ORAL PRESENTATION SESSIONS I - XIII

SESSION I:  9:30 AM – 10:45 AM
CONFERENCE RM A

9:30 | Poojan Pyakurel: Randolph College
Properties of Luminescent Transition Metal Compounds in Silicon Dioxide Polymers
Co-Author: Dr. William Bare
The present research was conducted to synthesize and investigate the luminescent properties of Re(CO)3(bpy)Cl and [Re(bpy)(CO)3(py)][PF6] doped in silicon dioxide polymers. Re(CO)3(bpy)Cl and [Re(bpy)(CO)3(py)][PF6] have been used to accurately measure oxygen quenching, and hence oxygen concentration in solutions. However, there are many limitations to this methodology, including non-reusability of the probe species and inconvenience of the technique for gaseous samples. Therefore, doped silicon dioxide polymers were prepared by adding the luminescent compounds in a sol gel preparation. This produced sol gel polymers, which were capable of measuring oxygen concentrations in both solution and gas phase standards. Initial results exhibited poor reproducibility, but were significantly improved after humidity was controlled during the measurements. The polymers were robust and were found to be sensitive to not only oxygen, but also to humidity.

9:45 | Ashley Carpenter: Sweet Briar College
The Synthesis and Medicinal Study of 3(2H)-Furanone Derivatives
Inotilone is a natural product belonging to a class of compounds called 3(2H) furanones, which have been studied for their medicinal properties. (Z)-2-(4-Chlorobenzylidene)-5-methylfuran-3(2H)-one is a derivative of inotilone that was successfully synthesized and isolated in high purity. The structure was confirmed with 1H and 13C NMR analysis while full analysis using IR spectroscopy, mass spectrometry, and melting point is still pending.

10:00 | Florian Kreuk: University of North Carolina, Chapel Hill
E. Coli, Enteric Epithelial Cell Translocation and Colonic Macrophage Cytokine Production
Co-Authors: 1) Julia M. Schmitz 2) Kristi J. Whitehead 3) Hubby Buehler 4) R. Ballfour Sartor
Adherent and invasive E. coli strains have been implicated in Crohn’s disease pathogenesis. In the monoassociated IL-10/- mouse model, three enteric E. coli strains: NC101, CUMT8LN-1, and K12, cause differential pro-inflammatory effects—colitis and small bowel inflammation (CUMT8LN-1 and NC101) vs. no inflammation (K12), despite equal colonization efficiency. Employing gentamicin protection assays and time course experiments, two pro-inflammatory cytokines, TNF and IL-12/23p40, were measured following bacterial exposure in J774 macrophages. Greater average cytokine production was induced by CUMT8LN-1 and NC101 than K12. Using transwell plates, translocation of CUMT8LN-1 across T84 colonic cancer epithelial monolayers was significantly higher than K12 over 4 hours. Few studies have been conducted on microbiota of the small bowel in human subjects due to sampling difficulties, thus these in vitro assays are key to understanding conditions like Crohn’s disease, which depend on host mucosal/microbial interactions.

10:15 | Rosha Poudyal: Randolph College
A Theoretical Investigation of the Oxidative Pathways of Peroxynitrite
Co-Authors: 1) Rebika Shrestha 2) Dr. Kurt Seidman
Peroxynitrite is formed by a rapid reaction between superoxide ion and nitric oxide in aqueous solutions. Nitric oxide plays an important role in cell communication and cell regulation in biological systems and superoxide is produced by cells of the immune system to kill invading pathogens. In biological systems that can produce nitric oxide and superoxide simultaneously, uncontrolled formation of peroxynitrite has been proposed to cause oxidative damage. Excessive peroxynitrite formation can lead to biological damages such as pulmonary and coronary diseases and central nervous system impairment. The possible pathways by which peroxynitrite causes oxidative damage to biological tissues are still subject to debate and include the formation of an adduct from peroxynitrite and carbon dioxide, the nitrosoperoxycarbonate ion and the formation of peroxynitrous acid. This study describes a theoretical investigation of one of the oxidative pathways that involves the formation of the carbon dioxide adduct.

10:30 | Jennifer Schwanke: Sweet Briar College
More Energy, Less Carbon
Co-Authors: 1) Jenna Wasylenko 2) Dr. Yen Nguyen
Current energy production is dominated by the burning of fossil fuels resulting in climate change due to the accumulation of carbon in the atmosphere. To decrease the amount of carbon emission, other types of sustainable resources must be researched. Solar energy is the largest and cleanest sources of renewable energy, however, the
energy production process is inefficient. This summer we worked with Columbia University and California Institute of Technology in the development of new solar cells that have shown to have higher electron injection rates by LASER spectroscopy, indicating an increase in efficiency.

SESSION II: 9:30 AM – 10:45 AM
CONFERENCE RM C

9:30| Ena Scott: James Madison University
A Cloak to Hide the Heart of a Viper: The 1793 Yellow Fever Epidemic in Philadelphia
A crisis struck the capital of the newly formed republic in 1793 when a yellow fever epidemic ravaged the city of Philadelphia. As gruesome sickness claimed ten percent of the city’s population and another half of the inhabitants fled, social, political, and economic functions came to a morbid halt. Yet little is commonly discussed of this major catastrophe in the history of the fledgling United States. Although there is a vaccination, there remains no known cure for yellow fever. It is an incredibly intimidating virus to fight today, and was all the more disheartening for the Philadelphians in 1793. Through collective efforts, Philadelphians learned how to manage the fever, cleanse the city, and grow once more from the decay; however, it was not an unproblematic process. With the threat of bioterrorism rising, epidemiology has become increasingly relevant in the study of US history, which brings this topic’s importance to light.

9:45| Mitchell Soni: James Madison University
Oppression in the American South: Sharecropping, Labor Activism, and Race Relations in the Life of Nate Shaw
In the years after the conclusion of the Civil War the American South was thrust into a period of upheaval unlike anything in its history. Plantation farming effectively collapsed with the abolition of slavery and by the early 1870s the piecemeal sharecropping system had become commonplace throughout the South. Nate Shaw was a black Alabaman sharecropper who lived in the midst of this monumental transitional period and found himself throughout his life a victim of the institutionalized racism infamously known as Jim Crow. His autobiographical recollections, published a year after his death in 1974, confirm and humanize many of the generalizations applied to sharecropping but the significance of Shaw’s experience is his resulting perspective on race relations and labor in the South during the 20th century and the effect of these economic and social experiences on his political consciousness.

10:00| Brad Elmore: James Madison University
The American Siberia, or Fourteen Years’ Experience in a Southern Convict Camp: The Confirmation and Destruction of the Typical Convict-Lease Narrative
The Post-Bellum South was rife with economic and social problems in the wake of the Civil War. With the state prison system lying in ruins, the convict-lease system emerged as the dominant penal system in many war-torn southern states. The system became notorious for its abuses and less-than-moral treatment of its inmates, most of whom were newly freed African Americans. By examining The American Siberia, Or Fourteen Years’ Experience in a Southern Convict Camp against the typical brutality-ridden image of these camps, this presentation will explore the validity of that image. The system was indeed a cruel, racist institution, but generalizing in this way leaves no room for the account of Captain J.C. Powell found in American Siberia. By narrowing the focus to the individual level, Powell’s narrative of his experiences shows that it was not impossible to form some semblance of humanity in such an inhumane system.

10:15| Luther Roadcap: Bridgewater College
Unforgiving Times: The Depression-Era Eviction of the Mountain Residents in Shenandoah National Park
This paper discusses a project that many believe to have its roots in Franklin Roosevelt’s New Deal program, the creation of the Shenandoah National Park and Skyline Drive in the Blue Ridge Mountains located in western Virginia. This paper highlights that it was not Roosevelt who began the projects; instead these projects had already begun before Roosevelt became president. However, this paper does give Roosevelt credit for employing his Civilian Conservation Corps to finish the Park and the Drive. Also the research presented in this paper gives the Roosevelt Administration credit for altering society by requiring that approximately 500 families who were living within the Shenandoah National Park be evicted from their homes. What is even more interesting is how the mountain residents responded to their eviction by suing Virginia in the United States Supreme Court, essentially defying the notion that the residents were unintelligent.

10:30| Jennifer Turner: James Madison University
"Old Jim Crow": The Case of Streetcar Segregation in Richmond, Virginia
Many are unaware that the segregation of the transportation system began at the close of the 19th century, long before the Civil Rights era. By analyzing articles published in The Richmond Planet in the early 20th century, I discovered that a major difference between protests to streetcar segregation and Civil Rights era protests was that the former were much more “conservative”. Blacks were encouraged not to cause upheaval. The streetcar boycotts also caused conflict between middle and lower class blacks. Middle class blacks felt they should have been treated more equally to whites because of their economic status. Another major outcome of the boycotts was that streetcar companies lost a lot of revenue and some even expressed opposition to the Jim Crow laws. This paper contributes to research that demonstrates the significance of Virginia as a “cultural background” for African-Americans’ fight against the obstruction of the Jim Crow era.

SESSION III: 9:30 AM – 11:00 AM
CONFERENCE RM D

9:30 | Lindsay Wood: Randolph College
**Burn Her Who is No Bride: A Feminist Assessment of Theclan Traditions**
For stories of early Christian women you must venture outside the New Testament canon and into the Apocrypha because, in the former, women have been reduced to invisibility by normative androcentrism and patriarchy. The Acts of Thecla, a second century apocryphal Christian text, tells of a young woman converted to Christian asceticism by the apostle Paul. Thecla crosses vocational and spatial boundaries, baptizing, teaching authoritatively, and leading the life of an itinerant missionary. My interest lies in addressing the reception of The Acts of Thecla and examining it from a feminist historical-critical perspective with several questions in mind: Would second century women have found this an empowering text or as a resource for those who imagined something for themselves beyond patriarchy? Was Thecla, as the scholar Willi Braun asks, a proto-feminist, or a woman who masculinizes herself as a result of the coercive androcentric cultural force?

9:45 | Stephanie Tran: George Mason University
**Saving Cinderella: Female Gender Roles in Grimms’ “Aschenputtel” and Their Influence on the Socialization of Young Girls**
What does the popular fairy tale “Cinderella” teach young girls? We will examine Jakob and Wilhelm Grimms’ 1857 edition of “Aschenputtel” (“Cinderella”), its negative and positive depictions of the Stepmother and Cinderella, and traditional versus modern interpretations of both characters. We will also evaluate the Stepmother and Cinderella’s impact on the socialization of young girls, their perceived roles in society, and the roles that girls eventually grow into as they become young women. Finally, we will determine how to prevent young girls from internalizing negative traits.

