Bryan Piatkowski: Roanoke College
Examining the Evolution of Polar Auxin Transport in Bryophyte Gametophytes
Co-authors: Geoffrey A. Bader, Jessica N. Branning, Laura E. Kellam, Anne D. Wallace, Dorothy Belle Poli
Most hormone transport is through vascular tissue, but plants can transport auxin (IAA) uni-directionally through specialized cells in a process called polar auxin transport (PAT). Bryophytes have been shown to exhibit similar auxin-controlled responses as more complex vascular plants. Metabolism of the hormone was measured using 3H-IAA. Data collected from the liverwort, Riccia fluitans, suggests that simple diffusion is utilized for the transport of auxin into the cell. Hornworts (Phaeoceros laevis, Anthoceros punctatus and A. agrestis) and the moss (Rhizomnium sp.) tested, displayed facilitated diffusion influx. All four species displayed facilitated diffusion as the method of auxin efflux. The moss Rhizomnium showed inhibitor sensitivity. PAT assays in the moss Dicranum scoparium which provided data suggesting a non-polar orientation of protein carriers. The results suggest that bryophyte gametophytes contain protein carriers similar to those used in PAT in vascular plants but that the process may not be unidirectional and specialized yet.

Angela Gupta: Mary Baldwin College
Effect of CpG Oligonucleotide and LL-37 on Prostate Cancer Cell Growth and Invasion
Co-authors: April Lao, Maria Craig, and Paul Deeble, Departments of Biology, Chemistry and Physics
CpG oligonucleotides have recently been considered as an alternative to chemotherapy due to their ability to stimulate anti-tumor immune responses. However, CpG effects are weak, and previous results are contradictory. LL-37 is an antimicrobial DNA-binding peptide that increases the body’s immune response to CpG. The combination of CpG and LL-37 has recently been shown to enhance the anti-tumor effects of CpG on ovarian cancer in mice. In this project, the effect of CpG combined with LL-37 on prostate cancer cell growth and invasion was investigated utilizing PC-3 and LNCaP prostate cancer cells. The addition of LL-37 was hypothesized to enhance the effects seen with CpG (i.e. decreased growth and increased invasion). Results indicate the combination of CpG and LL-37 increases growth in PC-3 cells and increases invasion in LNCaP cells. These results indicate that CpG oligonucleotides in combination with LL-37 should not be used as a therapy against prostate cancer.

Ariola Bardhi: Averett University
A Study of the Normal Flora in Individuals from Different Countries
This research project studies the role of geographic location in normal flora. Normal flora is the small population of microorganisms that populates the human body without causing disease. It usually varies from one individual to another, and it is affected by the diet of the individual, and the climatic and hygienic conditions which an individual lives in. Samples from the skin and mouth of twelve students who lived in their home countries for one month were taken when they arrived in the U.S. A series of laboratory tests were run to identify the microorganisms present in the samples. After ten weeks, a second group of samples was obtained from the same students who had been living in the U.S. during the ten week period. The data were analyzed to determine whether the geographic location affected the normal flora of the individuals, or not.

Morgan Franke: Sweet Briar College
The Impact of Light and Nutrients on Dimorphism in the Plant Species Thalictrum pubescens
Different resources may be required to maximize the growth and reproduction of male and female plants. I measured Thalictrum pubescens from five sites in Amherst and Nelson County, Virginia to evaluate if the environment plays a role in dimorphism. I evaluated the plant’s sex, height, stem diameter, flower number, and leaf number. The environmental traits measured were percent canopy open, percent organic matter, phosphorus, potassium, magnesium, calcium, and soil pH. The results indicated that dimorphism was influenced by the environment and occurred in at least one trait at most sites. The sites with taller females with bigger stem diameter had lower soil nutrients. Females had a stronger correlation between canopy open and flower number. Males showed a stronger correlation between potassium and flower number than females. Potassium may be limiting flower production in males, while light seems more limiting in females. These correlations represent evidence of environmentally influenced dimorphism.
**Session II | 9:30 – 10:45 AM  Room A**

**Joe Hochstetler: Eastern Mennonite University**  
**Analyzing Projectile Motion with Air Resistance in General Physics Lab**  
**Co-authors: Leah Boyer**

When projectile motion is studied in introductory courses, there is a lack of accessible equations that include air resistance to model the flight of the projectile. We propose a model that can be derived using straightforward calculus techniques, and then compare our model to experimental data as well as the standard equations without air resistance. Our model proved straightforward to solve and more accurate than the standard equations, but has room to improve for modeling the experimental data.

**Felicia McGuire: Sweet Briar College**  
**Coherent-Plasmon Enhanced Light Emission**  
**Co-author: Andrea Yocom**

In recent years, photonic crystals and photonic band gap materials have been an area of interest; specifically, the interest has been in surface plasmon resonance (SPR). Excitation of surface plasmons by light results in enhanced electromagnetic fields, characteristic of propagating surface plasmon polaritons (SPPs), and in intense scattering. The propagation continues until SPPs interact with an irregularity, resulting in the release and the possible re-emission of the energy of the electromagnetic field as coherent light. A metal-dielectric-metal structure, constructed by depositing a monolayer of monodisperse silica nanospheres on a glass substrate in a hexagonal close-packed pattern, evaporating 50nm of silver over the spheres, spin-coating a dielectric polymer over the silver, and evaporating 50nm of silver over the polymer, was used to provide the interfaces that support SPP propagation. These devices can be used as new structures for coherent light emission and for improving the luminescence of 2D light emitting devices.

**Karmel James: University of Mary Washington**  
**Synthesis of Phosphonic Acid Compounds for the Functionalization of Copper Surfaces for Electrocatalytic Applications**

The efficiency of transition metals used as electrocatalysts in the chemical reduction of CO2 can be increased by bonding the catalyst to an electrode surface; attaching the catalyst to a metal surface can be achieved using phosphonic acids. Two phosphonic acid compounds, 11-hydroxyundecyl phosphonic acid (1) and 4-(10-decylphosphonic acid)-4’-methyl, 2,2’-bipyridine (2), were synthesized and confirmed using nuclear magnetic resonance (NMR) spectroscopy. Once confirmed, compound 1 was used in the modification of a copper surface by a tethering by aggregation and growth (TBAG) deposition method. The modified surface was then used in a Steglich esterification reaction where the terminal hydroxyl group reacted with isonicotinic acid to form 11-(undecylphosphonate) isonicotinate. The copper plate was subsequently modified through a reaction with tricarbonyldichlororuthenium (II) dimer that yielded the surface-bound electrocatalyst. The steps used in the modification process of the copper plates were all confirmed using reflectance infrared (IR) spectroscopy.

**Katie Bitting: Sweet Briar College**  
**The Synthesis of 2-(p-carboxymethoxybenzylidene)-5-methyl-3(2H)-furanone: An Inotilone Derivative**

Inotilone is a 3(2H)-furanone isolated from the mushroom Inonotus sp. found to have anti-inflammatory and anti-cancer properties. The goal of this research is to synthesize compounds which are derivatives of inotilone for later biological testing for potential use as cancer drugs. Originally the synthesis of 2-(p-carboxybenzylidene)-5-methyl-3(2H)-furanone was attempted, but the reaction scheme was not successful. However 2-(p-carboxymethoxybenzylidene)-5-methyl-3(2H)-furanone was synthesized in a 0.15% yield overall. Additionally, 4-carbethoxy-2-(p-carboxymethoxybenzylidene)-5-methyl-3(2H)-furanone and 4-carbethoxy-2-(p-carboxybenzylidene)-5-methyl-3(2H)-furanone were both synthesized in a 24.5 and 31.8% yield respectively. No effective method was found to remove the ethyl ester group on the furanone ring in order to get the desired inotilone derivatives, however the compounds may still be useful for biological testing for anti-cancer properties.

**Sarah Ahlbrand: Roanoke College**  
**The Biosynthesis of the Chemotherapeutic Agent ET-743 Focusing on the Heterologous Expression of Key Biosynthetic Genes**

**Co-authors: Michael Schofield and Dr. Christopher Rath**

ET-743 is an approved chemotherapeutic natural product thought to be produced by Endoeuteinascidia frumentensis, a bacterial symbiont of the marine tunicate Euteinascidia turbinata. Total synthesis of the drug is currently not feasible, and obtaining large quantities of the compound is hindered by the inability to culture E. frumentensis.
Previous efforts towards heterologous expression in E. coli resulted in the creation of expression constructs for enzymes involved in the ET-743 biosynthetic pathway, but preliminary attempts at expressing these constructs were unsuccessful due in part to poor codon compatibility and protein insolubility. Our project focused on transforming biosynthetic enzyme constructs into E. coli strains engineered with genes designed to facilitate protein expression. Currently, EtuA2 domains and other enzymes involved in the biosynthetic pathway have been successfully subcloned into fusion partner constructs. Ultimately, expression of enzymes in the biosynthetic pathway will lead to a better understanding of structural information regarding the enzymes and to a novel laboratory method of total synthesis of ET-743 and the potential creation of analogues. Research was done at the University of Michigan through an REU project.

Session III | 9:30 – 10:45 AM Room C

Sam Beasley: Roanoke College
A Psychological View of Love
How do you define love? What elements make up love? Through research, theories, models, and methods, I break down the elements of what love consist of using Sternberg’s Triangular Theory of Love showing us the types of relationships, John Lee’s six styles of love, and Maslow’s Hierarchy of Needs. With these three models love can be understood a little more easily. Overall, love is love and it has many definitions and is meant in many different ways in many different relationships. Interpreting and understanding love and each other is the hard part.

Kathleen Schneckenburger: Neumann University
High on Love: An Interpersonal Addiction
The neurobiological response elicited when falling in and out of love is similar to that of a drug addiction. This presentation draws connections between love and drugs by examining the core elements of addiction. It may be sweet words, soft kisses, and kind gestures that ignite the flame of passion but what causes psychological dependence is located deep within the reward centers of the brain. So is it love, or is it addiction?

Amanda Newman: Roanoke College
Intimacy and Texting Behaviors
Recent research on “relationship talk” indicates length of relationship predicts the level of intimacy within romantic relationships (Knobloch, Solomon, & Theiss 2006). The current study extends these findings by exploring the relationship between text messaging and intimacy in romantic relationships. Approximately 37 participants were surveyed regarding their texting behaviors and the level of perceived intimacy in their romantic relationships. Length of relationship was positively correlated with both frequency of texting and intimacy within texting. Perceived intimacy was also correlated with intimate message content. We will explore social implications for college students.

Katelyn Conneen: Christopher Newport University
Exploring the Role of Curvature in Object Recognition
Co-authors: Verity Watson, Samantha Seay and Kelsey Jackson
The visual system is capable of recognizing objects using only a few highly informative features. Attneave (1954) argued that points of maximum curvature (such as corners) provide the most information for recognition, whereas Kennedy and Domander (1985) proposed that points located between areas of maximal and minimal curvature are the most informative. The current study further explores the role of curvature in object recognition. Participants were asked to identify objects on a screen that were rendered as “connect-the-dot” images. Dots were positioned around the boundary of the object according to four conditions: high-curvature, moderate-curvature, moderate-spacing, and even-spacing positions. The number of dots required for successful recognition was measured, showing that recognition of high-curvature renderings required significantly more dots than the other three conditions. These data contradict Attneave’s (1954) theory that points of maximum curvature are most informative for recognition, showing that even spacing is required for successful recognition.

