkward and not classically placed, though still technically challenging. My second piece, a solo choreographed for myself, went more towards the aspects of dance in which I excel. This piece is about the motivation and encouragement I have received throughout life from family and friends. Though it is not a thought provoking piece, my goal is to portray my feelings of happiness through my movement in a way that would be powerful and inspirational to the viewers.

One Man Show - Performance

The Undiscovered Country

Nicholas Sticinski

Faculty Mentor(s): Wesley Young Theatre and Cinema
May 5th 2 pm Hawes Studio Theatre

I will be presenting a one man show. The performance will contain monologues ranging from Shakespeare's Hamlet to the film Trainspotting, as well as musical numbers from Avenue Q and Aladdin. The material will be unified by the theme of people feeling lost at times in their lives. My hope is that my performance may speak to the audience, reminding them of times in their life when they felt lost. While the primary focus of the show is to showcase my talent as an actor/singer, it will also demonstrate my understanding of theatre in general.

Student Engagement Forum Closing Reception

Thursday, April 24 Heth 014 5:00 – 7:00

5:30 - 5:45 Welcome and Capturing Research Through ePortfolios
5:45 - 6:10 Effectively Showcasing Research
6:10 - 6:50 SURF Alumni Panel
6:50 - 7:15 Reception and Welcome to 2014 SURFers

In this seminar, Dr. Samantha Blevins will explain what ePortfolios are, and what they look like here at RU. Examples of ePortfolios that showcase research will be shared. Dr. Sara O'Brien, Assistant Professor of Biology, will explore the tips and tools students can use to leverage their research experiences at Radford University into well-crafted personal statements, interview talking points, resumes, and curricula vitae. Learning how to effectively showcase what you have accomplished during your time at RU will become your golden ticket to the career you desire. Summer Undergraduate Research Fellowship winners from last summer will share their experiences and offer advice to the 2014 awardees followed by a reception.

Rathweg, Victoria
Co-Presenters: **Lauren Keating, Thomas Carter**
Session: Communications Symposium
Day & time: Thursday 4:15 - 4:30
Room: Heth 044

Ritter, George
Co-Presenters: **Kelsey McGee, Vic Taylor, Cameron Baumgardener, Emily Luketic**
Session: Geology Poster Symposium
Day & time: Wednesday 4:30 - 6:00
Room: Heth 045

Rogers, Tess
Session: Geology Poster Symposium
Day & time: Wednesday 4:30 - 6:00
Room: Heth 045

Roller, Sharon
Session: Innovations in Foresic Science
Day & time: Wednesday 10:10 - 10:20
Room: Heth 014

Rupp, Kelsy
Session: Student Choreography Showcase
Day & time: Wedneday/Thursday
Room: Albig Studio Theatre, Peters, B112

Schulz, Tanya
Co-Presenters: **Emily Clark**
Session: Biology Symposium - Oral Presentations
Day & time: Wednesday 6:00 - 6:15
Room: Bonnie Auditorium

Scott, Victoria
Session: Biology Symposium - Poster Presentations
Day & time: Tuesday 5:30 - 7:00
Room: Heth 043

Shah, Manan
Session: Innovations in Foresic Science
Day & time: Wednesday 10:20 - 10:30
Room: Heth 014

Smith, Cecilia
Co-Presenters: **Timothy Chesnakas, Ryan Bedwell, Carl-Rodney Mocarski**
Session: Pyschology Poster Symposium
Day & time: Wednesday 4:00 - 6:00
Room: Heth 016

Smith, Gavin
Co-Presenters: **Nate Frisch**
Session: Biology Symposium - Oral Presentations
Day & time: Wednesday 7:30 - 7:45
Room: Bonnie Auditorium

Spicher, Cristina
Session: Advances in Chemistry Posters
Day & time: Tuesday 5:30 - 7:00
Room: Heth 014

Stanley, Lauren
Co-Presenters: **Kate Elmer, Sylvia Addison, Ashley Osborne**
Session: Pyschology Poster Symposium
Day & time: Wednesday 4:00 - 6:00
Room: Heth 022

Sticinski, Nicholas
Session: One Man Show
Day & time: May 5th
Room: Hawes Studio Theatre

Sublett, David
Co-Presenters: **Raymundo Balderas, Melissa Brett**
Session: Geology Poster Symposium
Day & time: Wednesday 4:30 - 6:00
Room: Heth 045

Sullivan, Raven
Co-Presenters: **Alexis Steptoe, Kellie Clark, Savannah Seeley**
Session: Communications Poster Symposium
Day & time: Thursday 3:00 - 3:30
Room: Heth 044

Surette, Fionna
Co-Presenters: **Erin Dudley, Caitin Annear**
Session: Biology Symposium - Poster Presentations
Day & time: Tuesday 5:30 - 7:00
Room: Heth 043

Tayloe, Courtney
Co-Presenters: **Katherine Fitzgerald, Barrett Kirby, Matthew Parr**
Session: Communications Symposium
Day & time: Thursday 4:45 - 5:00
Room: Heth 044

Taylor, Evan
Session: Communications Poster Symposium
Day & time: Thursday 3:00 - 3:30
Room: Heth 044

Thomas, Andrea
Co-Presenters: **Victoria Kirkpatrick, Andrew Foxx, Daniel Huneycutt**
Session: Geospatial Science Poster Symposium
Day & time: Thursday 1:00 - 3:00
Room: Heth 022

Thompson, Darcey
Session: Innovations in Foresic Science
Day & time: Wednesday 10:30 - 10:40
Room: Heth 014