10:00 | Lauren Babineau: Sweet Briar College
**“He Was So Different From Herself”: Transformations in the “Beauty and The Beast” Tales**
The myth of Cupid and Psyche is the beginning of a long history of “Beastly Bridegroom” tales, which include East of the Sun, West of the Moon, De Beaumont’s Beauty and the Beast, and C.S. Lewis’ Till We Have Faces. This research project traces the history of the tale as well as the similarities and differences in the variations on the theme of the “Beastly Bridegroom”. This project also proposes several explanations for why the story has evolved in the ways that it has and also how those changes fit in with the societal norms of the culture that each variation originates from.

10:15 | Bryan Brady: James Madison University
**Royal Methods of Rule Used by Queens in Patriarchal Societies: How Elizabeth I of England and Catherine the Great of Russia Governed**
In each period of history, certain figures stand out above the rest. These great leaders are remarkable for many reasons, chief among them usually their prowess in governing, or their failure at it. Despite their both ruling in male-dominated societies, Elizabeth I of England and Catherine the Great of Russia were able to maintain their power and authority, leading their respective countries into new eras of greatness. Separated by many years and miles, these monarchs used a variety of techniques to ensure that they would die of natural causes at an advanced age, instead of being dethroned by a coup, rebellion, or foreign invasion. Each could have given lessons in governing to Machiavelli, and their reigns will forever remain examples of how women could dismantle the preconceptions of their time and rule with an authority rarely matched by anyone else in history.

10:30 | Mary McCarthy: Sweet Briar College
**Kings, Queens, and the Way of Things**
"Kings, Queens, and the Way of Things" challenges the traditional definition of queen regnant. Through a comparative study of two twelfth century queens (Urraca of Leon-Castille, and Bertrade de Montfort of France) it becomes evident that the queens accepted today as having been regnant are pale in comparison to Urraca of Leon-Castille. This Iberian queen is arguably the first true queen regnant because when she inherited the crown, she operated as a single woman in power outside of the influence of men. By examining Urraca in contrast with a contemporary who occupied a traditional female position of power, Urraca’s extraordinary case shines through and challenges modern notions about medieval queanship.

10:45 | Blake Silver: George Mason University
Roles in the Renaissance: Apprenticeship to Rivalry
When trying to understand interactions between artists, few moments in history offer greater insight than the High Italian Renaissance. The works of visual art produced during the early sixteenth century created a period of highly autocatalytic artistic development that was pushed forward by individuals who were in constant competition with one another. By examining the historical contexts of several famous paintings and more specifically, by looking at the portraits hung in “Gallery 20” of the National Gallery of Art, we can gain a great deal of insight into the ways in which the key figures of the Renaissance used techniques learned, borrowed, and even stolen from their contemporaries to compete with one another on a level that has yet to be matched to this day.

SESSION IV: 9:30 AM – 11:00 AM
CONFERENCE RM B

9:30 | Angela Toscano: Christopher Newport University
The Fading Affect Bias and Religious, Spirituality and Religious Coping
Co-Authors: 1) Jackie Lentz 2) Joel Arcieri 3) Ashely Fehr 4) Janet Brantley
Research has shown a tendency for emotions associated with unpleasant events to fade over and above emotions associated with pleasant events, an occurrence called the Fading Affect Bias (FAB). The FAB is often considered a healthy coping mechanism. The study examined the relation between FAB for religious/spiritual and non-religious/spiritual events. Researchers hypothesized that religiosity/spirituality would be important predictors of FAB, because both factors are related to increased well-being. In phase one, participants were administered a basic information form, and measures of positive and negative effect, personality, social desirability, depression, religiousness, and spiritual transcendence. In the second phase, participants completed a FAB and religious coping questionnaire. Analysis of the data indicates the occurrence of FAB for religious and non-religious events, and that religiosity, spirituality, and religious coping are factors that help people maintain emotions associated with pleasant events over time. Implications are discussed.

9:45 | Jessica Joiner: Sweet Briar College
Examining a Fundamental Assumption of Pavlovian Learning in a Conditioned Approach Procedure with Rats
Pavlovian learning models widely envision the associative strength of a conditioned stimulus as going up or down depending on whether it is reinforced or not. They typically predict symmetrical changes of associative strength in acquisition and extinction unless the learning rate parameters differ for reinforcement and non-reinforcement. Using a novel method in a conditioned approach procedure with rats, Rescorla found greater associative changes per trial in acquisition than in extinction; he inferred that reinforcement has a greater impact than non-reinforcement. However, an alternative is that the learning rates are unbiased and there is an asymmetry in the form of the learning curves. Using Rescorla’s method and a conditioned approach procedure with rats, we found support for this alternate hypothesis. In light of converging data, this calls into question some of the basic assumptions about Pavlovian learning processes.

10:00 | Kaitlin Ryan: Christopher Newport University
Face Recognition in Emotional Scenes
Co-Author: Noah Schwartz, Phd
In human observers, face recognition is believed to be a specialized, holistic process, allowing individuals to recognize faces faster and more accurately than ordinary objects. When faces are viewed in a highly negative emotional context, face processing has been shown to shift to a feature-based strategy (Anderson, 2009). The current study further explores this finding by using a novel paradigm to determine which specific features are used to recognize faces that were initially encoded in a variety of emotional contexts. Participants were asked to recognize faces from a 3-alternative display after memorizing a similar face that was embedded in either a neutral, positive, or negative emotional scene.Faces were manipulated in 7 dimensions consisting of 4 feature dimensions and 3
configural dimensions. Results contradict previous findings, suggesting that participants employ a more holistic processing strategy regardless of the emotional context in which faces were initially encoded.

10:15 | Julia Boudrye: Roanoke College
An Examination of Technology Use in College Students: The Correlates of Reserved Quiet Time
A great deal of recent research has focused on how technology use impacts students. In our study, thirty students completed a survey reporting cell phone and internet use behaviors during the academic term. We will share general findings about their usage behaviors, including gender differences. Additionally, we will report correlational findings between their usage behaviors and their reported social interactions. Preliminary results suggest that students who intentionally reserve quiet time with no technology are more likely to respect quality time with friends ($r = -.67$, $p = .003$, $r = -.71$, $p = .001$) and family ($r = .43$, $p = .02$). Our findings will be discussed in the context of recent concerns about how technology use may impair face-to-face interactions.

10:30 | Diane Tran: Washington and Lee University
Student Ability Sorting at the K-12 Level
It is fairly self-evident to state that children are diverse learners. They learn at different paces and through different methods. Due to the fact that we have such diverse learners, schools essentially are forced to find different methods of structuring their classes and schools to deal with the wide range of students coming into their buildings. In addition, these structures can create environments in which children are either left behind or completely prepared for the next stage in their career or education. In general, the primary school organization method has been ability grouping, or sorting, students either within classes or between classes. In this paper, I will discuss the different types of ability groupings which are currently predominant in most mainstream schools at the K-12 level as well as specific trends that can either accelerate student achievement or stunt individual development.

10:45 | Nathan Castellano: Roanoke College
Finding What We Want to be When We Grow Up: An Analysis of Career Change in Graduate School
This study combines popular educational thought on climates for teaching and research in graduate universities with theories of career change and organizational integration to examine how personal and departmental variables influence graduate students. Results suggest that departmental climates are related to a student’s decision to move towards a new career path. This study is a first step in analyzing why students change their career goals and in understanding the changes that departments and universities can make to better support their graduate students.

SESSION V: 11:15 AM – 12:30 PM
CONFERENCE RM A

11:15 | Molly Schweinhart: Christopher Newport University
Believability Contrast Effect for Mildly Unbelievable Headlines
Co-Authors: 1) Dave Tosto 2) Morgan Epstein 3) Joshua Sturmfels 4) Dr. Jeffrey Gibbons
The current experiment examined if the believability ratings of mildly unbelievable headlines presented in different contexts would produce a believability contrast effect. Christopher Newport University students were randomly administered one of three forms and were instructed to rate the believability of 10 mildly unbelievable headlines presented with either 10 extremely unbelievable headlines, 10 believable headlines, or 10 mathematical problems. All headlines used in each questionnaire were pre-rated as extremely unbelievable, mildly unbelievable, or believable. The believability of each headline was rated using a 7-point Likert-type scale ranging from -3 (extremely unbelievable) to +3 (extremely believable). The data were entered into a one-way ANOVA and analyzed via SPSS. The results showed that mildly unbelievable tabloid headlines become more believable when presented with extremely unbelievable tabloid headlines than when presented with believable headlines or math problems, which demonstrates a believability contrast effect.

11:30 | Shi Hua: Randolph College
How Accurate Do Measures of Digit-Ratio Need to Be?
Co-Author: Dr. Dennis Goff
In earlier work we noticed that high reliability for finger length measurements yielded an unsatisfactory variability among raters when correlations between digit-ratio and mental rotation and toy preference were calculated. In this study we explore what an acceptable inter-rater reliability of finger length measurements should be. We recommend agreement that exceeds .95.
Alone in a Crowded Room: Loneliness and Attachment

This study investigated the relationship between attachment style and loneliness, using the UCLA loneliness scale and an attachment scale made by Collins & Read. Secure attachment style was found to be significantly negatively related to overall, social, and emotional loneliness. Anxious-ambivalent and avoidant attachment styles were found to be significantly positively related to loneliness as well. Secondary analysis found high involvement in groups negatively related to loneliness.

Measures of Cognitive Flexibility: Self-Report and Performance

Cognitive flexibility is characterized as an ability to represent knowledge from different conceptual perspectives. This flexibility may take on a variety of manifestations from simultaneous representation of objects along multiple physical properties (e.g., color, category, quantity) to awareness that for any problem, there are alternative options available. The current study examined the association between a number of indices of cognitive flexibility to investigate whether participants show consistent patterns of cognitive flexibility across self-report and performance-based measures: Anagrams task (Silver, Hughes, Bornstein, & Beversdorf, 2004), Compound Remote Associates test (Bowden & Jung-Beeman, 2003), Cognitive Flexibility Scale (Martin & Rubin, 1995), Color-semantic multiple classification task (Bigler, 1992), Graphophonological-semantic multiple classification task (Cartwright, 2007), and Wisconsin Card Sorting Task (Berg, 1948). Correlations between these measures will be discussed and may shed light on cognitive flexibility as an important mechanism underlying complex cognitive functions.