Samantha L. Jones: Virginia Military Institute
The Effects of Facebook on Memory
Co-author: Scott T. Frein
Facebook is a social networking website or online source that is designed to allow multiple users to publish content themselves and interact with others. This study uncovers facts about social networking and how it is affecting our cognitive functioning, such as memory. Memory is the ability of the mind to store past sensations, thoughts and knowledge. We hypothesized that memory would be lower in those that used Facebook actively for more than one
hour a day compared to those that use Facebook for less than one hour due to the feed of continuous information and the fact that members rely on Facebook to store all of the information (essentially do the remembering) for them. Forty participants completed a free recall memory test for 72 words. Results indicate that there is a trend for lower recall among the high Facebook users (t (38)=1.78, p= .084).

Session IV | 9:30 – 10:45 AM Room B

Claire McNabb: James Madison University
Strange Fruit: The Influences of Two 20th Century Lynchings
In the American South from 1890-1920, the lynching of African American males was fairly common. This research takes a look at the lynchings of Ed Johnson (1906) and Ell Persons (1917) and discusses how their embodiment of the "worthless Negro" influenced their deaths, while their differing circumstances impacted how their deaths were received.

Julianna Joyce: Randolph College
“They’re Not Like You and Me, Which Means They Must Be Evil”: The Racialized Other in Disney Film and Television Animation
Focusing on selected film and television animations from 1992 to the present, the project reveals relationships between Disney’s business and marketing strategies and its multifaceted depictions of racialized groups. Drawing upon interdisciplinary theories of racialization, the project analyzes Disney’s representations of race and racism as complex and ambivalent portrayals. The investigation is also situated within scholarly conversations about contemporary cultural industries and the cultural production of race and racism.

Alyssa Bostrom: Roanoke College
Immigration and the Media
The public’s perception of the world today is widely shaped by the media. A controversial topic that is frequently in the news these days is immigration. The purpose of my research was to find a correlation between how the television news media presents immigration issues and what the public’s feelings about immigration are. The project involved intense media immersion that provided insight as to how immigration is presented. While the secondary analysis of attitudinal data about immigration in the U.S. through the GSS public opinion surveys, provided a portrait of how the public feels about immigration. The focus was a comparison between English-language news and Spanish-language news. The findings show Spanish-language news media presents the topic as if they are advocate for Latino communities and overall, that Americans are currently unsure about the topic of immigration as many of them are more concerned with issues surrounding the economy and unemployment.

Melissa Jarkowsky: Neumann University
Remembering the Truth: Japanese American Internment in the United States
Japanese American history tends to be overlooked when World War II is studied, but the treatment this group of people received needs to be considered when Americans judge the rest of the world as a country’s past impacts both its future and its perception alike. The American government’s internment of Japanese Americans will be first detailed then compared with other nations’ negative historical events. Additionally, the racism experienced by these Americans, with regard to all of the information currently available, as opposed to the biased information originally presented, will be examined.

Adam Ryan Blincoe: James Madison University
Jacksonian Values in Political Prints During the Elections of 1824 and 1828
In 1824, the people elected Andrew Jackson to become the next president, but he did not win a majority of the Electoral College vote. The House of Representatives, due to the Twelfth Amendment, chose John Quincy Adams to become president, and Jackson immediately started to campaign for the next election. The Jacksonians, the people who supported Jackson, saw the election results as “power,” in the form of an aristocracy ruling the common class, winning over “liberty,” the idea of people choosing who has political power. Jackson, in both elections, represented this idea of liberty and became a political force. In my paper, I analyze political cartoons and advertisements, found in the Library of Congress’ collection, in the elections of 1824 and 1828. These cartoons and images show the pro-Jackson sentiments of the public and the hopes and fears of the Jacksonians with power winning over liberty.
Jennifer Will: Sweet Briar College  
Corrupted States: Tyranny in Plato and Thucydides
The term "tyrant" was introduced in ancient Greek philosophy to describe any ruler who assumes power through unconventional means, but its implications were neither negative nor positive. Today, the word has a much stronger meaning, suggesting a disregard for the rights of citizens and a general inclination to cruelty. By looking at ancient writings, such as Plato's Republic, and modern writings, such as Hannah Arendt's Origins of Totalitarianism, I will investigate how the concept of tyranny has changed since ancient times, and whether or not we can apply ancient ideas about tyranny to oppressive regimes in the 20th and 21st centuries.

Kacy Coates: Mary Baldwin College  
The Village of Le Chambon: Nonviolence During the Holocaust
The citizens of the village of Le Chambon in France performed extraordinary actions of nonviolent resistance during the Holocaust under the Nazi-friendly Vichy regime. They participated in nonviolent resistance by harboring Jewish refugees and keeping them safe from the Nazis, and they openly admitted that they disagreed with the Nazi’s persecution of Jewish people. All of this was done nonviolently despite the extreme violence of the genocide which they were opposing. A Le Chambon pastor, Andre Trocme, and his wife, acted as unofficial leaders of this nonviolent resistance. This paper/presentation draws upon such sources as Lest Innocent Blood Be Shed by Philip Hallie and The Courage to Care: Rescuers of Jews During the Holocaust by Carol Rittner and Sondra Myers. I seek to show how nonviolent citizen resistance can be a viable and ethical method of resistance even during such unparalleled violence as genocide.

Thomas Davis: James Madison University  
The "Only Pure Fountain of Power:" The Rationality of the Alien and Sedition Acts in the Federalist Mind
In most of historical scholarship, the Federalists who passed the Alien and Sedition Acts are vilified while their Democratic-Republican counterparts are seen as valiant defenders of liberty. When viewed in the historical context of their time, however, it is evident that Federalists possessed logical reasons for the passage of the Acts. In the 1790s a legitimate fear of French subversion engendered by the now infamous XYZ Affair provided the Federalists with the ability to pass the Alien and Sedition Acts. These acts were intended to eradicate French hostility and neutralize the dangerous “factions” the Federalists saw in Congress. Even the blatant partisanship the Federalists employed in the enforcement of the Acts was consistent with their political philosophy. Furthermore, the Federalists believed and rationally argued that the Acts were necessary to preserve republican government. The legacy of the Federalists has been misunderstood and misinterpreted.

Grace Caudle: James Madison University  
With All “Un”-Deliberate Speed: The 1970 School Year in Richmond, Virginia
In the 1954 case of Brown v. Board of Education, the US Supreme Court ordered states to integrate racially segregated school districts. Throughout the South, this decision was met with controversy and outrage, especially in Richmond, Virginia, the former capital of the Confederacy. From 1955 until 1969, Richmond strove to give the façade of successful integration without actually integrating schools. In 1970, the first true integration took place, with the implementation of a busing policy. Parents, teachers and community leaders still opposed integration sixteen years after Brown and wanted to see busing fail. This study however shows that when looking solely at the student experience with busing, integration did not produce the horrors many parents, teachers and community leaders vehemently predicted.

Kristina Kowalski: Christopher Newport University  
Comparative Study of 2001 and 2011 Bulk Densities in the Great Dismal Swamp  
Co-author: Robert Atkinson
The Great Dismal Swamp has been repeatedly disturbed over the past 10 years, from Hurricane Isabel in 2003, the Logging fire in 2008, to the current Lateral West fire and reestablishing native forest types is a priority. However, drainage causes slumping and fire reduces fine organic matter particles, which can increase bulk density and may not favor desired tree species. In June, soil samples were obtained from the upper 10 cm of the soil at 32 plots using 59.15mL(x9 per plot) tins and will be compared with pre-fire (2001) bulk density data from nearby stands. Mean bulk density in 2001 ranged from 0.084± 0.021 g/cm³ to 0.244 ± 0.027 g/cm³ on the plot level. Near term planting strategies should attempt to replace organic matter lost through a combination of fire and decomposition with the
longer term goal of reestablishing species such as Atlantic White Cedar.

Shawn J. Wurst: Christopher Newport University
A Characterization of Soils in Created Wetlands in Loudoun County, Virginia
Co-authors: R.B. Atkinson and J.D. Roquemore
Soil compaction and low nutrient availability have hindered efforts to create functioning wetlands. The purpose of this study was to characterize the effect of soil physical and chemical parameters on tree growth at created wetlands in Northern Virginia. Seven species of trees were planted as bare roots, in gallon (3.8-L) pots, or tubelings at 3 created wetland sites on March 9-10, 2009 while growth of individual trees was monitored immediately after planting and each subsequent August. Soil samples were gathered at the sites this May; KCl extraction was performed to quantify Nitrogen concentration and Mehlich 3 extraction for Phosphorus. A LISST was used for particle size analysis. Averages for bulk density (1.04±0.14), Nitrate/Nitrite (3.6±3.7) and Potassium (66.1±64.3) suggest that each may influence observed growth trends among tree species.

Melany Su: Marymount University
Performance of the TGM-4510 Tag on Hawksbill Turtles (Eretmochelys imbricata)
The hawksbill turtle (Eretmochelys imbricata) is a critically endangered species under the International Union for Conservation of Nature and Natural Resources. Predation, especially by humans, contributes most to its population decrease. Efficient protection of the hawksbill requires a deeper understanding of its migration and nesting habits. In summer 2011, three GPS Marine System (TGM-4510) tags were installed on female hawksbills encountered near Gales Point, Belize, where the nesting season falls between April and August. Evaluation of recent data has confirmed the importance of two-dimensional mapping in determining nest locations. Habitation of certain locations, previously reported only by word of mouth, has been recorded. The usefulness of depth measurements, on the other hand, lies in question. Most recorded depths are 2 meters below sea level, but implausible heights above sea level have also been reported. Further evaluation of the TGM-4510 tag’s performance will help decide whether funding should continue as allocated.

Ariel Firebaugh: Roanoke College
Lymantria disp-erase! The Effect of Landscape Structure on Male Gypsy Moth Densities
The gypsy moth (Lymantria dispar) was introduced from its native Europe in 1869 (Tobin et al. 2007). Since 1924, over 81 million acres of forest have been defoliated by this “pest” (USDA 1995). Male gypsy moth density is strongly correlated with mating success and may anticipate future outbreaks (Tobin et al. 2007). We examined the relationship between male gypsy moth capture in and various landscape and habitat features, predicting that moth capture would be greatest in high-quality habitats (high basal area of preferred hosts) that neighbored other large forests. Moth capture was highest in forests that were close to other large forests (p = 0.025, R²= 0.35), but was not affected by habitat quality (p = 0.0465, R²= 0.045). The control of “problem” populations is often resource-intensive. Using landscape features to identify vulnerable, low-density populations may enable land managers to develop more efficient control programs for the gypsy moth.