Informed Consent: Participants’ Complacency in Reading and Comprehending Information

For a number of reasons such as familiarity of the researchers and the awareness of one’s protection by ethics committees, participants often sign informed consent forms (ICF) without reading the form in its entirety. Seventy-six undergraduate students, 49 females and 27 males, ranging from 18-24 years old participated in one of six possible conditions: control, content-manipulated, verbal accompaniment, highlight selections, time pressure, and researcher absence. Participants received a condition-specific ICF, sat through a filler task, answered an informed-consent reflective questionnaire and were debriefed. The use of a one-way ANOVA showed that the presence of a verbal accompaniment significantly improved the informed consent related recall and recognition abilities of participants. Ideally, with modifications to the research project and administration processes future results will reflect statistical support that provide the most copacetic style and administration process for participants to read informed consent forms in their entirety.

Verdun and Modern Memory

The battle of Verdun, notably the most horrific battle of WWI and possibly in history, raged for 10 months along a 29 kilometer front and became the symbol of French national pride and the epitome of a Pyrrhic victory. An entire generation of French and Germans were destroyed at Verdun but out of the ashes arose a new era of French glory. Verdun is one of the many significant lieux des memoires in France but what separates Verdun from all of the others? During the summer of 2010, I did extensive research not only on the battle itself and the way that it was waged, but how it came to be France's most significant place of memory. Also in my paper, I discuss the important issues of memory with regards to national remembrance.

Memory as a Political Strategy: The Politics of Stalin Remembrance in Russia

After witnessing the renovations of the Kurskaya metro station in Moscow that included lyrics of the Soviet national anthem praising Stalin, I began examining Stalin’s place within the official memory discourse. Using collective memory literature, I researched the other battles regarding the politics of Stalin remembrance in Russia today, including the commemoration of the Great Patriotic War, educational policy, and the Katyn Forest Massacre. Rather than an outright rehabilitation or denouncement, Stalin and his legacy has evolved into something that is truly malleable depending on the situation, audience, and desired outcome. The current administration has developed a pattern in recent years of splitting Stalin by simultaneously acknowledging some of his crimes while also praising
his great achievements, whatever the cost. Such a policy, whether unconscious or not, has created a situation in
Russia that has garnered extreme responses on both sides of the political spectrum.

11:45 | Caitlin Kimak: James Madison University
Capitol Building Architecture: The Representation of American Identity, 1789-1829
Despite our obsession with nineteenth century Congress and the laws they made, there is little discussion about the
building where these events took place, the Capitol. There is even less discussion on how the imposing building
reflected the ideals of the time, how the architecture was a constant reminder of the people whom members of
Congress served and the identity in which they shared. This paper will examine the Old Capitol, completed in 1829
by Charles Bulfinch, and how the building of the Capitol reflected the establishment of American identity,
especially the ways in which American virtues of liberty, democracy and perseverance are enshrined within the
physical building. I propose that the Capitol became a testament to the young republic’s emerging American identity
through the distinct architectural innovations of its two major architects, Benjamin Henry Latrobe and Charles
Bulfinch.

12:00 | Thomas Schirra: Virginia Military Institute
The Shanghai War of 1937: Then and Now
The present-day visitor to the Chinese city of Shanghai today is greeted by towering skyscrapers and the sounds of
city traffic, but what of its past? On August 13, 1937, the Shanghai War of 1937 was initiated with a Guomindang
assault on the Japanese district of Hongkou. Three months later and tens of thousands, if not hundreds of thousands
of combatants lay dead on both sides. Another month and the civilian population of Nanjing would be subjected
to death and mutilation by the victorious Imperial Japanese Army. Now, after seventy-three years, office buildings
have replaced the rubble left by Japanese and Chinese artillery shells and bombs. This urban renewal also translates
into the collective memory of the Shanghai War of 1937. The history is not so much hidden, but rather ignored, with
modern day politics and economics taking precedence.

12:15 | Kathleen Hunter Lea Todd: Mary Baldwin College
Hikikomania: Existential Horror or National Malaise? The Japanese Psyche Post-World War II as Symptom
of a Dying Nation
Currently in Japan, an estimated one million youths are missing from society. They have sequestered themselves in
their family homes and have little to no contact with the outside world. Many believe them to be social misfits or
psychologically unsound; in truth, they are silent rebels, trapped in their unwillingness to operate within a country
that denies them their individuality. They are the hikikomori (“socially withdrawn”). While Japan is a nation that
seeks to maintain harmony, many young men and women feel existentially disconnected from the “groupism” that
pervades Japanese society. But this is only one symptom of a bigger problem that Japan is experiencing. If youths
are retreating into the womb of their rooms, if the birth rate keeps decreasing, and if the general pessimism of the
Japanese continues, how will their society survive?

SESSION VII: 11:15 AM – 12:45 PM
WAILES LOUNGE (FIRST FLOOR)

11:15 | Bryan Piatkowski: Roanoke College
Evolution of Polar Auxin Transport in Gametophytes
Co-Author: Geoffrey Bader
While auxin is transported via the phloem, it is unique because it can also be transported unidirectionally, termed
polar auxin transport (PAT). Auxin is the only hormone transported in this fashion and is believed to be connected
to evolutionary developmental phenomena. Bryophytes are evolutionarily between green algae and vascular plants,
making them ideal candidates to study the evolution of development and shape in vascular plants. In addition,
bryophytes exhibit many auxin controlled responses seen in higher plants. Our results demonstrate that bryophyte
gametophytes may contain similar proteins responsible for PAT in sporophytes. The liverwort Riccia fluitans
exhibited simple diffusion of auxin uptake, while the hornwort Anthoceros punctatus and the moss Rhizomnium sp.
both exhibited facilitated diffusion of auxin uptake. All three species displayed facilitated diffusion of auxin efflux,
but the more complex Rhizomnium sp. also proved NOA inhibitor sensitive, suggesting the presence of similar
auxin efflux carriers as vascular plants.

11:30 | Anastasia Blake: Mary Baldwin College
YES, The Fish in Your Rivers Are Intersex! Use Of The Yeast Estrogen Screen (YES) To Determine
Endocrine Disrupting Chemicals in the Tributaries of the Shenandoah River, Virginia
The presence of endocrine disrupting compounds (EDC’s) in lakes and rivers has been a cause of concern worldwide due to observations of aquatic wildlife with sexual abnormalities. The aim of this study was to determine EDC contamination in rivers in the southern Shenandoah Valley, and it was conducted during winter and summer of 2010. Samples were collected from rivers and wastewater treatment plants (WWTPs). EDCs were determined using the Yeast Estrogen Screen (YES). The YES is a bioassay that employs genetically modified yeast cells (Saccharomyces cerevisae), which contain the human estrogen receptor. Solid Phase Extraction was used to extract EDC’s from samples prior to analysis by the assay. The EDC levels observed ranged from non-detectable to 16 ng/L, with a mean of 3.5 ng/L in rivers. In WWTPs, the EDC levels ranged from non-detectable to 0.5 ng/L.

11:45| Shawn Wurst: Christopher Newport University
Second Year Survivorship of Planted Trees Within Three Created Wetlands in Loudoun County, Virginia
Co-Author: Dr. Robert Atkinson
Forested wetlands are frequently impacted and wetland creation and tree planting is commonly used to compensate. The purpose of this study is to determine which tree species and initial planting type has the highest survivorship in created wetlands of the Virginia Piedmont. Using randomized block design, 1596 trees of seven species and three initial planting conditions were planted in 24 plots across three created wetlands in Loudoun County, Virginia. Planting occurred in spring 2009 and monitoring in fall 2010. Survivorship of all trees combined was 38.49% at Phase I, 46.61% at Phase II, and 67.64% at Phase III. The total survivorship across all sites was 59.72%. The best surviving tree so far is the swamp white oak, the best planting condition is as a gallon. Improved information about the types of trees and initial planting conditions that result in optimum density will help improve future forested wetland compensation projects.

12:00| Ariel Firebaugh: Roanoke College
Does Mother Know Best?: Oviposition Choice and Larval Survival of Cabbage White Butterflies on Two Host Plants
Co-Author: Dr. Rachel J. Collins
We explored a plant/herbivore system in which two coevolved species may have diverged in the introduced range. Pieris rapae (small cabbage white butterfly) and Allaria petiolata (garlic mustard) are native to Europe and are widespread throughout the eastern United States. We conducted two experiments to understand whether cabbage whites control garlic mustard populations in North America. First we assessed cabbage white oviposition preferences among four Brassica varieties: garlic mustard, mustard greens (Brassica juncea), collard greens, and kale (Brassica oleracea varieties). Females preferred to lay eggs on mustard greens (52% of all eggs; One-Way ANOVA, F= 49.21, P < 0.0001, df = 95). We then tested the “mother knows best” hypothesis: Would females lay eggs on the best food source for their offspring? Larvae fed garlic mustard had higher fitness than larvae fed mustard greens. Our results suggest that cabbage whites do not control garlic mustard populations in North America.

12:15| Lauren Achtemeier: Christopher Newport University
Post-Burn Herbaceous Vegetation in the Great Dismal Swamp National Wildlife Refuge
Co-Authors: 1) Lauren Achtemeier 2) Robert Atkinson
The Great Dismal Swamp National Wildlife Refuge (GDSNWR) contains over 45,344 hectares of forested wetlands which support diverse herbaceous plant communities. In 2008 an unintentional fire in GDSNWR impacted 1,960 hectares. The purpose of this study was to indentify and quantify the herbaceous vegetation in the burned areas of the GDSNWR. In August 2010, aerial cover estimates of herbaceous species were collected in 3-1 m² subplots adjacent to 25-10 m² plots. Plant identification followed Radford et al. and nomenclature followed Accepted Virginia Flora. Of the approximately 60 species identified, the highest occurring and most dominant species were Andropogon virginicus, Woodwardia virginica, and Smilax laurifolia. The species found in the post-burn locations is similar to other studies of burned areas in the GDSNWR and different from species in unburned forested regions of GDSNWR. The 2008 fire changed the ecological conditions and stimulated growth of disturbance-tolerant herbaceous species.

12:30| Justin Weiser: Christopher Newport University
Two-Year Comparison of Post-Fire Atlantic White Cedar Regeneration in the Great Dismal Swamp National Wildlife Refuge (Gdsnwr)
Co-Author: Dr. Rob Atkinson
Anthropogenic disturbances of the Great Dismal Swamp have resulted in a decline of Atlantic White Cedar (AWC). The GDSNWR seeks to restore this valuable AWC habitat to pre-disturbance conditions. In the summer of 2008 a fire within the GDSNWR impacted >1000 hectares. The purpose of this study is to quantify and compare post-fire regenerating of AWC density over a two-year period. AWC seedlings were censed in 25 plots in both the fall of
2009 and late summer 2010. The density of regenerating AWC seedlings decreased between 2009 (17,125 stems/ha +3,475 SE) and 2010 (8,656 stems/ha + 1,915 SE) (p=0.029). The decreasing AWC density suggests that natural regeneration may not be sufficient to meet AWC restoration goals of 1000 to 2100 stems/HA reported for 65-YR old AWC stands. Given the high mortality rate, management efforts such as supplemental planting of nursery-grown AWC may be necessary.

SESSION VIII: 11:15 AM – 12:30 PM
CONFERENCE RM C

11:15| Michael Lantz: James Madison University
Policing the People: Moral and Sumptuary Law in Rome from 146 BC to 37 AD
Moral and sumptuary laws were not unique to ancient Roman society; however what the Romans sought to accomplish by the creation of these types of laws was uniquely Roman. This presentation argues that unlike most societies the ancient Romans largely had utilitarian goals in mind when they created moral and sumptuary laws. Accordingly, the Romans used moral and sumptuary laws primarily to control the actions of the elite and further stratify the divide between the upper and lower classes of Rome. Further, this presentation dichotomizes the surviving examples of Roman moral and sumptuary law into thematic subcategories that better explains the intent of their creation. Much emphasis is placed on attempting to explain the commonalities of intent within each thematic subcategory. However, the laws offered as evidence are also examined on an individual basis to explain their respective impacts on Roman society and the cultural mores surrounding their passage.

11:30| Rachel Akers: Sweet Briar College
George Washington: The Embodiment of Roman Republican Virtue
George Washington, today, is known for his military success and his position as the First President of the United States. Throughout his life, Washington was offered many opportunities to be a tyrannical Caesar over a weak government, but instead Washington looked out for his fellow citizens and did what was needed in order to strengthen the young country. Washington symbolized Roman Republican virtue, similarly to the virtue of Plutarch’s Cato the Younger and Livy’s Cincinnatus. Unlike his intellectual cohorts Thomas Jefferson and John Adams, Washington didn’t discuss Roman writings, but rather Washington’s letters and speeches embody his conscious effort to live as a Roman role model for his country.

11:45| Adam Sexton: Roanoke College
Plato on Happiness, Freedom, and Individuality: A Corrective to Modern Views
Three of the most important concepts in the modern democratic individual’s mind are happiness, freedom, and individuality. These concepts are praised, however, in a way that has skewed their meanings and have tended to make people generally unhappy. In the Republic, Plato provides definitions for these three concepts that differ from their modern definitions. This paper will argue that, in many respects, Plato’s definitions of happiness, freedom, and individuality are actually better and more fulfilling than the modern definitions of those concepts. Additionally, Plato’s views are not without criticism. J. S. Mill in On Liberty and Karl Popper in The Open Society and Its Enemies both support the modern views of happiness, freedom, and individuality and provide strong critiques of Plato’s definitions. This paper will defend Plato’s views in light of those critiques and advocate the reasoned acceptance of Plato’s corrective as a means to a happier life.

12:00| Melissa Valentine: Washington and Lee University
A Torturer’s Maxim
In Metaphysics of Morals and The Foundations of the Metaphysics of Morals, Kant provides an account of morality which includes both a command that should always be followed and a description of our duties to others. Based on this account, one can speculate as to Kant’s views about acting on a maxim to excruciatingly torture your enemies provided you are willing to allow anyone to act in the same way even if you are tortured. I argue that Kant would condemn this maxim because it violates the categorical imperative and the duties one has to others.

12:15| Christopher Clemons: James Madison University
Youth and Morality: The Debate Between the Boy Scouts of America and Homosexuality
At the turn of the 20th century with the Industrial Revolution in full swing, the culture of the United States was experiencing a masculinity crisis and questioning what was going to happen to their boys. People established many groups to help guide young men in this new and different time; the most prominent became the Boys Scouts of America. Since its conception in the United States in 1910, the Boy Scouts of America has sought to instill its members with an unwavering sense of citizenship, reverence, and duty to fellow man, as expressed by the Scout
Law and Scout Oath. However, in the current masculinity crisis of the 21st century, this organization chooses to fight for the right to exclude, in particular homosexuals. The history and culture surrounding the Boy Scouts, homosexuality, and their struggle against each other was the focus of my research.

SESSION IX: 11:15 AM – 12:15 PM
CONFERENCE RM D

11:15 | Richard Coultas: Randolph College
ADBACDCBDBABDBCACBACABDACDBDCAACDBDDBABDDBCABACDBC
An Additively Non-Repetitive(ANR) sequence is a sequence of whole numbers containing no two adjacent subsequences of the same length and the same sum. In a Summer Research project at Randolph College, we attempted to determine the existence of an infinitely long ANR sequence constructed from a finite set of whole numbers. While we did not resolve the complete question, we give some partial results.

11:30 | Avis Foster: George Mason University
Extensions of the Cable Equation Incorporating Spatial Dependent Variations in Nerve Cell Diameter
Co-Authors: 1) Anarina Murillo 2) Emily Hendryx 3) Michelle Salas
Neuronal function relies on electrical signaling which, in turn, depends greatly on the morphology of neurons. Local changes in the diameter of neurites caused by deformations such as tumors or enlarged cerebral aneurysms may significantly affect electrical conduction. Morphologically accurate models are typically constructed by representing neurons as branched cables. In this setting, a neuron is modeled as a system of coupled cable equations, each representing small neuronal segments as cylinders. Two extensions of the linear cable equation that allow the radius to change continuously in space are constructed here by assuming that the radius of a neuronal segment changes to form a section of a cone or a hyperbolic volume. This research shows how different geometrical representations used to derive cable equations have varying impacts on the calculation of solutions.

11:45 | Guan Wang: Randolph College
Non-Repetitive Sequence and Tower of Hanoi
By definition, a non-repetitive sequence is a sequence that contains no identical adjacent segments. This concept was first introduced in the 1960s, and has ever since been explored. In the 1990s, it was proven that the sequence of optimal moves in the puzzle Tower of Hanoi (TOH) is always non-repetitive. This intriguing discovery has the potential to offer Mathematicians new angles to study non-repetitive sequence. Therefore, the objective of our research was to find out the essential elements of TOH that yield non-repetitiveness.

12:00 | Michael Blatnik: Lynchburg College
Mining the Green Bank Telescope Metadata Archive: Statistics on Radio Frequency Use, 2002-2010
The purpose of our project was to extract data from the Green Bank Telescope archives to create histograms of frequencies observed vs. time observed within a frequency. We created programs that could retrieve the data out of the FITS storage files and input it an Excel readable file. In addition, we examined how much observing occurred within astronomy-allocated bands. Our results showed that 18.8% of the observing occurred entirely within an allocated band while 55.7% of observing occurred at least partially within an allocation. Although the entirety of the data could not be accounted, we were able to obtain significant results in the form of histograms, and create a research framework for future data extraction.

SESSION X: 2:00 PM – 3:15 PM
CONFERENCE RM A

2:00 | Alexandra Knabe: James Madison University
Guy Fawkes and the Gunpowder Plot
Focusing on the events surrounding the Gunpowder Plot of 1605, this presentation seeks to inform the audience of the key conspirators behind the Plot, their reasoning, and the consequences of the Plot on the English government and public. The presentation in particular aims to increase the audience’s understanding of the role of Guy Fawkes in the Plot, primarily to explain that Fawkes was neither acting alone, nor was he the leader of the thirteen conspirators, both of which are popular myths that are often mistaken for fact. The final point touched upon in the presentation is the origin of the traditional English holiday of Bonfire Night, which is closely associated with the Gunpowder Plot of 1605, and its decreasing contextual value in English culture as it is slowly eclipsed by the Americanized holiday, Halloween, which falls within a week of Bonfire Night.
2:15| Paul McDowell: James Madison University
Fools, Mules & Idealists: The Origins of the Modoc War and the Unsatisfying Results it Achieved
A mere blip in the long, tumultuous history between Native Americans and white settlers, the Modoc War of 1872 and 1873 lasted less than one calendar year. Fought along the lunar-like landscape of the eastern California-Oregon border, renegade Modoc leader ‘Captain Jack’ began to utilize swift and devastating guerrilla warfare to terrorize the underestimating and unprepared U.S. Army for nearly six months. Although the hostilities were short-lived, and relatively few combatants were involved in the fighting, the Modoc War proved the climactic end of long, arduous, and entirely complex tensions between settlers, natives, and the U.S. government, and ultimately proved one of the costliest Indian Wars the United States had ever encountered.

2:30| Benjamin Goglia: James Madison University
The American Dream
The accidental findings of gold on January 24, 1848 in Sacramento Valley California led to the creation an entirely materialistic society. It operated solely through and around the actions of the most inhumane behavior. In 1850, just two years later, over 300,000 people had migrated from all over the world to California in search for riches; San Francisco alone went from 1,000 to 25,000 residents. The prevalence of prostitution, corruption, and murder was everywhere and occurred every day.

2:45| Nicholas Peacock: James Madison University
“Let My Show Go On”: William F. Cody’s Role in Shaping the Mythic American West
William F. Cody lived an extraordinary life. As a gold prospector, rider in the Pony Express, and scout for the Union army, his early years exemplified the romantic notion of life on the American frontier. However, it was his job as a hunter for the Kansas Pacific Railroad where he would earn his most famous name, Buffalo Bill. Through his rising fame as a hero in popular dime novels, Cody was eventually able to create the show, Buffalo Bill’s Wild West. His show featured cowboys and Indians locked in deadly battle, trick shooting by one of the world’s first female celebrities, Annie Oakley, as well as several other spectacles billed as an accurate portrayal of life in the American West. The show reached millions of people around the globe and in the process Cody helped create and ingrain the concept of the mythic West as part of American culture.

3:00| David Lemelin: James Madison University
Assistant Naval Secretary Theodore Roosevelt: Giving America a World-Class Navy
The last years of the nineteenth century saw the United States Navy’s transformation into a world-class fighting force, tempered in the brief but brutal Spanish American War. This evolution in American naval power was the result of many people’s influence and hard work, but perhaps no one played a larger part than Assistant Naval Secretary Theodore Roosevelt. Acting on a strong belief in expansionist foreign policy, Roosevelt planned strategic courses of action in response to possible threats from foreign powers, rallying like-minded expansionists, and tirelessly haranguing many individuals in higher administrative positions. Thanks largely to Roosevelt’s efforts, the United States was hugely successful in the Spanish American War and emerged with a competitive, world-class navy.

SESSION XI: 2:00 PM – 3:15 PM
CONFERENCE RM B

2:00| Andrina Schroders: Averett University
Lessons on Leadership à la Charles De Gaulle
My senior honors project focuses on the late French President Charles de Gaulle and his unique style of leadership. De Gaulle emerged as the leader of the French resistance during WWII despite having no institutional backing. When dealing with the Allies, de Gaulle acted as if he was France itself though he had never been elected into office. How was de Gaulle able to function as a leader without the benefit of a legitimate institutional position? My hypothesis is that legitimacy can be acquired without institutional procedures.