Mellony Seidel: Christopher Newport University
Mortality and Herbivory Intensity of Two Nursery Stocks of Atlantic White Cedar, in Chesapeake VA
Co-author: Dr. Atkinson
Herbivory by white-tailed deer in afforestation and reforestation projects can increase tree mortality and decrease growth. The purpose of this study is to compare mortality and herbivory intensity for Atlantic white cedar (AWC) seedlings from two nursery stock sources (ArborGen, Inc. and NC Forestry Service, 180 of each type) were planted in 10 plots and mortality and herbivory data were collected in summer of 2011. NCFS trees had a higher mortality rate (23.8%), when compared to ArborGen trees (18.8%). NCFS trees had a higher browse rate (63.9%) than ArborGen trees (59.8%, p=0.018). Nursery source of AWC may play a role in restoration success and should be considered in restoration plans. Future study of seedling tissue nutrient content may provide additional insight regarding patterns of herbivory on AWC.

Session VII | 11:00 AM – 12:30 PM  Room B

Erin Grogan: Lynchburg College
Ecocriticism and Gender in “The Grapes of Wrath”
This excerpt from a longer examination of gender and the environment in John Steinbeck’s “The Grapes of Wrath” explores how Steinbeck’s descriptions of nature impact the expression of gender within the text. Because males are
equated with the land throughout the novel, the paper investigates how masculinity is weakened though the eviction of the Midwestern families from Oklahoma. Additionally, because masculinity and femininity are typically conceptualized as binary opposites, the impact of the weakening of masculinity on femininity is also discussed.

Holley Ledbetter: Sweet Briar College
Gender and Dual Patronage: The Example of Ferdinand I and Sancha in León
This paper treats the patronage of the 11th century Leónese royals Queen Sancha and King Ferdinand, most notably a prayer book commissioned and owned by the royal pair. This study questions the accuracy of the older view that King Ferdinand was the sole patron of the prayer book and that Sancha’s role in its genesis was minimal. Moreover, this study also questions the accuracy of the newer view that Queen Sancha alone commissioned the prayer book independent of her male counterpart. This research posits that the patronage of Queen Sancha and King Ferdinand was a joint affair. I argue that the images of the prayer book depict an active conversation between the two patrons that helps define the nature of gendered patronage. It is with this new approach that a more holistic understanding of gendered patronage is made possible.

Kristen Wander: Longwood University
Medieval Parish Guilds in England
Parish Guilds and their influence have been underappreciated in Medieval Studies. Originally guilds were started as groups to support commerce. Later on the guilds supported the patron saint and church of the community. They also gained influence in the local government. Many government officials were members of the guild, leading to a strong tie between church and state. Charity was also important. All gave varying amounts depending on circumstances and guild wealth. Guilds also upheld social norms. Each gender had specific jobs within their own sphere of influence. Some parishes were large enough to support two guilds one for women and one for men. Allowing women to have almost total autonomy in their sphere, the parish gave women a voice they never had before. As knights and traditional power-brokers seemed to hold an unstable position in the thirteenth and fourteenth centuries, guilds laid the foundation for new structures to come.

Ann Key: Lynchburg College
Classical Works by Female Composers: An Occupation for the ‘Fairer Sex’
The Classical Era (1750-1820) became a time of change and implementation of new ideas. In addition to renowned composers such as Wolfgang Amadeus Mozart (1756-1791), the Classical Era cultivated many talented female composers. With the intent of improving music pedagogy and performance, the purpose of this research was to gain information about female composers of the Classical Period (1750-1820). The specific problems of this study were to: 1) identify female composers and their compositions; 2) examine how these female composers succeeded in a field dominated by men; and 3) analyze Sicilienne for Violin and Piano, a composition by Maria Theresia Von Paradis (1759-1824). Five female composers, Franziska Lebrun (1756-1791), Maria Agata Szymonowska (1789-1831), Marianne Martinez (1744-1812), Nannette Streicher (1769-1833), and Maria Teresia Paradis (1759-1824) became accomplished musicians during their lifetimes. Due to their talent with musical instruments and composition, these women influenced history and the development of Western Music.

Alexandra Curinga: Lynchburg College
The Evolution of the Keyboard: Scarlatti and His Sonatas
The Classical era (1750-1830) brought about evolutionary changes in the structure of keyboard instruments, reformatting music to convey the best quality of sound. With the intent of improving music pedagogy and performance, this research investigated the development of keyboard instruments during the early classical era and the life of Domenico Scarlatti (1685-1757). The specific problems of this study are as follows: 1) to trace the development of keyboard instruments during the eighteenth century; 2) to examine the life and music of Scarlatti; and 3) to analyze Sonata in C Major K. 159 (1752). Keyboard instruments of the early eighteenth century included the harpsichord and the clavichord; thereafter, the fortepiano replaced earlier keyboard models. Scarlatti, a harpsichordist, composed numerous keyboard sonatas. These sonatas utilized binary form. An analysis of Sonata in C Major K. 159 represents Scarlatti’s sonata composition style, which includes 555 keyboard works.

Session VIII | 11:00 AM – 12:30 PM Room C

Kristen Bilotta: Neumann University
The Power of Place: Pilgrimage as a Path to Spiritual Transformation
For hundreds of years, people have taken pilgrimages to sacred places to search for God and to find acceptance and meaning. Through their personal growths and struggles we can find perspective in our own lives. Each pilgrimage
destination is different; each religion or faith affiliation has sites all over the world that hold deep spirituality. This presentation will examine the transformative function of pilgrimage as it applies to the lives of Sts. Francis and Clare of Assisi. The works of Roch Niemier, André Cirino, Robert Hamma, and William Schmidt will be used to explain key concepts of a pilgrimage, including: the importance of spirituality of place, the focus of community, the experience of Eucharist and prayer, and the wisdom and impact of solitude. The author’s recent pilgrimage to Assisi will serve as an illustration of the role of pilgrimage in bringing about spiritual transformation.

Jacob D. Glessner: James Madison University
Prayer, Prophecy, Politics and Polemics: Martin Luther on the Turks
This presentation will explore the writings (both private and public) of Martin Luther regarding the Ottoman invasions of Eastern Europe in the early sixteenth-century. Luther’s writing against the Turks communicated his own political prescriptions and grievances against imperial leadership. Luther also critiques the role of church hierarchy in political decision-making. Additionally, Luther’s writing seeks to advise his audience religiously, encouraging strict religious adherence to turn back the threats of the Turks, announcing them as divine punishment. Furthermore, Luther’s writing incorporated a polemical argument against Islam, comparing the religion of the Turks to his own theological perspective.

Tessa Evans: Lynchburg College
New Light in Bedford: The History of the Organized Church in Bedford County from 1750-1850
Bedford County, Virginia, represented the quintessential Piedmont region: a substantial amount of tobacco production, clear class structures, and some slavery. Bedford County’s religious history followed suit of the other regions in colonial Virginia to a certain extent, in which Protestantism dominated, and the evolution of denominations occurred based on social and political reasons. Overtime, Bedford became a core for new light religion. The gradual shift from traditional Anglicanism to more emotional new light denominations can be seen by examining the location of churches in the county, the members of the various denominations, and the time frame in which various churches were established, from 1750-1850.

Elizabeth Nowak: James Madison University
Women from the Hearth: Lottie Moon and the Southern Baptist Missionary Movement
Society in the American Antebellum South expected its women to embody virtue, domesticity, submissiveness, and piety. Some scholars have heralded the Protestant women’s missionary movement as a first step in the woman’s rights movement. However, Charlotte “Lottie” Moon, one of the most famous and prolific figures of the southern Baptist missionary movement, illustrates how southern women transferred their social gender constructions to the missionary movement. Moon’s correspondence, journal publications, as well as articles from various Baptist circulars, notably The Christian Index, clearly illustrate how Moon and other women embraced their roles as mothers, wives, and pious women to spread the Word of God. Their work was not politically motivated, but was grounded in the soft graces of traditional southern womanhood. The fields of women’s history and religious history are relatively new disciplines. More research is needed in these fields to truly understand our social histories as a whole and women’s place in them.

Courtney Legler: James Madison University
The Great Stone and Murray Circus: A Look into 19th Century Entertainment
It was called “The Great Stone and Murray Circus” though not many people can say why; like many circuses of its era, the historical relevance of the Stone and Murray circus has been lost in time. This presentation examines the interplay between 19th century circuses and the audiences they entertained, with special focus on the importance of reputation in the New England region, and the new contribution of the Stone and Murray Circus. Points highlighted will look at a brief history of the circus as defined in the 19th century, and how social standards impacted decisions of circus managers and circus performances.

Heidi Ermlick: James Madison University
General Braxton Bragg: "Trials" of War
This paper is about General Braxton Bragg and his unpopularity amongst his troops during the civil war. This paper is largely based on a set of original documents found in March, 2011. It explores the harsh nature of discipline in Bragg's army by examining trial records and general orders under Bragg’s command.
Alexandra Kolleda: James Madison University  
John C. Calhoun and the Nullification Crisis  
Nineteenth century United States was fraught with questions over slavery, protective tariffs, and the strength of the federal government. The South felt threatened by the ability of Congress to push through protective tariffs even with southern opposition. The federal government was becoming too strong, and the southern reliance on slavery was beginning to be questioned in Congress. South Carolina believed that their way of life was in danger until John C. Calhoun, Vice President of the United States, stepped forward as the supposed Savior of the South; however, the rest of the South vehemently opposed South Carolina’s actions. Calhoun, at first seen as a devout nationalist, completely changed positions, choosing instead to support states’ rights. Using Calhoun’s own papers, his true motives in supporting the nullifiers are examined, and he is shown to be more selfish than selfless.

Margaret Anderson: Roanoke College  
The Executive Office of the President: Analyzing the Influence on Policy-Making  
The President of the United States is continuously faced with decisions that are imperative to the well-being of Americans. Each decision is attached with a multitude of consequences as all United States citizens are affected by a signature enacting a law, a veto, or an executive order. The President is not alone, however, in this decision-making process. In 1939, President Franklin R. Roosevelt created the Executive Office of the President (EOP) to assist the President with his duties. The EOP consists of numerous federal agencies designed to advise the president and act as a liaison for Americans. Thus, this study has been created to examine the function(s) of White House Offices and Councils. This paper will focus on the "why" aspects of policy-making through case study and historical methods of research, as it is crucial that the people of the United States are able to comprehend and recognize presidential motivation.

Mary Ta: James Madison University  
Questioning America's Morality: Understanding Inaction from the United States During the Rwandan Genocide  
In April 1994, 800,000 Tutsi were systematically killed by Hutu in the small African country of Rwanda. In response to this genocide, one of the worst of the 20th century, the international community did close to nothing. The United States, in particular, deliberately chose inaction. This paper explores the reasons as to why the United States under the Clinton administration failed to intervene and stop the genocide in Rwanda. It examines the political atmosphere during the time the genocide occurred, the information the United States received during the course of the genocide and the nature of its occurrence. While the Clinton administration received immense criticism by Americans after the fact, the plausibility of intervention is quite debatable after examining the circumstance of the time. Newspapers, declassified CIA correspondence and other government documents are the primary sources analyzed.