2:15| Kelly Lynch: James Madison University
The Friendship that Saved the American Revolution: The Marquis De Lafayette and George Washington
The relationship between the Marquis de Lafayette and George Washington was vital to the success of the American Revolution. Lafayette was one of the most important figures in the American Revolution not only for his military skill but also for his ability to gain the all-necessary aid from France. Lafayette may have shaped the revolution but the revolution also shaped him as a republican. He grew as an individual through his ideological views and military prowess. This development was greatly influenced by George Washington who stood as Lafayette’s surrogate.
father. Lafayette made it his life goal to embody everything Washington stood and became a model republican. The relationship was reciprocal as Lafayette affected Washington especially in the realm of slavery. Washington and his forces would not have succeeded without his relationship with Lafayette. Washington’s influence led Lafayette to his involvement and eventual failure in his own country’s revolution.

2:30 | Christopher Wishon: Lynchburg College  
Paul Watson, The Prince of Whales?  
Despite our constant exposure to the concept of terrorism, individuals often have trouble discerning terrorist acts from others. Paul Watson, founder and president of the direct-action ecological organization, Sea Shepherd Conservation Society (SSCS), has been labeled alternatively as a pirate, eco-terrorist, environmentalist, and social activist. These descriptions carry varying connotations, which is important because the way an issue is framed greatly influences the relationship with the media and affects public opinion. While on his missions, Watson destroys property, endangers human life, and tailors international law to his benefit, while also enjoying media attention. This exploration of the fundamental principles and operations of SSCS through the lens of international and U.S. law, as well as state and other institutional reactions, offers a critical analysis that may apply to similar potentially dangerous organizations. Ultimately, the findings will help society make the distinctions between terrorists and non-terrorists, and inform policy reactions to them.

2:45 | Sarah Jones: Sweet Briar College  
Faith Based Organizations and their Influence in HIV Prevention Programs in Sub-Saharan Africa  
This paper explores the influence Faith Based Organizations (FBOs) have on HIV programs in Sub-Saharan Africa. Using the ‘Ugandan Miracle’ as a central case study, this paper explores if and how the lessons from Uganda can be applied to other countries in the region. Attention is paid to two aspects of a FBO’s influence: first, in setting policy, a top-down approach, and second, in the influence local religious leaders have over their community to inspire change or continue societal tradition, a grass-roots method. I hypothesize that my research will point to local religious leaders being key players in creating successful HIV prevention programs, no matter what the country, because of the respect religious leaders traditionally receive from their community.

3:00 | Meredith Bernard: Mary Baldwin College  
“The Wedding Night”: An Analysis of a Post-Colonial Egypt  
The Wedding Night, a 1950's era film set in Egypt, presents a picture of a typical post colonial 20th century society, with a delicate balance between local convention and foreign customs. Although written and directed as slapstick, this film still manages to raise historical, cultural, and traditional questions that remain important to the identity of present day Egypt.

SESSION XII: 2:00 PM – 3:15 PM  
CONFERENCE RM C

2:00 | Whitney Scott: Ferrum College  
All Fullness: Historical Notes and “The Handmaid’s Tale”  
How do authors of fantasy narratives make their worlds realistic to the reader? Critics of Margaret Atwood’s feminist novel The Handmaid’s Tale often assert that its use of dystopia fails as a cautionary criticism of the past and present world because the oppressive treatment of women in the work does not seem believable. Even so, through the structure of the Historical Notes section and its characterization, Atwood brings verisimilitude to the events of the plot. Study of the people named in the novel’s dedication reinforces the intentionality of Atwood’s craftsmanship of the Historical Notes section, and an in-depth analysis of this section reveals that The Handmaid’s Tale effectively critiques not only past and present society but also anyone who undermines the believability of the oppression featured in the novel.

2:15 | Amanda Figueroa: Mary Baldwin College  
Magnificent Days: The Death of Che Guevara  
Although I had been interested in Che Guevara’s history for a long time, it was not until researching the facts of Guevara’s death that I began to be interested in the story itself. Eyewitness accounts describe Guevara as soft spoken, intense, and proud, even though he knew he would not survive the capture by Bolivian officials. Many accounts that I researched of the event, including American CIA records and Bolivian soldiers and citizens, mention subtle details about the man himself and the circumstances he was in, provoking a sense of loss at such a poignant moment in the life of a great man being reduced to names, dates, and politics. While staying true to the historical facts, my series of poems, entitled Magnificent Days, tells the story of Che Guevara’s final days, written to give
African-American religion greatly influenced Southern women on plantations. To what extent did slave religion change women’s attitudes towards their own faith? How did they apply it? Diaries and journals kept by these women provided the best insight into this topic. I looked through roughly eight diaries kept by plantation mistresses, ranging from South Carolina, Georgia, Virginia, and Louisiana. I looked through slave narratives to find written evidence of black religion influencing these women from their perspective, as well. Most evidence consistently attested that girls hated going to church and boring sermons. Several girls wrote about their search for a better church, during which they explored black religion, including exhortations, call-and-response, emotional sermons, and conjuring spirits. These diaries contained a large amount of evidence to prove the extent of influence of black religion on these Southern women.

2:45| Leela Pereira: James Madison University

**Seen, Not Heard: Identifying Female Okies and Debunking the "Migrant Mother" Myth in Dust Bowl-Era San Joaquin Valley**

This presentation examines the myths about women perpetuated by the Dust Bowl-era photograph, Migrant Mother, contrasting those myths with the values, beliefs, and anecdotes expressed in oral histories by female migrant workers from the San Joaquin Valley in California. Following an historic drought which devastated mid-Western farmlands, migrants trickled into California and Arizona for work. Native Californians bristled at the presence of the migrants, or Okies, labeling them stupid, dirty, and backward. Despite its origins as a regional Californian construct, the Okie stereotype was sensationalized by the Depression-era mass media. The Migrant Mother photo, taken in 1936 by portrait photographer Dorothea Lange, went on to epitomize the poverty and anguish of the Great Depression. However, the inferences the public made from the photo deny Florence Thompson, the subject photographed in Migrant Mother, and other female Okies, their proper place in history as an indefatigable, practical, and highly-resourceful lot.

SESSION XIII: 2:00 PM – 3:15 PM CONFERENCE RM D

2:00| Justin Hoover and Bill Andrews: Lynchburg College

**Learning Rules for Nexus State Planning**

Machine planning is slow, because the computer making the plan must do an extensive search for a path from the state of the world as it is now to the state of the world that is the given goal. We identify world states that are "nexus" states -- states in which many actions are applicable; states with many neighboring states -- to use as stops along the way; find simple rules for getting to them without extensive search; and use this to generate plans quickly. Our current work relates to having the computer learn the rules for itself.

2:15| Kelly Mattoon: Lynchburg College

**Accessing Apple iTunes Using Three Simple Events**

We will demonstrate an open-source program we have developed that provides a simple three-event interface to Apple's iTunes. The interface allows the user to navigate a music library, podcasts, audio books, Internet radio, and email, simply by responding to yes/no prompts. The system can run on a very basic Windows-based computer.

2:30| David Griffith and Jacob Wyatt: Lynchburg College

**Interruptible Automated Congressional Districting to Prevent Gerrymandering**

Gerrymandering is the dividing of a state, county, etc., into election districts so as to give one political party an unfair advantage. Signs of gerrymandering can be seen in districts that are unusual in their shape, such as abnormally elongated districts, districts with weird indentions or extensions, and most especially districts that aren’t even connected. Computer-generated districting could prevent this, but the time requirements are prohibitive, and it is unclear what the best districting scheme would be. To solve this problem, we propose an interruptible computer program that will create fair voting districts, using a scoring method that will look at the roundness of a district, the fairness of population, and the contiguousness of a district, to continuously improve the districts, allowing the program to be interrupted at any time throughout the process, settling on the most favorable solution that can be generated for any given time allotted.

2:45| Anne Whitesell: Roanoke College
The Influence Of Interest Groups on Federal Education Policy

Much research has been devoted to studying the influence of interest groups in shaping public policy; I chose to focus my research on groups interested in federal education policy. The data comes from the letters of support submitted by interest groups to the nomination hearings for Secretary of Education appointees Rod Paige, Margaret Spellings, and Arne Duncan. I collected data on the characteristics of the groups, their strategies, and the issues mentioned within the letters. The relationships between variables were analyzed using a series of chi-square tests and binominal regressions. My results show that financial resources and the nature of the group’s members affect the group’s strategies. Results also show that the specific issues mentioned are influenced by the background of the nominee, the incoming administration’s priorities, and the current political climate. Further research on the topic might include looking into how interest groups shape education policy in other venues.
POSTER SESSION ABSTRACTS

1. Amanda Powell: Christopher Newport University
The Stress of Being a Care-Giver for People with Obsessive-Compulsive Disorder: A Literature Review
Obsessive-compulsive disorder (OCD) is an anxiety disorder in which persistent thoughts, impulses, and/or images are intrusive and/or produce repetitive behavioral or mental acts that are performed to reduce an individual’s distress (Storch et al., 2010). In conjunction, a shift to community-based mental health care over institutionalization inevitably produces more personalized caregivers, usually family members and/or friends (Laidlaw et al., 1999). Research by Laidlaw and colleagues (1999) suggest that the caregivers of OCD sufferers endure the highest levels of care-giving stress. These particular care-givers undergo stress in ordinary areas of life including friendships, recreation, work, home management, and financial obligations (Laidlaw et al., 1999). Stressed caused from care-giving is adverse to both the care-giver and the patient’s ability to cope with OCD (Chamberless et al., 2001). Further research could help develop programs to reduce care-giver stress and evaluate the effectiveness of deinstitutionalized treatment of mental health disorders similar to OCD.

2. Diana Reiss: Christopher Newport University
A Literature Review on Religious Coping and Personality, View of God, and Gender
Psychologists are in the early phases of studying religious coping. Although there is still much to learn about the topic, a substantial literature base has been developed and is worthy of analysis. Religious coping is using one’s “religious ideals, beliefs, rituals, etc.” (Cooper, Bruce, Harman, & Boccaccini, 2009) to deal with a stressful circumstance in his or her life. Through a literature review, I will analyze several variables that determine a person’s likelihood of using religious coping as well as the type of religious coping used and the effects a specific religious coping method has on an individual. These variables include personality (McCrae & Costa, 1986), one’s view of God (Maynard, Gorsuch, & Bjork, 2001), and gender (Lonczak, Clifasefi, Marlatt, Blume, & Donovan, 2006). The results of my analysis could benefit students, counselors, and researchers alike.

3. Brittany Custer: Christopher Newport University
The Evidence-Based Existence of the Not-Known Self: Unintended Implication of Social Psychology
The Not-Known Self (NKS) is a theoretical construct that explains how thinking is based on social cognitive structures; an individual makes a decision mindfully, but is unaware of cognitive factors that influence this decision processing. In other words, people generally want to believe that they determine their thoughts and choices, but the discovery of NKS suggests that people are often ignorant to the factors that determine self outcomes. Evidence has shown that consistent versus inconsistent self-referential traits are filtered by schematic structures, and that this processing is done independently of the individual’s awareness. These schematic structures are an example of how the NKS influences preference and choice without intentional processing by the individual. This poster is structured to organize and explain how the NKS is relevant to common social constructs and social processes.

4. Laura Boettcher: Christopher Newport University
“I Can't Help Falling in Love with You”: The Influence of Birth Order and Personality on Mate Selection
Sulloway (1997) concluded that birth order can be a major influential factor that shapes personality, such as openness, agreeableness, neuroticism, conscientiousness, and extraversion. The goal of the study was to investigate this influence of birth order status and Big Five personality on mate selection. Approximately 200 adults completed an online survey with questions regarding birth order status of self and their significant other as well as a 50 question International Personality Item Pool. A series of ANOVAs were used to determine impact of birth order on personality. A significant difference was found in extraversion (middle-born were higher than only and oldest) and neurotisism (only were lower than youngest and middle). Further analysis revealed that no relationship between birth order of self and birth order of significant other, although certain trends exist. Oldest-born were often in relationships with other oldest-born and majority of youngest-born were in relationships with other youngest-born.

5. Daniel Mitteer: Christopher Newport University
Posttraumatic Growth: Investigating the Positive Change Processes of Children During Stressful Life Events
Despite extensive literature regarding the negative aspects of trauma and the degree of resiliency on individuals, there is a lack of research investigating the benefits of a traumatic experience (i.e., personal development). This
construct of posttraumatic growth (PTG), or the experience of positive change as a result of the struggle with major loss or trauma (Calhoun & Tedeschi, 1998), has been scarcely examined; moreover, most of this research has been conducted solely on adults. This study seeks to: (a) provide a model of PTG processes within children, (b) distinguish children's PTG processes from adults' PTG processes, and (c) offer suggestions for measuring PTG in children. Such a measure would test for personal growth, control for the subjective severity of the trauma, and would include items specifically related to children.

6. Dana Ryan: Virginia Tech
Helping Marty Avoid Biff: A Literature Review of the Effectiveness of Bullying Intervention Programs for School Psychologists

School bullying is becoming a world-wide epidemic. A literature review was conducted across five school psychology studies on bullying intervention programs. Several important trends were identified regarding risk factors, intervention effectiveness, and gender differences. For instance, bullying occurs most frequently in unstructured environments such as lunchtime or recess, while activities and staff involvement during those times tends to decrease the frequency of bullying. Although intervention and prevention programs are generally effective, girls tend to have better results than boys. Implications and future research will be discussed.

7. Lindsay Keeler, Predair Robinson, Rebecca Campbell, Chaney Flahive: Christopher Newport University
Impact of Implicit Versus Explicit Body Esteem Measures on Participant Attitudes

Previous research has shown that body esteem is affected by exposure to idealized body images. These results are not consistent, however, and it has been hypothesized that the explicit nature of body esteem surveys confounds measurement of media reactivity. The current study aims to compare the effect of implicit and explicit measures of body esteem on body shape-related attitudes. Participant body anxiety was explicitly measured using the 16-item Physical Appearance State and Trait Anxiety Scale (PASTAS). Body shape self perception was implicitly measured with the Body Shape Assessment (BSA), a randomized set of body shape silhouettes ranging from emaciated to obese. Finally, participants completed the Free Affective Response Survey (FARS-MF), a survey assessing participant attitude toward individuals of various body sizes. Surveys were administered in random order; it is expected that FARS-MF attitude will vary as a function of the body esteem measure that preceded it.

8. Dara Gruber: Christopher Newport University
A Naturalistic and Literature Review Analysis of Refrigerator Designs: Implications for Food Choices and Habits

The American society has seen the emergence of an obesity epidemic. Center of Disease Control estimates that 30% of Americans can be considered obese, and another 20% can be considered over-weight. Albeit, health experts have targeted unhealthy food ingredients, easy and cheap sources of food, and challenged food providers to better make meals and snacks; little has been done to evaluate how food is stored and made available. Specifically, this research attempts to understand the ever-present, residential, and kitchen placed refrigerator. A design analysis of refrigerators shows a basic genetic form and function of this appliance that has been a constant over a half century. Design-behavior analysis indicates that the way and location of food placed (by design) in a refrigerator may actually steer food choices and eating habits (snack choices). Implications of this research concern how experts consider health promotion and intervention programs to address the obesity epidemic.

9. Kyle Harshey: Hampden-Sydney College
Whisking for Water: The Regulation of Texture Discrimination by the Thalamic Reticular Nucleus
Co-Author: Dr. Dan Weese

The thalamic reticular nucleus (TRN) is an essential part of the neural circuits between the thalamus and cortex. The TRN is a crescent-shaped structure ventral to the cortex that forms a stratum of GABAergic cells over the thalamus. Many researchers term the TRN as a filter because all thalamocortical and corticothalamic connections activate neurons in the TRN, while also gating cortical signals by inhibiting thalamic cells. This project looks at an alternative method to test the role of the TRN—specifically by blocking its effects on the ventral posterior medial nucleus (VPM) of the thalamus in the rat. We hypothesize that unilateral GABA manipulation of the VPM will disrupt contralateral stimuli discrimination. This presentation outlines the first phase of the project, which consists of developing a protocol for training rats to discriminate between rough and smooth textures via active whisking on
a specially designed discrimination task.

10. Ruth Yeh: Christopher Newport University
Exploratory and Confirmatory Factor Analysis Caveat in Scale Development: What It Is and When to Use It
Since its inception during the times of Binet’s intelligence testing, factor analysis has been a powerful statistical analysis that allows researchers to examine the constructs influencing the validity of their measures (Spearman, 1904). With the advent of modern computing a large percentage of peer reviewed research generated uses factor analysis in one form or another (Fabrigar, Wegener, MacCallum, &Strahan, 1999; Russell, 2002). Although the process of running a factor analysis is relatively easy, knowing what methods to apply and when to use them can be complicated. This perquisite knowledge is essential to utilizing factor analysis to its full potential. This literature review seeks to examine the current methods of both exploratory and confirmatory factor analysis and to discuss some of the issues that arise when these analyses are used incorrectly.

11. Ian Muse: Christopher Newport University
Concurrent Bimodal Event Related Potential Tasks: Implications of Multitasking and Interference
Recent advances in electroencephalography (EEG) have given rise to event-related potentials (ERP). ERP techniques have unlocked the ability to determine precise neuronal latencies of reactions to stimuli (Luck, 2005). Research has previously focused on latencies of neuronal firing given a single modality task (e.g., visual). This research explores neuronal firing latencies when participants face multiple and concurrent modality tasks. Implications of this research concerning both neuronal and behavioral interference will be discussed.

12. Christina Philyaw: Christopher Newport University
Does Cognitive Flexibility Predict Counterfactual Reasoning?
Co-Authors: 1) Corinne Birkeland 2) Ashley Frank
Counterfactual reasoning involves the ability to ask, “What if?” and, “If only?” questions when reflecting on a past event in order to guarantee a different outcome in similar future scenarios. Cognitive flexibility is the ability to concurrently categorize an object in several ways. While previous research has examined conditions affecting counterfactual generation, the current study examined the relation between counterfactual generation and cognitive flexibility. A total of 33 third grade students, 30 fourth grade students, and 27 fifth grade students were invited to listen to four stories individually. Between each story, participants were provided with the opportunity to generate counterfactual statements. Subsequently, participants engaged in a general multiple classification task used to measure cognitive flexibility. Children with higher cognitive flexibility scores were expected to generate more counterfactual statements than children with lower cognitive flexibility scores. The results supported the hypothesis.

13. Kaitlin Heffron: University of Virginia
Academic Year and Gender Differences on Adolescent Math Interest
Math interest is of increasing priority for American professions in science, technology, engineering and mathematics (STEM) to ensure a diverse representation of individuals in the national workforce. The objective of current research is to explain the adolescent tendency for girls and minorities to exhibit diminished interest in math. The study design asked male and female students between grades 7 and 11 to complete a 130-item questionnaire on math interest for three consecutive years. The student reports in the third year of the study were analyzed to detect group differences and determine relations between Math Self-Efficacy, Math Outcome Expectations and Math Interest. Findings revealed no significant differences by gender, but future math expectations did relate to liking of math activities and perceived math proficiency such that 7th grade student expectations of math were more optimistic than those of 9th and 11th grade students.

14. Amory Cox: Christopher Newport University
Inadvertent Plagiarism: Do Students Unknowingly Copy Examples on Creative Tasks?
Co-Author: Gayle T. Dow, Phd
Are examples helpful or hurtful? If the researcher gives an example, on an assignment, students may then form their schema around that example and inadvertently plagiarize it. For example, when asked to “create a name for a new pain reliever” if the instructions provide an example (“relive-a-prin”) will the students tend to give responses that
only end in “prin”? The purpose of our study is to investigate the creativity of students’ responses to a verbal (create a new pain reliever) and a nonverbal (draw an alien) task. Furthermore, we are interested in novice versus expert differences. We expect that novices will be more prone to inadvertent plagiarism than experts because they are still at the initial stages of schema development.

15. Elizabeth Begej: Sweet Briar College
Studies of Motivation and Achievement in Business
This case study details traits that are seen in people who are motivated to create businesses within the cyber community of Second Life. The goal was to see that if the research yielded results similar to previous research done studying motivation and achievement. A Likert scale used by Angela Duckworth et al. classifies 12 different aspects of motivation through achievement, and was used in conjunction with a candid interview about the overall success of the business that was created in Second Life. Four individuals were interviewed, and the data was then retrospectively compared to the original data that was taken by Duckworth et al.