Leighann Kimble: Mary Baldwin College  
An Alternate Vision for U.S. Policy in the Middle East  
The United States has had extensive involvement in Middle East since the Cold War Era. In response to events of September 11th, 2001, the method launched by the Bush Administration has been to promote democracy, forcefully or otherwise, in order to prevent the growth of terrorism, thus strengthening national security. The strategy of implementing democratic institutions in addition to the “War on Terror” has been generally unsuccessful due to US misunderstanding and generalization of various aspects of the Middle East, global mistrust of US motives, particularly in the Middle East, and the rejection of US influence in the Middle East, leading to failure in Iraq and Afghanistan. It is essential that the United States make radical changes to protect the world from terrorism by abandoning their call for forced democracy and most importantly removing selfish US prospects from the “War on Terror” justification.

Meghan O’Reilly: James Madison University  
Assessing Henry Morgenthau and the Armenian Question  
The Armenian Genocide was a key event that occurred in the shadows of World War I. Henry Morgenthau, the US Ambassador stationed in Constantinople, wrote an important account of the Armenian Genocide as viewed from the Ottoman capital. Controversy surrounds the Armenian Genocide and more attention must be brought to Morgenthau’s account, Ambassador Morgenthau's Story. I will offer a critical analysis of Henry Morgenthau’s work, carefully assessing the issues of credibility and bias. Moreover, I will address how three eminent sources about the Armenian Genocide have both used, and misused, Morgenthau’s account in terms of these issues.
Morgenthau’s work must be applied in a more skeptical manner and in combination with other sources.

Hannah Facknitz: James Madison University
The Baghdad Railway: The Unrealized Nightmare of the Allied Powers
Before the Great War (1914-1918), Germany endeavored to connect the North Sea at Hamburg to the Persian Gulf via Baghdad by rail. A German-Ottoman alliance was then vital to the success of this Baghdad Railway. France, Britain, and the United States, however, saw this alliance and the resulting railway as a threat to their own imperial and commercial might. As the political climate continually shifted towards war, the Triple Entente developed political campaigns and propaganda against Germany’s new alliance and the Baghdad Railway, using it as the symbol of German imperialism. The Baghdad Railway itself was a failure and largely incomplete in 1914, so it could not directly or physically influence the war. The Triple Entente, however, used the railway as the frame for their portrait of Germany’s menacing imperialism. Thus, it was the idea of the railway—not the railway itself—that was a cause of the Great War.

Session X | 11:00 AM – 12:00 PM Waines Lounge
Julia Boudrye and Lauren Schwabe: Roanoke College
Smartphone use in College Students: Implications and Impact
In the fast paced, technology driven world that we live in, it is fairly common to be interrupted while working on something important. In this study, we explored how technology enabled interruptions and a lack of school priorities affected students’ stress levels and preoccupation with their Smartphones. Fifty-one students were surveyed on smartphone use and academic/social priorities. Multivariate analysis of variance indicated that there are both internal (lack of school priorities) and external (techno-interruption) pressures that cause individuals to experience higher stress levels and preoccupation with their Smartphones. A qualitative analysis indicated that students reported both positive and negative experiences from on and off task Smartphone interruptions. We will examine practical implications for teachers and for students.

Megan Hageman: Randolph College
Academic Integrity at Randolph College
Randolph College’s Honor Code Infraction archives were studied in order to understand the demographics of students required to come before the Judiciary committee. Comparisons of infractions were made before and after Randolph College transition to coeducation. Interesting findings emerged when comparing the four coeducational years to the 14 single sex years, as well as, the comparison of the percentage of gender population to the percentage of infractions sent to the judiciary committee.

Ethan L. Betts: Virginia Military Institute
Is Psychopathy in College Students an Adaptive Response to Adverse Childhood Environments?
Caldwell (2001) proposed that psychopathic traits are adaptions to adverse childhood conditions. This study tested his proposal. Forty-two undergraduates at a military college participated (67% male; age range = 18-25). Tests administrated include MMPI-2 Pd (Psychopathic Deviancy) Scale, Adult Attachment Scale, Sensation Seeking Scale, Boredom Proneness Scale, Confidential Life Events Survey, and the Inventory of Callous Unemotional Traits-Parent Version. Pd scores were correlated with lower levels of parental caring (r=.27; p=.04). Multiple critical life events were also correlated with Pd scores: witnessing non-domestic violence (r=.26, p<.05) or domestic violence (r=.31, p=.03) and motor vehicle accidents in childhood (r=.32, p=.02). “Boredom-killers” (High Boredom Proneness + Low Sensation Seeking) scored significantly higher on the Pd Scale than “thrill-seekers” (Low Boredom-Proneness + High Sensation-Seeking). The mean Pd scores for “boredom-killers” was T62, versus T54 for the “thrill-seekers”. These results support many of Caldwell’s hypotheses concerning the etiology of MMPI-2 Pd Scale elevations.

Jodie Stevenson: Sweet Briar College
Factors Affecting the Overall Mental Well-Being and Retention of Sweet Briar Students
College dropout and attrition rates continuing to grow, presenting a challenge to higher education. The present study attempted to assess the characteristics of students least satisfied with their college experience. The study focused on attachment style, self-esteem, perceived stress, and coping behaviors, factors thought to be related to college well-being. Previous studies focused on the relationships between college attrition and one or two factors (mainly stress and coping behaviors), and a focus has not yet been placed on determining specific coping skills that might be important for different measures of college wellbeing. The ultimate goal of this line of research is to isolate factors most relevant to the college well-being of students and to provide guidance to college administrations as to how to
promote student mental well-being and lower attrition rates. Results from a survey of 270 students will be discussed.

**Session XI | 2:00 – 3:30 PM  Room D**

**Mira Elena Nair: The College of William and Mary**

**Contextualizing Costa Rican Women’s Struggle for Political Rights Between the Early 1900’s and the 1940’s**

Involving in-depth historical research, this paper argues for an interpretation of female suffrage which integrates the complex interplay of gender, class and race. Within a case study of female suffrage in Costa Rica, the paper challenges two interpretative traditions. First is the myth of Costa Rican exceptionalism which dismisses ethnic diversity as a feature of post-colonial nation-building, unlike nearly all other Latin American countries. Second is the hegemonic narrative of female suffrage told from the perspective of upper class people of predominantly European heritage. I examine the class origins of female teacher trainees and also consider the history of Afro-Caribbean women along Costa Rica’s Atlantic coast. I contend that this analytical approach enhances our historical and theoretical understanding of the dynamics of female suffrage, not only in Costa Rica, but also elsewhere. It also questions previously more limited narratives which perpetuate patriarchal myths surrounding the genesis of women’s rights.

**Erin Dalvini: Sweet Briar College**

**The Soldier’s Mother: Turkish Motherhood in a Patriarchal State**

Turkey is viewed as a patriarchal state; however, it is clear that mothers dominate the domestic sphere. How does this dichotomy of power function in modern Turkish society? Carol Delaney has noted this contrast between a fatherly state and a motherly nation. Drawing upon my experience living in Turkey in a single mother household I analyze the contrast between these opposing images. This research was conducted through participant observation and academic research. I will be relating this research through an oral presentation.

**Krys Demboski: Mary Baldwin College**

**A Century of Gender Changes in Japan**

Through research taken from various sources, this thesis seeks to discover and prove how gender has changed in Japan over the past century. Topics such as Japan's historical patriarchy are contrasted with modern lifestyles of women. The focus is on women's rights and how they have progressed. By looking at the highly popular theater of Takarazuka, this paper seeks to show that ideas of fixed gender and sexuality have progressed to be more visible today. Further, it seeks to speculate that the role women play as mothers and workers can be combined or ignored in order to foster independence. Common knowledge about the Japanese population crisis and low marriage rate is incorporated. Takarazuka theater shows that dialogues about gender have become more open as Japanese people become less conservative about traditional roles. By bringing in issues of politics, economics, popular media, and domestic as well as sexual lifestyles, this thesis tracks the evolution of equal gender roles in Japan.

**Cierra Waitman: Mary Baldwin College**

**Trafficked Into Sexual Slavery: A Government Form of Control**

This paper examines the manner in which the Burmese government has used the threat of human trafficking to impose the Burmese identity on ethnic minority states. When the minorities don't comply, they are routed out of the villages and left to the mercies of human traffickers. Ethnic minority women and girls are especially sought after because they are not considered citizens, and, because they are secluded in remote areas, they are believed to be virginal, STD-free girls. Virgins sell at a higher price, and are sometimes even sold up to three times as a virgin. These women and girls are subjected to several forms of trauma, both mental and physical. If they happen to escape, they are stigmatized by the society. Throughout the whole process, the government doesn't help retrieve the girls, doesn't protect them, will sometimes send the girl back, or contribute to sex trafficking through bribery and corruption.

**Ashley Knowles: Lynchburg College**

**A Case Study of the Metcalfe Divorce of 1859-1860 in Bedford County, Virginia**

Divorce in the Antebellum South, rare for the nineteenth century contradicts the typical way of life, because the patriarchal and paternalistic society in the Antebellum South made for a difficult trial. Most divorce cases did not make it to court, and women could not sue their husbands themselves. Although some divorce cases went to court they all did not end in a divorce some ended in a deed of separation, the difficulties of divorce made this act so uncommon. A case in Bedford County, Virginia, demonstrates the difficulties of a divorce trial in the Antebellum South, the Metcalfes. The Metcalfes were members of a wealthier class, owning many slaves, and a few decent plots of land, which acquired some wealth. Those facts about the Metcalfes are what also make this divorce case one that
is unusual because of their status in society during the Antebellum period.

Mary Ann Mason: James Madison University
The Double Edge Sword: Feminism and Religion

paper explores how the feminization of religion during the Second Great Awakening gave New England women the confidence to step into society and how this confidence, fueled by religious fervor, moved New England women to take part in reform societies and later to move into abolitionist causes. The paper then moves on to discuss how women’s involvement in the abolition movement opened their eyes to the need of female equality. Also, the paper explains how this equality, while initially entrenched in the same religious zeal of the earlier social and abolitionist movements later broke into its own political sphere, free from the patriarchal systems of the New England church.

Session XII | 2:00 – 3:30 PM Room A

Stephanie Skipp: Longwood University
From Local Consumption to Mass Exportation: Change in the Costa Rican Cattle Industry
In the 1970s, Costa Rica’s cattle industry underwent a major transformation. Prior to the 1970s beef was provided primarily for local consumption, but in 1986 Costa Rica exported 36 million tons of beef, as cited in The Green Republic: A Conservation History of Costa Rica by Sterling Evans. This was spurred by demand in the United States for cheap beef and by falling market prices for Costa Rica’s traditional agro-exports, such as coffee. By analyzing the transition period, one can grasp the pervasive changes brought on by increased beef exportation. The environment was arguably the most heavily affected, and ranchers and farmers also faced difficulties in handling the new situation. Comparing the commodity chain of beef – what it affects along its production cycle - before and after the switch gives insight to the degree this altered the economics and environment of Costa Rica.

Gregory A. Hargreaves II: James Madison University
A Ditch in Time: The James River & Kanawha Canal, 1785-1879

The history of Virginia's James River & Kanawha Canal is full of controversy. In its time it was a source of endless, impassioned debate, and the grounds on which the canal debate raged were surprisingly diverse. These included the often contradictory interests of geography, politics, economy, and technology, and stirred the society of Virginia from top to bottom. Why was the JR&KC so controversial? What impact did the canal have on Virginia? And why was it built in the first place? Answers to these questions and many more when you find out just how exciting digging a ditch can be!

Safiyah Lopez and Shradha Shrestha: Randolph College
Assessing Some Externalities of Non-Profit Home Restoration: The LNDF in Lynchburg and Tinbridge Community

The Lynchburg Neighborhood Development Foundation (LNDF) restores residential properties in Lynchburg and assists low-to-moderate-income residents in securing affordable mortgages and fit housing. Programs like these stand to create a number of neighborhood externalities. This project extends and completes the work of numerous Randolph-Macon Woman's College and Randolph College economics students who have studied some of the LNDF's effects in Lynchburg. The results from this study are beneficial to the LNDF as well as other non-profits in the area to assess the effectiveness of their housing projects. First, we examine the changes in the assessed and sales values of the neighboring properties of the houses renovated by the LNDF in Lynchburg. We hypothesize that the home assessed and sales prices will increase at a decreasing rate as the distance between the restored home and neighboring homes increases. We supplement this analysis with results from a neighborhood satisfaction survey in the Tinbridge Hill community.

Frederick Mitsdarfer: Neumann University
Fair Trade: The Ethical Way to Trade

The exploitation of workers in developing countries results in the plutarchy gaining more wealth and power as the rest of the country suffers in conditions well below the subsistence level. This exploitation of the working class in developing nations is often accepted as a normal part of development. This presentation will show that free trade prevents the economic development of poorer countries and has established an imperialistic relationship between the United States of America and these poorer, less developed countries. Then, the presentation will propose the implementation of fair trade as a real, reasonable and ethical solution to the growing international economic disparity, which can be implemented effectively by modifying the current system. Finally, this presentation will call to action each man, woman and child to help correct this unethical exploitation of foreign people, countries and
lands in the mindless pursuit of financial gain.

Ross Hawkins: James Madison University
An Unexpected Silver Lining: The Use of POW Labor in the Central Shenandoah Valley During World War II

As the United States mobilized for World War II, certain areas of the nation’s economy needed additional labor in order to sustain it. Augusta County and Rockingham County of the Central Shenandoah Valley desperately needed workers, so both counties received a supplemental German prisoner of war (POW) workforce until the end of the war. From mid 1944 to late 1945, German POWs worked in orchards, agricultural processing, and forestry jobs. During the German POWs’ stay in the Central Shenandoah Valley a type of informal relationship formed between these prisoners and the locals. This bond may not have been so much a friendship, but a mutual understanding between the locals and the POWs, which acknowledged that a gracious coexistence would best facilitate each group’s needs and wants.

Ella K. Sampoli: James Madison University
America the Bootiful

This work focuses on American, or Patriot Privateering during the early years of the American Revolution. Long overshadowed by land campaigns, this work highlights naval engagements between the Patriot forces and the British navy. Also examined are the social, economic and ideological consequences that privateers and their financiers experienced once they became involved in the enterprise.

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Poster Session | 2:00 – 3:30 PM Boxwood Room

1. Caitlin M. Jones: Sweet Briar College
The Use of Engineering Technology in the Determination of Historic Brickwork
Ceramic materials, such as brick, contain a multitude of information regarding the past. By applying the use of engineering technology to further investigate this material, this time capsule may be unlocked and further historic provenance of the structure be drawn forth. The purpose of this project was to investigate the material properties of the brickwork of Tusculum, a home built ca. 1755 in what is now Clifford, Virginia. Several forms of engineering materials analysis were performed on the brick samples to determine the composition, mineralogy, strength, durability, porosity, and elasticity. These tests included basic physical analysis, X-ray diffraction (XRD), scanning electron microscopy (SEM), thermal gravimetric analysis (TGA), differential scanning calorimetry (DSC), neutron activation analysis (NAA), porosity, hardness, and compression strength.

2. Sarah Lindemann: Sweet Briar College
The Legacy of Historic Mill Dams at Three Sites in Amherst County, Virginia
Co-author: Dr. Rebecca Ambers
Following the publication of Walter and Merritts’ (2008) study focused on Pennsylvania, there has been a growing interest in research on historic mill dams and their impacts on streams. Central Virginia has a more plantation-based and less industrial land use history than Pennsylvania, so we explored the sedimentary records left by mill dams to investigate their legacy in this area. At three former mill dam sites in Amherst County, Virginia, stratigraphic cross-sections of channel banks and streambed particle size were measured and interpreted. We found evidence of repeated storm events, dam failures, and dam reconstructions over time. Laminated mill pond clay and silt deposits are overlain by floodplain sediments, and deep incision to modern stream levels followed this depositional phase. Streambed particle size coarsens downstream from historic dam sites similar to patterns observed in modern dam systems. The influence of historic dams can therefore still be discerned today.

3. Jeffrey Joseph Illinik: Virginia Wesleyan College
Effects of Tidal Immersion and Body Mass on Phosphorus Cycling of Geukensia demissa.
Co-authors: Raluca Elena Illinik and Dr. Maynard Schaus
Effects of tidal immersion and body mass on phosphorus cycling of Geukensia demissa. Geukensia demissa is an abundant filter feeder that may have important effects on nutrient cycling within East Coast...
salt marshes. This species is thought to interact mutualistically with salt marsh cordgrass (S. alterniflora), as nutrient cycling by mussels fertilizes the cordgrass, which provides attachment sites for mussels. We investigated phosphorus excretion and fecal deposition by G. demissa in the Lafayette River, Norfolk, VA, including how mussel mass and tidal immersion may impact rates of phosphorus cycling. Mussels were collected, cleaned, and placed in bags containing filtered estuarine water, which was later analyzed for PO4 using the molybdenum blue technique. We observed a significant negative correlation between mussel dry mass and mass-specific phosphorus excretion and feces production. We also observed a significant decrease in phosphorus release and feces production with increased time since tidal immersion.

4. Will Bader: Roanoke College
Examining the Effect of Forest Fires and Increased Nutrient Levels on Algal Blooms in Marine Ecosystems
Through the exploration of previously ignored fossilized and charred wood from the Carmel Church dig site it became obvious that fire may have impacted a large marine death site around 14 million years ago. It's hypothesized that a possible forest fire in the surrounding area could have drastically increased the nutrient levels of the marine ecosystem. That along with changing wind and current patterns due to a changing global ecosystem could have increased algal blooms. These algal blooms could have released toxins at high concentrations that could have caused massive marine deaths. The next step is to create an experiment to find a connection between algal blooms and increased nutrient levels caused by fires and to find evidence of fossilized algal blooms.

5. Nashiva McDavid: Randolph College
Her Thousand Chimneys Smoked: Virginia's Enslaved Cooks, Racialized Labor and Legacy
Co-author: Wyatt Phipps
This short documentary represents our research on enslaved cooks in Virginia and Barbados. This film shows our research methods, data analysis and conclusions. This project was in junction with Dr. Deetz’s manuscript on enslaved cooks.

6. Jordanne Ryan: Sweet Briar College
Sacrifice: How Place and History Influence Art and Creativity
During the course of the summer of 2010, I sought to understand the influence of place on an artist's creativity, and more precisely the influence of Sweet Briar's 3500 acres on my own creativity as a writer and photographer. Sweet Briar's foundation as a women's college by a woman plays a key part in women's rights to equal education as their male counterparts; however, over the course of my research, I conclude that it is Sweet Briar's history as a plantation that truly inspires my work. Without the sacrifice of slaves to garner the wealth of the college's founder, the college would exist as the institution that prides itself in inspiring women to pursue their interests and passions.

7. Darrin Warren: Lynchburg College
Charlie Parker: A Man of Mystery
Charlie Parker is a known jazz saxophonist and composer who brought new and improved ideas to the music world. With the intent of improving music pedagogy and performance the purpose of this research is to investigate the life and compositions of jazz saxophonist Charlie Parker. The specific problems of this study are: 1) establish the musical legacy of Charlie Parker; 2) identify his compositional styles; and 3) analyze Blues for Alice. Charlie "Bird" Parker's legacy is a founding figure of modern jazz, or bebop. Parker joined other musicians who wanted to play fast-paced, fiery music with unpredictable beats and lengthy improvisations and this jazz style was known as bebop. Blues for Alice is a classic old school jazz jam for an alto sax, trumpet, string bass and percussion. Charlie Parker became one of the most respected jazz performers and composers of his time, and created new styles of music.

8. Nicole Balsamello: Lynchburg College
Niccolò Paganini: The Virtuosity of a Romanticism Divo
Niccolò Paganini (1782-1840) was a distinguished Italian instrumentalist and composer who changed the course of music history. With the intent of improving music pedagogy and performance, the purpose of this research is to gain information about Paganini and what set him apart from other composers and performers. The specific problems of this study are: 1) to analyze the evolution of violin technique and how this concept influenced others; 2) to examine
the relationship Paganini had with Hector Berlioz (1803-1869) and establish how this interaction resulted in his reputation as a divo; and 3) to explore the decline in Paganini’s health and how it affected his work. Although unpopular at the time, Paganini focused on ‘left-hand’ technique. Paganini refused to play a viola solo written in his honor by Berlioz. Paganini faced health issues that affected his performance daily. Despite illnesses, his reputation as a violin virtuoso remains intact today.

9. Christina Gruber: Lynchburg College
Gustav Holst and the Evolution of the Modern Wind Band
English composer Gustav Holst (1874-1934) standardized wind ensemble repertoire with the First Suite in E Flat and Second Suite in F, (Op. 28), the first works published for this genre. With the intent of improving music pedagogy and performance, the purpose of this research is to gain information on the life of Holst and his compositions. The specific problems of this study are as follows: 1) to investigate the life of Gustav Holst; 2) to identify the genres in which Holst composed; and 3) to analyze both suites that comprise his Opus 28. Named one of the most prominent English composers of the twentieth century, Holst blended his philosophy of the Hindu religion with the idea of English folksong to create numerous compositions. These compositions span between numerous genres, including choral works, orchestra compositions, and pieces for wind band. The wind band works helped popularize the genre and legitimize the wind band as a realistic ensemble.