16. Laurin Roberts: Christopher Newport University
Mindfulness-Based Cognitive Therapy: A Literature Review
Mindfulness-based cognitive therapy (MBCT) is a recently developed treatment designed to prevent relapse or recurrence of major depression (Segal, Williams, & Teasdale, 2002). MBCT combines aspects of cognitive based therapy for depression with meditative practices that help to facilitate the development of metacognitive skills, or the cognition about one’s cognition (Bishop et al., 2004; Teasdale et al., 2000). This literature review will discuss MBCT in comparison to current depression therapies and reveal specific research findings. For instance, studies have shown a significant decrease in the relapse rates of individuals who underwent MBCT as compared to individuals who received treatment as usual (TAU) (Kingston, Bates, Dooley, Lawlor, & Malone, 2007) and compared to individuals in a maintenance antidepressant medication group (m-ADM) (Kuyken et al., 2008). This literature review will also discuss future implications that could expand the understanding of the MBCT and its effects.

17. Angela Toscano: Christopher Newport University
Alcohol, Religiosity and the Fading of Emotions: A Proposal
Co-Authors: 1) Ashley Fehr 2) Janet Brantley 3) Jackie Lentz 4) Joel Arcieri
Fading Affect Bias (FAB) is the tendency for unpleasant emotions to fade more than pleasant emotions. Past research showed an Alcohol Frequency x Event Type interaction in which low drinkers showed more FAB for non alcohol related events than for alcohol related events, but no difference was found for high drinkers. Religiosity and spirituality has also been correlated with the fading of unpleasant affect. The proposed experiment will hypothesize that high alcohol consumption will predict higher FAB than low alcohol consumption. Spirituality and religiosity will be negatively correlated to the fading of pleasant affect. Additionally, alcohol will be negatively correlated to religiosity and spirituality but more so to religiosity than to spirituality. The main hypothesis will be whether alcohol will mediate the relation between religion and FAB.

18. Huma Manati: Sweet Briar College
Women’s Status in the Middle East
This research paper will compare the legal and social status of women in three contemporary, Islamic states: Afghanistan, Turkey, and Iran. The argument is, that the modern western-style democracy and secularism are the ways to promote women’s access to equal rights. In particular, which of these factors (religion, culture, political status, law, economics, education) most influence how women’s status in these countries can be strengthened. Moreover, what is Sharia Law and how does sharia law define women's status and their roles in a Muslim society. And finally, what can government, national or international organizations do to improve the situation.

19. Mary Hoover: Longwood University
2009 Chilean Presidential Elections
This paper discusses the recent Chilean Presidential campaign and January 17, 2010, election of Sebastián Piñera. On the first election day, no one emerged as a clear winner; therefore, the second election day, as law requires, was a run-off between the two leading candidates. Piñera won, and on March 11, 2010, less than two weeks after the
fifth strongest earthquake in recorded history hit Chile, he was inaugurated as the first right wing president since the dictatorship of Augusto Pinochet, deposed in 1990. Piñera follows Michelle Bachelet, the most popular president Chile has ever had, who is leaving office with an approval rating of about 85%. The study addresses why Chileans are ready to have another right wing president; why they elected a new leader whose views are so different from the previous administration, and whether political affiliation matters at all in the wake of the February 27th earthquake.

20. Ashley Dabbraccio: Roanoke College
From Miners to Boy Scouts: A History of the Land that Became Camp Powhatan, 1800-Present
In the 1960s, the Boy Scouts of America obtained land in Pulaski, VA. The land itself had once served as a mining community. The project covers researching the land in two distinct ways. First, focusing on the mine and how the land was worked during the mining boom. How did mining affect the land and the people? What did it mean for the town’s economics? The second part of the project would be delving into information on the land after the Scouts bought it. What was the land primarily used for after they bought it? Oral histories from former Scouts and Scout masters were used to collect histories and anecdotes about times at Camp Powhatan. By studying the changes in one specific environment, one can see how one setting progresses through social and economic upheavals and downfalls, in order to survive within their own surroundings.

Randolph College’s Musical Heritage: Exploring and Preserving Decades of Musical Performances at Randolph-Macon Woman’s College
For decades, the Randolph-Macon Woman’s College Department of Music has sponsored quality performances by students, faculty, and guest artists. A great many of these performances have been recorded, mostly on reel-to-reel tape. Lipscomb Library is in possession of many of these archival recordings, dating back to at least 1963. The recordings are not catalogued, and sadly, the media are becoming degraded. We propose to preserve, catalog, and make these recordings available to the Randolph College community, and the community at large, through the LION online library catalog. This is a continuation of a 2009 Summer Research project, in which over 200 reel-to-reel tapes were catalogued, methods of preservation were explored, and thirty-two performances were successfully digitized and are now available on CD. This year, the process was streamlined, resulting in preservation of an additional 45 recordings.

22. Qingping Yu: Randolph College
Using Semblance Analysis to Study the Microseismicity of Central Virginia
Most earthquakes happen along major lithospheric plate boundaries. There is no major plate boundary in Virginia, but we still have records of events with magnitude 4.0 and higher that have consistently occurred over the same area (CVSZ: Central Virginia Seismic Zone) during the last 100 years. The reason for these seismic activities is not well understood. There are numerous earthquake faults within CVSZ, but the recorded earthquakes do not correlate well with the location of the faults. This could be due to high uncertainty in earthquake location and/or due to the small number of events recorded in CVSZ. Traditional earthquake location techniques do not perform well when data have low signal-to-noise ratio. We used a new technique – semblance analysis to locate some of the recorded events that had very low signal-to-noise ratio.

23. Thawda Aung: Randolph College
Cryptology with Mathematica
Cryptology is the study of encoding and decoding secret messages to enable users to communicate securely over an insecure channel in a way that guarantees their transmissions’ privacy and authenticity. For example, the Internet is an insecure channel, yet we do secure transactions such as banking, shopping, mail exchange, etc., through the Internet. Cryptology gives us the mechanisms that make these transactions possible and practical. Behind secure cryptosystems are powerful mathematical theories. In the Randolph College Summer Research Program 2010, I have worked on a project where I studied the mathematics behind cryptography. I also explored with the software Mathematica and implemented various cryptosystems and attacks against them. The implementations helped me to better understand the intricacies of secure communication. In this presentation, I will share my work from the summer research project and demonstrate how some cryptosystems work in practice using the programs I have written in Mathematica.
24.  
**J. Timothy Balint: Roanoke College**  
**A Gesture Recognition Algorithm Using OpenCV and Pybrain**  
The interactions exchanged between humans and computers are always evolving. For large structured virtual environments, one method of interaction is through gesture recognition. A method for creating full body gesture recognition is proposed. This system first uses previously coded algorithms from the OpenCV library to track the users head and hands. It then accounts for and corrects inaccuracies in the stock algorithms to create a more accurate tracking system. Next, the information is fed into a feed forward neural network using the Pybrain library. Finally, the accuracy of the classification is determined. There are more inaccurate classifications than accurate classifications, and reasons for this are given.

25.  
**Sarah Lightbody: Sweet Briar College**  
**Design of an Articulated Thumb for a Low-Cost Prosthetic Hand**  
The hand is a complex machine that is invaluable to humans today. One usually does not recognize the wonder of the daily tasks that the hand performs. However, upon loosing this tool, two major issues are encountered: loss of functionality and loss of wholeness. Coupling functionality and cosmetics allows the amputee to regain a sense of wholeness. This research seeks to develop a cosmetically appealing, functional and low-cost thumb to complete a first generation prosthetic hand. The thumb will enable the hand to pick up objects through multiple grasping techniques. The goal of this research is to develop a low-cost prosthetic hand to be used in developing countries.

26.  
**Sarah Ahlbrand: Roanoke College**  
**Phylogeography and Conservation Genetics of Etheostoma Cinereum (percidae) with Emphasis on a Newly Rediscovered Population in the Elk River, Tennessee**  
*Etheostoma cinereum* (Percidae: subgenus *Allohistium*), or the Ashy Darter, is a freshwater fish that dwells in low-silt, slow-moving areas of rivers in the Cumberland, Duck, and Tennessee River drainages located in the southeastern part of the country. Urbanization, dam construction, and other human influences have resulted in population decline, extirpation of populations in some historical areas, and isolation of populations from one another. In this study, phylogenetic analysis was conducted on both partial and complete cytochrome *b* sequence data (*n* = 40), indicating genetic diversity amongst the populations inhabiting the three drainages. Based on the conclusions reached in the limited amounts of previous studies, data support the existence of three distinct management units (MU) of *E. cinereum* that represent the three drainages. The existence of these management units should be taken into consideration as conservation efforts are made, including the possibility of reintroducing the species into different habitats.

27.  
**Deanne Martin: Lynchburg College**  
**Just as Sweet: Fragrance Variation in Rosa Palustris**  
Roses are one of the oldest plants to be cultivated by humans. They are known for their engaging fragrances, yet the more hybridized they become, the more of the original rose scent they lose. In June 2010 we investigated Rosa palustris, a native wetland rose species, in order to characterize its fragrance signature and, eventually, to compare it to hybrid rose varieties. Fragrance samples were collected via solid phase micro-extraction (SPME) and analyzed using a Thermo electron-focus GC and DSQ MS. Obtained mass spectra were compared to a complete NIST-MS library using XCalibur software to verify compound identities. Identified compounds at the highest peaks included germacrene D, phenylethyl alcohol, and both cis- and trans- geraniol, all of which are known for their association with roses.

28.  
**Sabrina Ripperger: Lynchburg College**  
"The Knock Out": Silencing the HER2/neu Signaling Pathway Using Small-Interfering RNA  
Co-authors: 1) Kerri Moorman 2) Tristin Kaase  
The human epidermal growth factor receptor (HER) family of transmembrane tyrosine-kinase receptors is the subject of current research due to its involvement in the development of numerous malignant tumors. While HER1, HER3, and HER4 are often expressed in the progression of these tumors, HER2/neu is over expressed in 20 percent of breast cancers. Patients whose tumors overexpress HER2 exhibit a worse prognosis because of the aggressive qualities of the cancer. The use of a novel technique, known as small-interfering RNA (siRNA), is an attempt to “knock-down” or halt the production of HER2 proteins. To examine the affects of siRNA on the HER2 cell
signaling pathway, Western blotting is used to identify changes in PI3 Kinase/Akt activation and HER3 in the cell line SK-BR-3. Our results show HER2/neu levels decrease after treatment with siRNA, as compared to the untreated control. In addition, HER3 and activated MEK levels decreased.

29. 
Austen Rawle: Mary Baldwin College
The Role of the Small GTPase, Arf6, in Regulating B1 Integrin Function in the Context of Invasive Breast Cancer
Co-authors: 1) Da'vona Boyd; 2) Garnett Mингledorff; 3) James Casanova; 4) Anne Allison
Virginia has one of the highest rates of breast cancer mortality in the country. This research investigates how the small GTPase, Arf6, affects breast cancer pathogenesis. Normally, Arf6 regulates transport within the cell. We are analyzing how Arf6 regulates the trafficking of B1 integrin, an integral membrane protein with established roles in cancer pathogenesis. When breast cancer cells are depleted of Arf6 protein using a siRNA knockdown approach, an increase in cell-surface B1 integrin is observed. When total B1 integrin protein is analyzed by Western blot, two bands of similar size are observed in an Arf6-dependent manner. This finding suggests that Arf6 may regulate a posttranslational modification or alternative form of B1 integrin. Results from this study will enhance our understanding of fundamental cell biology as well as breast cancer research.