10. Megan Burns: Lynchburg College
Orfeo ed Euridici: One Hundred and Fifty Years; Does it Make a Difference?
Composers such as Claudio Monteverdi (1567-1643) and Christoph Gluck (1714-1787) used legends as dramatic devices to develop opera. With the intent of improving music pedagogy and performance, the purpose of this research is to investigate the changes, within a one hundred and fifty year time span, of two works based on the legend, Orfeo. The specific problems of this study were to 1) examine the life of Claudio Monteverdi and Christoph Gluck; 2) introduce the Greek legend Orfeo; and 3) to compare and contrast L’Orfeo (Monteverdi) and Orfeo ed Euridici (Gluck). Claudio Monteverdi transitioned the Renaissance era in music to the Baroque era, while Christoph Gluck composed during the opera reform stage of the Classical era. L’Orfeo and Orfeo ed Euridici used the legend of Orfeo, but the compositions are separated by one hundred and fifty years. The comparison of the two works outlines changes in operatic development from 1607 to 1762.

11. Kyle Greaney: Lynchburg College
Don't Make It Up: Improvise!
Many middle and high school instrumental music programs incorporate jazz education into their course curriculums; however, music educators are often apprehensive about teaching improvisational skills. The purpose of this research is to explore ways that improvisation reinforces student musical learning. The specific problems are as follows: 1) trace the development of improvisation in music education; 2) identify strategies to incorporate improvisation (National Standard 3) into instrumental education classes; and 3) develop a five lesson improvisation curriculum designed to improve a student’s improvisational abilities. Factors that contribute to improvisation in musical learning include: 1) a review of basic chords and chord progressions; 2) playing variations on a melody; 3) listening to recordings to gain ideas on improvisation; and 4) improvising based on different scales and modes. The benefits of this study for future music educators include an increased knowledge of scales and functional harmony, experience in musical creativity, and the distinction of a personal statement in music. Through improvisation, students will gain a sense of musicality that can be applied to additional musical situations.

12. Meredith Humphries, Woyni Teklay and Qi Zhang: Randolph College
Science and Math Links: Research-Based Teaching Institute
We are continuing our study on the influence of hands-on lessons (as opposed to traditional lecture and reading) on student and teacher attitudes toward science, with the goal of increasing engagement, keeping children interested in science, and increasing student achievement. We are creating resources including lesson plans, associated content, and video for hands-on and inquiry-based lessons in the K-8 classroom, and are holding an institute for 60 local teachers to help them to implement these types of lessons in the classroom. We are collecting data through surveys, student performance measures and classroom observation. This ongoing research project, started in 2000, has a website resource The new Science Teacher (http://tnst.randolphcollege.edu) that we are continuing to enhance and
to add to in the form of resources for teachers and results from research.

13. Nathan Walker: Christopher Newport University
Distributed, EEG-Controlled BCI Platform
Co-authors: Daniel Tomaino, Dustin Ingersoll and Derek Werner
Brain-computer interface (BCI) technology has great potential to change the way people interact with computers. We developed a distributed BCI system that is based on a centralized BCI Dashboard that allows a user to integrate multiple, parallel EEG systems and to flexibly interact and control a variety of devices and applications. Unlike traditional BCI systems, the BCI Dashboard operates by distributing the computational load to the different nodes in the system: Data Clients are responsible for collecting and processing data from the EEG system and then sending processed data to the Dashboard, while Device Clients receive standardized instruction from the Dashboard and perform tasks such as activating a remote controlled car. Additionally, the BCI Dashboard manages connections between Data and Device Clients, allowing reconfiguration and integration of unique EEG devices into the same system without extraordinary effort. The system is demonstrated using low-cost, smart-phone based technology over a Bluetooth network.

14. Zahra Adahman: Randolph College
Classification and Analysis of the Pup Calls of a Mouse Model of Autism
Co-authors: Prof. Katrin Schenk, Prof. Lily Jan, Prof. Yuh Nung Jan, Prof. Bill Setharts, David Young, Alan Leggitt and Alexandra Latshaw
Autism is a neurological disorder that affects about 0.2% of the human population. The disorder is highly correlated with communication deficits. Mouse pups of ages 1-2 weeks usually make calls that are ultrasonic in nature and only make vocalizations when separated from their mother. Here we present the analysis of data that was collected by recording the vocalizations of the pups via a maternal separation paradigm (isolating the pup from their mother). The vocalizations were recorded with an ultrasonic microphone for a length of 5 minutes for each pup. About 46,000 calls were recorded, digitized and stored for analysis during this experiment. The calls were then segmented from the background noise and classified into types using a classification scheme. A rank versus frequency analysis was then performed.

15. Caroline Alice Sorensen: Sweet Briar College
ROS Generation from Immobilized Anti-Viral Fullerene-Polymer Thin-Film Coatings: Applications to Water Treatment
Water treatment done through membranes is an excellent way to purify a limited resource. The main problem using membranes is the growth of bacteria on its surface. The bacteria clog the pores and inhibit water filtration. This experiment tested the theory of creating fullerene-polymer thin-film membranes to inactivate bacteria and viruses on the membranes. Fullerene particles, when exposed to UV light, act as catalysts to produce a continuously high level of reactive oxygen species (ROS), specifically singlet oxygen, which inactivates viruses and bacteria in water. In this experiment, the polymer polycarbonate (PC) was used to trap the fullerenes in a polymer matrix, minimizing the fullerenes’ impact on the environment and maximizing ROS production. Once created, the membranes were immersed in a solution of bacteria, and subjected to UVA (365 nm) light for varying lengths of time. Using SOSG (singlet oxygen sensor green), singlet oxygen production was measured and analyzed for effectiveness.

16. Anne Kyner: Roanoke College
Investigation of Mossbauer Data from the Planet Mars
In the summer of 2003, NASA launched two Mars Exploration Rovers (MER), Spirit and Opportunity, to explore the Martian geology. The Martian rovers are both equipped with a miniaturized Mössbauer spectrometer. The data collected by this instrument can be used to fingerprint the iron mineralogy on Mars and assist in the search to find microbial life. By fitting the Mossbauer spectral data, the hyperfine field properties corresponding to the different iron phases can be deduced. These in turn aid in identifying the composition of the rocks which helps to answer questions and bring about a better understanding of Martian rocks and geology. The data primarily shows the iron oxides to be hematite, magnetite, olivine, and pyroxene. Graphing the temperature as a function of the hyperfine parameters led to a further analysis of the particle size which was deduced to be approximately 4.15nm, while the
quadrupole splitting and isomer shift values showed no variation.

17. Jonathan Perkins: Roanoke College

Ethers and Fluoroethers from Pentafluorophenyl-Substituted Cyclopentadienes

1,2,3,4-Tetrakis(pentafluorophenyl)cyclopentadiene and 1,2,4-tris(pentafluorophenyl)cyclopentadiene were reacted with fluorous and non-fluorous alcohols of differing chain length to produce tetrafluorophenyl ethers and fluoroethers. The reaction of 1,2,3,4-tetrakis(pentafluorophenyl)cyclopentadiene with methanol (6 equivalents) and anhydrous potassium carbonate produced the teta-substituted product in a 30% yield. The reaction of 1,2,3,4-tetrakis(pentafluorophenyl)cyclopentadiene with 2,2,2-trifluoroethanol (6 equivalents) and sodium hydride (25 equivalents) produced the mono-substituted product in a 27% yield. The reaction of 1,2,3,4-tetrakis(pentafluorophenyl)cyclopentadiene with 2,2,3,3,3-pentafluoropropanol (6 equivalents) and sodium hydride (30 equivalents) produced the tetra-substituted product in a 15% yield. The reaction of 1,2,4-tris(pentafluorophenyl)cyclopentadiene with 2,2,2-trifluoroethanol (6 equivalents) and sodium hydride (25 equivalents) produced the di-substituted product in a 32% yield and the tri-substituted product in a 5% yield. All products were purified using silica gel flash chromatography and characterized by 19F and 1H nuclear magnetic resonance spectroscopy.

18. Caroline Hunter: Roanoke College

Gene Cloning in the Purine Biosynthetic Pathway in Archaeoglobus fulgidus

Co-author: Dr. Catherine Sarisky

Our goal was to determine the function of the AF1811 gene and the AF0113 gene in the purine biosynthetic pathway. The AF1811 gene from the Archaeoglobus fulgidus genome was cloned. The AF1811 protein was expected to act like a PurH2 protein and convert FAICAR to IMP in the last step of the purine biosynthetic pathway. After the AF1811 gene was cloned, the AF1811 protein was produced. An HPLC (high performance liquid chromatography) assay showed that the AF1811 protein produced was functional and when combined with a protein which converts AICAR to FAICAR, the AF1811 protein produces IMP, as predicted. The AF0113 gene was also cloned through the same process. The AF0113 protein was expected to act like a PurP protein and convert AICAR to FAICAR. Using the Bratton-Marshall assay and the HPLC, it was determined that the AF0113 protein was not functional and did not convert AICAR to FAICAR.

19. Jeremy Johnson: Roanoke College

Bisamine Boron Cations from 1,4-Dimethylpiperazine

In this research project, several different bisamine boron cations derived from 1,4-dimethylpiperazine (DMP) were synthesized, isolated, and characterized via 1H NMR, 11B NMR, and IR spectroscopy. More specifically, Me3NBH2-DMP-BH2Me32+ and the cis isomer of pyBH2-DMP-BH2py2+ were synthesized, isolated, and characterized. Several attempts were made to isolate the trans isomer of pyBH2-DMP-BH2py2+ from the cis isomer, but complete separation did not occur.

20. Meagan Tolley: Roanoke College

A Study of Purine Biosynthesis in Sulfolobus solfataricus

Co-author: Dr. Catherine Sarisky

Abstract (150 words maximum): Purines are important units that make up DNA and RNA and are necessary for the proliferation of all organisms. The method of purine biosynthesis is highly conserved among most organisms except in archaeal species. Archaea contain unique ways of finishing the last steps to yielding purines. Specifically, this project examines the last two steps in purine biosynthesis, the conversion of AICAR to FAICAR to the product IMP, in Sulfolobus solfataricus (SSO). In order to learn more about the enzymes involved in these last two steps of purine biosynthesis, identification of the gene that encodes the enzyme and characterization of the enzyme will provide a greater insight into how this necessary biochemical pathway is completed. The two purP-like genes, SSO0239 and SSO0241, are cloned and the enzymes are characterized. However neither enzyme was active as an AICAR formyltransferase. Also attempts to construct a gene library of Sulfolobus solfataricus were unsuccessful during this project.
21. Colin David Briggs: Roanoke College
Adsorption and Release of Organic Dyes in Mesoporous Silica Spheres
Adsorption and release studies were performed with two organic dyes, Orange II and Janus Green B, in acid prepared mesoporous silica spheres (APMS). Adsorption studies were performed with Janus Green B in APMS in pH 2 and pH 7 environments, where it was discovered that more of the dye would be adsorbed into the silica in the pH 7 environment than in the pH 2 environment due to electrostatic interactions between the silica and the dye. Release studies of Orange II dye from APMS were performed where the dye was loaded into the silica in the pH 2 environment and the release was measured in pH 2 and pH 7 environments. The amount of dye released was dependent upon the pH of the environment and the amount of time that was allowed for the dye to release from the silica. Attempts were made to measure the release of Janus Green B from the APMS, but were unsuccessful due to experimental problems.