30. 
Oscar Forrest: Hampden-Sydney College
Comparison of the JAWSII and DC2.4 Dendritic Cell Lines as Invitro Models for Evaluating Dendritic Cell Maturation and Activation
Dendritic cells (DC) form an important arm of the immune system as they function as one of the main antigen presenting cells of the body and mediate the innate and adaptive immune response. Despite the importance of maturation and activation to DC function, many of the factors that regulate these processes are not well understood, and it has proven difficult to isolate large numbers of these cells from model organisms for experimental analysis. In this study, we characterize murine DC lines JAWSII and DC2.4 in order to establish whether these may serve as effective in vitro models for studying DC maturation and activation. We show that both cell lines in their resting state exhibit properties of semi-mature, unactivated DC and that recognition of the Toll-like receptor ligands lipopolysaccharide (LPS) or lipoteichoic acid (LTA) induces minimal additional maturation but leads to robust activation characterized by production of proinflammatory cytokines and chemokines.

31. 
Kevin Smee: Roanoke College
Expression, Extraction and Purification of Hyperthermophilic Archaeal Purp Proteins from escherichia coli Cell Cultures
Assays of enzyme activity have been developed for the AICAR formyltransferase and IMP cyclohydrolase steps of the purine biosynthesis pathway in certain species of hyperthermophilic Archaea, in particular Pyrococcus furiosus. Protein expression, extraction, and purification problems have made conclusive results from these enzyme assays difficult to obtain. New methods of protein expression, extraction, and purification were attempted to solve the problems created by lack of soluble protein. The PF 1517 gene was re-ligated into a plasmid vector that allows for immobilized metal affinity chromatography (IMAC) purification. Methods of growing Escherichia coli cultures for induction and extraction of protein were modified. E. coli culture growth and induction methods involving overnight IPTG induction and ZYP-5052 auto-inducing media produced sizeable amounts of protein. Produced protein was trapped in insoluble inclusion bodies. Extraction methods failed to yield soluble protein. Inclusion body preparation and resolubilization did not yield soluble protein.

32. 
Jonathan Perkins: Roanoke college
Tetrakis(pentafluorophenyl)cyclopentadiene: Synthesis and Addition of Fluorous Alcohols
1,2,3,4-tetrakis(pentafluorophenyl)cyclopentadiene was synthesized from the reaction of sodium cyclopentadienide with six equivalents of hexafluorobenzene and sodium hydride producing a 24.40% yield. A method was then developed to replace the para fluorines of the pentafluorophenyl substituents with fluorinated chains of varying length by reaction with fluorous alcohols of differing chain length in the presence of excess sodium hydride. The reaction between 2,2,2-trifluoroethanol and 1,2,3,4-tetrakis(pentafluorophenyl)cyclopentadiene produced a 33.9% yield. All products were purified using silica gel chromatography and characterized by 1H and 19F NMR spectroscopy.
33. Heather Anthony: Roanoke College
Bisphenol a in Polycarbonate Plastics
Bisphenol A, a key building block in polycarbonate plastics, poses a health risk as being an endocrine-disrupting chemical. This experiment using solid phase extraction, MSTFA derivatization and gas chromatography-mass spectroscopy (GC-MS) to analyze the amount of BPA leached due to variables such as temperature, stirring, pH levels and ethanol content. This experiment also tests consumer products for concentrations of bisphenol A leached from polycarbonate plastics in one hour.

34. Lydia Bickford: Roanoke College
Analysis of the Active Site of 5,10-methylenetetrahydrofolate Synthetase from Mycoplasma pneumoniae via Mutations of Polar, Charged Residues Aspartate and Lysine
5,10-Methylenetetrahydrofolate synthetase (MTHFS) is an enzyme involved in the conversion of 5-formyltetrahydrofolate into 5,10-methylenetetrahydrofolate, a part of folate metabolism. MTHFS is used as the catalyst in rescue pathway, 5-formyltetrahydrofolate being the rescue agent, in methotrexate chemotherapy in order to start cell proliferation and growth back up. Mutations were made to amino acids in the active site near the ATP binding site. Lysine at position 3, aspartate at position 151 and aspartate at position 154 were all mutated into alanine separately and kinetics were run on each mutation. Double mutations of lysine 3 into aspartate; aspartate 151 into lysine and lysine 3 into aspartate; aspartate 154 into lysine were also made and kinetics were run. Conclusions that can be drawn from the kinetics are that the negatively charged aspartate at position 154 is important to the enzymatic function of MTHFS.

35. Basil Panton: Hampden-Sydney College
Synthesis of an Aziridinium-based S-Adenosyl-l-Methionine (SAM) Mimic as a Tool for Probing DNA Methylation
Co-authors: 1) Dr. Lindsay Comstock  2) Dr. Rajsekhar Guddnepanavar
Methyltransferases (MTases) transfer methyl (CH3) group from the native cofactor S-adenosyl-l-methionine (SAM) to biomolecules such as proteins and DNA, and DNA methylation regulates signal transduction, gene transcription and genetic expression. Aberrant methylation of substrates, however, may lead to the onset of disease such as cancer. The prominence of methylation in cell regulation, coupled with the difficulty in identifying the small methyl groups attached to biopolymers, lead researchers to tackling this mechanism. This research focuses on designing a precursor for a mimic of SAM containing an aziridinium ring in lieu of the methyl-sulfonium and having an alkyne functionality attached to the C8 position of the adenosine base. In future analysis, using the Huisgen [2+3] cycloaddition (Click Chemistry) with a fluorescent or affinity tag attached to the alkyne handle, the site of methylation can be isolated and identified. Thus, biological methylation can be traced and patterned by this procedure.

36. Meagan Tolley: Roanoke College
Investigations of the Active Site of 5,10-Methylenetetrahydrofolate Synthetase (MTHFS)
Enzymes are biological catalysts essential for chemical reactions in organisms. 5,10-Methylenetetrahydrofolate Synthetase (MTHFS) is an important enzyme needed to catalyze an initial step in the folate pathway that produces cofactors necessary for the production of DNA and proteins. In this project, we look at the active site of MTHFS to determine the importance of certain amino acids to the binding of the substrates, ATP and folinic acid. Through kinetics we established that without an aspartate at positions 124 and 154, the enzyme is inactive concluding that this amino acid is important to holding the substrate ATP in the active site. Mutations of arginine at positions 7 and 125 and tryptophan at position 153 resulted in a slower turnover rate and weaker binding of ATP and folinic acid to the enzyme. From this project, we were able to gain a better understanding about the functioning of MTHFS at the active site.

37. Melaina Macone: Sweet Briar College
The Synthesis of a Natural Product Derivative
Inotilone has anti-inflammatory properties and is a COX-2 inhibitor. COX-2 inhibitors such as Vioxx and Celebrex have been found to increase the risk of adverse cardiovascular effects. However COX-2 has been found to induce the growth and metastasis of cancerous cells. Because inotilone has a lower selectivity than Celebrex and
Vioxx, it may be less likely to elevate the risk of cardiovascular effects. The purpose of this research is to synthesize an inotilone derivative that will inhibit COX-2 without elevating the risks of cardiovascular effects. 2-(4-Hydroxybenzylidene)-5-methyl-3(2H)-furanone was successfully synthesized in 3.7% yield.

39. Nathan Seeburger: Lynchburg College
The Synthesis of 2-Phenylchromenes as Neurological Probes
Co-author: Dwight A. Williams, PhD
The abuse of illicit substances is a major societal concern. Many studies have been conducted to discover the neurological factors involved in generating the rewarding and reinforcing effects of these substances. One such target is the metabotropic glutamate receptor subtype 5 (mGluR5). Antagonists for this receptor have been targeted as a means of developing pharmacotherapies for substance abuse. The chromene skeleton, which is found in many natural products, has previously been investigated for its neurological activity. Molecular modeling calculations have revealed significant structural similarities between the chromene skeleton and previously reported mGluR5 antagonist. This poster presents our efforts to synthesize a series of chromene derivatives that should serve as a new class of mGluR5 antagonist.

40. Selma Elsarrag: Mary Baldwin College
Induced Pluripotent Stem Cells as a Model for Chemotherapy Toxicity
In vitro derivation of germ cells from human induced pluripotent stem cells (iPSC) provides an ideal system to study processes involved in toxicity to female gametogenesis. Here we investigate the possibility of using iPSC derived primordial germ cells as a model for chemotherapy induced toxicity. iPSC were maintained in conditioning media with 100ng/ml bFGF, treated with 100ng/ml BMP4, or maintained in media without bFGF; these groups were treated with either vehicle alone or doxorubicin. Pluripotency markers and germ cell markers were assessed using RT-PCR and Real Time PCR. Our initial findings indicate that pluripotency markers decreased when undifferentiated cells were allowed to differentiate spontaneously or in the presence of BMP4 and that BRACHURY and MSX1 were increased when the cells were treated with doxorubicin. We are currently looking at the effect of doxorubicin on germ cell markers. In conclusion, doxorubicin affects the differentiation of iPSC cells.

41. Arne Ulbrich: Hampden-Sydney College
Synthesis and Electron Spin Resonance Spectroscopic Studies of an Acetaminophen Analog with Reduced Hepatotoxicity
Co-author: Dr. Herbert J. Sipe, Jr.
ESR investigations of a reported non-hepatotoxic acetaminophen analog (SCP-1) and its metabolite (SCP-123) are reported. SCP-1 and SCP-123 were synthesized by literature methods and characterized by NMR and melting points since they are not commercially available. Unstable phenoxyl free radicals were observed for acetaminophen, SCP-1, and SCP-123 by fast-flow ESR spectroscopy using three radical generating systems: oxidation by Ce(IV), oxidation by hemoglobin / H2O2, and oxidation by horseradish peroxidase [HRP] / H2O2. The ESR spectra were characterized by an approximately 5 gauss triplet hyperfine splitting attributed to the two hydrogen atoms ortho to the phenoxyl group. Under some conditions additional hyperfine couplings were observed. These results suggest that the reported lower hepatotoxicity of SCP-1 likely does not arise from an inability to be metabolized to free radicals by liver enzymes in vivo but more likely from differences in its absorption, distribution, and excretion profile.