22. Eric Johnson: University of Mary Washington
Creating a Universal Platform for Metal Oxide Surface Functionalization Using Click Chemistry
Click reactions between azides and alkynes are useful because they provide very specific products, are extremely favored in terms of thermodynamics, are simple to carry out, and use either no solvent or solvent that is easily removable or benign. For these reasons, a platform on metal oxide surface suitable for click chemistry can provide a stepping stone for many new future reactions. Both α-bromoisobutyryl bromide and 1,12-dibromododecane were used in series of reactions meant to attach a phosphonic acid and an azide to opposing ends of a molecule. The azide allows for the click reaction while the phosphonic acid allows for the molecule to bond to the metal oxide surface. Infrared and nuclear magnetic resonance spectroscopy were used to determine that both the azide and either a phosphonate or the phosphonic acid functional group were present in the products.

23. Ashley Brielle Carpenter: Sweet Briar College
The Synthesis of Natural Product Derivatives for Anticancer Studies
Two natural product derivatives, 4-carbethoxy-2-(p-chlorobenzylidene)-5-methyl-3(2H)-furanone (1), and 4-carbethoxy-2-(p-nitrobenzylidene)-5-methyl-3(2H)-furanone (2) were synthesized in 38% and 28% overall yields, respectively, starting from commercially available ethyl diacetoacetate. The structures of these derivatives are modeled after inotilone, a fungal metabolite from the fruiting body of the mushroom Inonotus sp. that was found to be a potent cyclooxygenase-2 inhibitor with anticancer properties. Bioactivity testing of 1 and 2 will be performed against HCT-15, SW 620, and SW480 colorectal cancer cells.

24. Sara Blankenship: Roanoke College
Creation of a Substrate Phage Display Library to Study Enzyme-Substrate Interactions of Plasmepsins IX and X in P. falciparum
Many enzymes expressed during Plasmodium falciparum’s erythrocytic stage have not been characterized. Two of these enzymes are plasmepsins IX and X. Using a substrate phage display library, substrate specificity of these enzymes can be determined. Attempts were made at creating the phage display library through overlapping extension to create the oligonucleotide containing the random sequence, followed by restriction enzyme digests and purification of the oligonucleotide and M13KE phage vector. Both the vector and oligonucleotide have been successfully digested by restriction enzymes and visualized by agarose gel electrophoresis and PAGE but have not been successfully purified for ligation. Future experiments include troubleshooting PAGE gel purification and phenol:chloroform extraction. Once the phage display library has been created, it not only can be used to study plasmepsins IX and X, but other proteases for enzyme-substrate interactions.

25. Paul Vines: Virginia Bioinformatics Institute
A Computational Approach to Iron Metabolism in Breast Epithelial Cells
Co-authors: Julia Chifman, James Brunner, Emily Hendryx, Andrew Reagan, Steven A. Akman, Frank M. Torti, Suzy V. Torti and Reinhard Laubenbacher
Iron metabolism is a tightly regulated intracellular network consisting of numerous regulatory feedback loops. Changes in this network have been observed in connection with cancers in breast and other tissues. Because of the network’s complexity and apparent importance in cancer biology, we simulated intracellular iron metabolism using
a discrete logical mathematical model. This model includes the main regulatory elements of the network as well as
the proteins involved in heme synthesis. By adjusting the logical model, we simulated many different experiments
with little extra computational effort. This use of mathematics allows us to gain insight as to which species are
crucial to cancer cell survival without the expense of laboratory time and materials. The state space of the model and
model perturbations successfully replicated experimental results, and simulations suggest that misregulation of the
iron regulatory network is necessary to meet the increased iron demand of a neoplastic cell.

26. 
Alexandria Kelly: Mary Baldwin College
Neuroendocrine Differentiation and Its Effects on Chemoresistance in Prostate Cancer Cells
Co-authors: Sophia Stone, Caitlin Combs and Paul Deeble
Neuroendocrine (NE) differentiation, induced by forskolin (Fsk) and 3-isobutyl-1-methylxanthine (IBMX), was
analyzed in a prostate cancer progression model using androgen-responsive LNCaP and androgen-independent PC-3
prostate cancer cells. NE differentiation was quantified by measuring neuritic branch points and mean process
length, and LNCaP cells were found to exhibit a higher level of NE characteristics when compared to PC-3 cells.
Cell viability in response to various chemotherapeutics, including Docetaxel and Rapamycin, was measured in
undifferentiated and NE-differentiated cancer cell lines using an MTT assay. NE differentiation was found to
protect LNCaP cells from cell death induced by chemotherapeutic agents.

27. 
Casey Wojtera: Roanoke College
Investigations of the Active Site of 5, 10-methenyltetrahydrofolate synthetase (MTHFS) from Mycoplasma
pneumoniae
The purpose of this research was to determine the importance of several amino acids in the active site of 5, 10-
methenyltetrahydrofolate synthetase (MTHFS). Specifically, amino acids hypothesized to interact with one of the
substrates, folic acid, were investigated. These interactions were expected to contribute to how the enzyme binds
substrate and how fast it is able to catalyze the reaction. Gene sequences of MTHFS were mutated using site
directed mutagenesis. Through several transformations, induction, and various purifications, mutant enzymes were
obtained and were tested kinetically. Based on inferences made from the calculated Km and kcat values, amino acids
were concluded to be important for binding folinic acid in the active site and for maintaining catalytic efficiency of
the enzyme.

28. 
Kayla R. Muncy: Roanoke College
Cloning Plasmsepsins IX and X to Find Their Function in Malaria
Malaria is a deadly disease that is caused by mosquitoes transmitting Plasmodium parasites. The purpose of this
research is to study the properties of these plasmepsins, protease enzymes, IX and X which are released when the
red blood cells are infected with Plasmodium falciparum, the deadliest form of malaria. P. falciparum is becoming
more and more resistant to the current antimalarial drugs. To find properties of the plasmepsins cloning must first be
done. The DNA sequences were amplified out of the P. falciparum cDNA and genomic DNA using PCR, polymerase
chain reaction. Purifications and restriction enzyme digests were successful, but ligation failed with different inserts
(cDNA and genomic DNA) making cloning unsuccessful.

29. 
Henry Loehr: Hampden-Sydney College
Analysis of Arabidopsis thaliana Deletion Lines for T-DNA Genomic Insertion Frequency
We are examining lines of the model genetic plant Arabidopsis thaliana with knockouts generated by random
insertion of a transfer DNA (T-DNA) cassette with the goal of better understanding the effects specific genes have
on a range of phenotypes. Each homozygous diploid genome was analyzed using polymerase chain reaction (PCR)
techniques to determine if multiple T-DNA insertions exist in a given line. A dual target PCR approach was
primarily used to characterize these lines and this method was later mathematically scaled using a quantitative PCR
procedure. Ultimately, we developed a graphical scale to determine the number of inserts based on quantitative dual
target PCR results that can be obtained cheaply, quickly, and efficiently. This can be applied to future lines of A.
thaliana to develop a comprehensive genomic insertion database as part of a research consortium with University of
Georgia, Barnard College, Hampden-Sydney College, and the College of Charleston.
30. Matthew Corbicz: Roanoke College
Examining Polar Auxin Transport in the Moss Gametophyte of Dicranium scoparium
Co-authors: Jessica Branning and Dorothy Belle Poli
Polar auxin transport is a process understood most in higher plants. Understanding where a physiological mechanism evolved requires examining the same process across the entire plant kingdom. Poli et al. (2003) examined polar auxin transport across the bryophyte sporophytes and learned that hornworts exhibit simple diffusion, liverworts exhibit facilitated diffusion, and mosses show active transport. However, examining polar auxin transport using traditional agar block methods has been limited in gametophytes. This study examines the moss Dicranium scoparium. From Bader et al. (unpublished) it is expected that this terrestrial moss gametophyte should show facilitated diffusion.

31. Brittany Brown: Christopher Newport University
Classification of Cognitive Flexibility by Cluster Analysis
Cognitive flexibility is characterized as an ability to represent knowledge from different conceptual perspectives. Specifically, cognitively flexible individuals can efficiently think about multiple dimensions of stimuli (e.g., shape, color, or number) simultaneously and/or can switch back and forth between tasks that require attention to one dimension with relative ease. Previous studies have operationally defined cognitive flexibility in a variety of ways. The purpose of the current study was to classify varieties of cognitive flexibility based on performance across six different self-report and demonstration measures: Anagrams task (Silver, Hughes, Bornstein, & Beversdorf, 2004), Compound Remote Associates test (Bowden & Jung-Beeman, 2003), Cognitive Flexibility Scale (Martin & Rubin, 1995), multiple classification task (Bigler, 1992), Graphophonological-semantic multiple classification task (Cartwright, 2007), and Wisconsin Card Sorting Task (Berg, 1948). Results of the cluster analysis indicate that cognitive flexibility is a multifaceted construct.

32. Kaitlin Ryan and Carol Paulson: Christopher Newport University
Developing a Computerized Method for Quantifying Characteristics of Bubble Nests Formed by Betta splendens
Co-authors: Raluca Brand, Brian Roller and Andrew Velkey
Bubble nesting is an important component of the reproductive cycle of Betta splendens. Many environmental factors can influence bubble nesting behaviors and nest construction. Specifically, nest size can be an indicator of mate quality, and nest density can be an important factor that influences the viability of eggs that are subsequently deposited in the nest. Previous studies have employed manual grid-counting and pixel-counting strategies to examine bubble nest characteristics; however, grid-counting lacks precision, and pixel-counting, while more precise, is time-consuming when analyzing large data sets. The use of digital image analysis can reduce measurement error and will allow for the quantification of other important characteristics such as intra-nest density variations. The purpose of the present study is to develop and test a computerized image analysis tool to efficiently quantify bubble nest characteristics. Such a method can be used to further behavioral research associated with bubble nesting in Betta splendens.

33. Sophia Stone and Lisa Hebert: Mary Baldwin College
Odor Preference in Asian Musk Shrews
Many species of mammals identify and attract mates through odors, which can be influenced by sex steroids. The Asian musk shrew (Suncus murinus) is a small mammal (order Insectivora) in which females have no estrus cycle and secrete relatively little estrogen but high levels of testosterone. Given insectivores’ typical reliance on their sense of smell, the strong musk scent of males compared to females, and the unusual hormone pattern of the female musk shrew, we examined the odor preferences of virgin females, sexually experienced males and females, and sexually experienced testosterone-treated females. The greatest differences in preference were seen with cage odors, followed by urine, with little preference for musk observed. Odor preference for conspecifics was greatest in virgin females. There was no indication that early hormone treatment had an impact on how mature females perceived odor.

34. Nicola Donnelly and Jasmine Reynolds
Sex Differences in Impulsive Responding by Betta splendens
Co-authors: Ashley Darden, Katrina Hallwerck and Andrew Velkey
As animals explore their environment in search of food, they often encounter choices between impulsiveness and self-control. While past research has examined the effects of various factors on impulsive choice, little work has concentrated on sex differences in choice distributions, especially in teleost species. In the current study, we examined the instrumental choice behavior of 44 Betta splendens, 18 males and 26 females. Over numerous 3-week series of instrumental trials, each subject had a choice of a small immediate reward or a larger delayed reward. Results revealed sex differences in trials-to-criterion, instrumental response latencies, and preference; significantly more males stabilized on the delayed choice than the immediate choice. Females were less likely to stabilize on their preference, and when they did stabilize, some indicated a preference for the delayed reward while most preferred the immediate reward. Results are discussed in relationship to territoriality and mate selection processes in Betta splendens.

35.
Teja Chalasani: Christopher Newport University
The Effects of Sleep Loss on Cognitive Performance and Perceived Effort
Co-authors: Jennifer Marshall, Stephanie Roldan, Nathen Illidge, Ryan Trachtenberg, Amanda Wilson, Jennifer Bledsoe and Kathleen Needham
The present study aims to explore the effects of sleep loss on reaction time, as well as the effect of added incentives to promote accuracy. Sleep loss is defined in several ways including sleep debt, the cumulative effects of sleep loss, sleep restriction, and sleep deprivation. Cognitive performance was assessed using Automated Neuropsychological Assessment Metrics (ANAM), motor-cognitive tests used to assess cognitive performance in a variety of behavioral domains. Participants also completed a survey describing their sleep habits, the quality of sleep of the previous night, napping habits, job/school hours, and use of caffeine or other medications. Data showed a significant positive correlation between reaction time on a code substitution task and hours awake. Data also showed no significant relationship between simple reaction or spatial rotation reaction time and sleep behavior. Future research will evaluate participant ratings of subjective effort during difficult tasks.

36.
Lauren Tapscott: Christopher Newport University
Examining Compassion Fatigue and Religious Coping: A Pilot Study
The purpose of this pilot study is to examine the relationship between compassion fatigue and constructs useful to helping such as religious coping and empathy. Past research has demonstrated relationships between compassion fatigue and constructs such as depression and burn out (e.g., Figley, 2002; Smith, 2009). What has not been examined in research is compassion fatigue in conjunction with religious coping. For this pilot study, four participants involved in service and ministry work in Pignon, Haiti completed surveys containing a variety of measures, including constructs such as the Interpersonal Reactivity Index and the Integration of Successful Life Experiences Questionnaire. Results reveal a negative trend between empathy and compassion fatigue as well as negative religious coping and perspective taking. Future research should examine these constructs with larger sample sizes in order to establish significance.

37.
Kacy Dillon: Roanoke College
Students' Perceptions of Professors
Co-author: Steven Huffman
Past research had indicated that the majority of students surveyed in a larger university setting described their professors in a negative manner (Schmier, 1993, 2001). In the current study, we attempted to replicate and extend this work at a small liberal arts college. Seventy students were surveyed to examine how they described their professors (positively, negatively, neutrally) and what factors were associated with these descriptions (e.g., immediacy, classroom methods and management). In contrast to previous research, the majority of students surveyed had a positive view of professors. We intend to examine how teaching style, teacher immediacy, and classroom management are related to perceptions of professors.

38.
Alissa Feudo: Christopher Newport University
Anorexia Nervosa and Bulimia Nervosa Treatment: A Literature Review
Two of the most prevalent eating disorders observed within present western culture include Anorexia Nervosa (AN) and Bulimia Nervosa (BN) which are characterized by “severely restricted food intake and refusal to maintain body...
weight at a normal level”, and “recurrent binge eating and regular extreme compensatory behavior designed to influence body shape and weight”, respectively (Hayes & Luoma, 2008). This literature review will evaluate the effectiveness of current treatment options for AN and BN including Cognitive Behavior Therapy (CBT), Acceptance and Commitment Therapy (ACT), Basic Body Awareness Therapy (BBAT), Dialectical Behavior Therapy (DBT), Pharmacologic Treatment, Psychotherapy, and Dynamic Therapy. With respect to past studies, CBT has shown to be the most effective and most commonly used treatment for both disorders (Thomas-Brenner, Boisseau, & Satir, 2010). However, this review will consider benefits of new therapies such as ACT, and the prospect for a shorter treatment time and a more stable recovery.

39. Christine Smilek: Christopher Newport University

Mindfulness-Based Stress Reduction on Psychological and Physical Well-Being

Mindfulness-Based Stress Reduction (MBSR) is a meditation practice used to lower stress levels by focusing in depth on the mind and the present moment without thinking about worries. Specifically, MBSR requires the participant to focus specifically on the present experience by each moment in a nonjudgmental way (Kabat-Zinn, 2003). This literature review will explain the effect of MBSR on psychological and physical well-being. Studies have shown MBSR to reduce anxiety and depression, which leads to a better well-being (Kabat-Zinn, Massion, Kriteller et al., 1992). Studies have also demonstrated MBSR’s equal effectiveness in stress reduction as compared to that of biomedical treatment through a patient-centered approach (Reibel, Greeson, Brainard, & Rosenzweig, 2001). While research has established the positive effects of MBSR on psychological and physical well-being, future research should examine effects of psychosocial support of MBSR, compare MBSR to different stress therapies, and study MBSR’s effects with academics.

40. Tra My Dinh Doan: Randolph College

Measuring the Invisible: Explicit and Implicit Mental Illness Stigma in Young Americans Across Cultural Groups

Co-author: Dr. Caroline Mann

Increasingly, individuals are concerned with appearing unprejudiced. Psychologists have developed subtle methods for studying prejudice that do not involve self-report. Most recently, a revolutionary new instrument known as the IAT (Implicit Association Test) uses participants’ reaction times to elucidate underlying preconscious attitudes. Researchers find that participants respond faster to negative words, for example, if the words are preceded by a prime of an African-American face (vs. Caucasian) because of our underlying prejudice. While such measures have been used to successfully explore racism and ‘visible’ markers, they have never been tested with invisible stigmas. We seek to address this gap. We will introduce participants to 6 individuals (via pictures, information), some of whom have mental illness and others not. We will then seek to use these virtual individuals (wearing differently colored shirts to facilitate memory regarding group-membership) as primes, and test whether participants show implicit bias against the mentally ill individuals.

41. Eleonora Salaro: Radford University

Metaregulation and Health for Older Adults as Compared with College Students

The present research investigates the relationship between health and “metaregulation,” which is defined as strategies used to improve one’s limited capacity for self-regulation. These strategies are important because the ability to resist unhealthy temptations (e.g., smoking, over-eating) is limited and often fails. To date, 209 younger and older participants have completed measures of physical health and metaregulatory strategies. An interaction between participant age and metaregulation on health was hypothesized. It was expected that among younger adults, metaregulation would be unassociated with health because the young are at less risk for chronic diseases even if they engage in unhealthy lifestyles. However, a positive relationship between metaregulation and health was predicted for older participants. Among the old, metaregulatory strategies should protect them from exposure to unhealthy behaviors associated with chronic diseases. The final data will be analyzed using a 2 (age) X 2 (metaregulation) ANOVA on health.

42. Keenan Bratton: Christopher Newport University

A Preliminary Theoretical Model For Structuring Father-Child Relationship Outcomes: A Heuristic For Counseling Psychology
This research proposes a theoretical model illustrating the complexity of a child’s development as related to the presence and absence of a father figure. Research has shown that a child’s self-efficacy and esteem are contingent on father-child congruency. Likewise, the absence of a father is related to a child’s efficacy and esteem deficits. Because father-child relationships are embedded in a social network of divergent people and interests, efficacy and esteem outcomes are often difficult to predict. The proposed theoretical model attempts to sort and structure this apparent ambiguity to better predict childhood self-efficacy and self-esteem.

43. Laurin Roberts: Christopher Newport University
Multidimensional Family Therapy: A Literature Review
Multidimensional Family Therapy (MDFT) is a family-based approach to the treatment of adolescent substance abuse. According to Liddle et al. (2005), MDFT utilizes risk and protective factors for adolescent drug use as a basis for assessment and intervention in four separate domains including: the adolescent, the parent, the family environment, and extrafamilial sources of influence. Research has shown a significant reduction in substance abuse in adolescents who underwent MDFT as compared to individuals who received treatment as usual (TAU) (Liddle et al., 2006) and compared to individuals who participated in additional therapies such as Adolescent Group Therapy (AGT) and Multifamily Educational Intervention (MEI) (Liddle et al., 2001). While studies have demonstrated MDFT’s effectiveness in adolescent substance abuse reduction, future research should continue to examine the usefulness of MDFT in various settings, particularly in non-research contexts, in order to further establish its treatment value.

44. Daniel Mitteer: Christopher Newport University
Using a Modified “Planned Behavior Theory” to Explain Inter and Intra Sex Differences in Hand Washing
Research conducted by Mitteer and Berry (2010) discovered women are more likely to hand wash than men. However, a component analysis of their results showed men using commodes wash their hands at the same rate as women. In contrast, men using urinals wash their hands less than both men and women using commodes. These results help explain, in part, the differences in hygiene practices across men and women. The following research seeks to explain inter and intra sex differences by employing the Theory of Planned Behavior approach that incorporates two other measures: (a) rule-following socialization measure and (b) contingency-based decision-making measure.

45. Christopher Fry: Christopher Newport University
The Effects of Sexual Abuse on Dissociative Identity Disorder Emergence
The research presents a theoretical model documenting diagnostically relevant variables important to the emergence of Dissociative Identity Disorder (DID). DID is defined as when someone dissociates between multiple different personalities, and each has their own distinct abilities and emotions. For instance, girls who are sexually abused are at a higher risk of developing DID later on in life than are sexually abused boys. Research shows a strong link between sex differences and DID diagnosis. This connection is partly based on the evidence showing that a majority of people who sexually abuse children are heterosexual men, while two thirds of sexually abused victims are women. Because girls are three times more likely to become DID diagnosed, this outcome requires further explanation. The paper conducts a factor modeling analysis and discusses how theoretical modeling might assist therapist determine diagnosis and recovery.

46. Amanda Powell: Christopher Newport University
The Effects of Afterlife Beliefs on an Individual’s Well-Being: A Literature Review
Co-author: Diana Reiss
The effect of general conceptions of religion and spirituality on an individual’s well-being is a relatively new area of study emerging among the recent interests of researchers. Afterlife beliefs are individual expectations or assumptions about life after death (Benore & Park, 2004). The current literature review will analyze the influence of afterlife beliefs on individual’s well-being, looking specifically at the relationship between afterlife beliefs and depression and anxiety. Collective research suggests negative afterlife beliefs can negatively impact well-being (Flannelly et al., 2006; Flannelly, Ellison, Galek, & Koenig, 2008). The current area of inquiry lacks sufficient amounts of research and definitive testing measurements to directly examine the variables that impact an individual’s well-being by afterlife beliefs (Galeck & Porter, 2010). The implications of further research could be
used by researchers and practicing psychologists alike in taking a biopsychosocial approach in handling psychosomatic illnesses derived from afterlife beliefs.