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Graduate Student Research Symposium

**Africa Room, Duquesne Union
October 25, 2013**

Sponsored by:
Academic Affairs
Office of the Provost
Office of Research



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Photo by Jake Kurtz.

Graduate Student Research Symposium

**Africa Room, Duquesne Union
October 25, 2013**

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Photo by Jake Kurtz.





The first annual

Graduate Student Research Symposium

Friday, October 25, 2013

Africa Room

Duquesne University

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ACKNOWLEDGEMENTS

The organizers would like to thank all of the Faculty Mentors for their service and support of our graduate scholars.

GSRS Planning Committee:

Sara Barna
Paul Cacolice (Committee Chair)
Lisa Enright
Jacob Kohlhaas
Ella Macklin
Julie Michael
Erin Pischke
Sneha Potdar
Siyun Zhou

We would also like to thank the following organizations and individuals for their generous support of this important event:

Bayer School of Natural & Environmental Sciences
Center for Catholic Intellectual Tradition
Center for Spiritan Studies
DU Undergraduate Jake Kurtz for the cover photograph
Enrollment Management Group
McAnulty College and Graduate School of Liberal Arts
School of Nursing
Office of the Provost
Office of Research, Christine Pollock, & Mary McConnell

SCHEDULE

Friday, October 25, 2013 | Africa Room

Poster Participant Set-up	9:00 am to 12:30 pm
Doors Open to the Public Opening Remarks	12:30 pm
Oral Presentations Session 1 (Details on page 5)	1:00 pm to 2:30 pm
Poster Session Guests are invited to walk around, peruse student projects, and engage w/ students. *Poster session will continue to run throughout the duration of the GSRS	1:00 pm to 4:30 pm
Break	2:30 pm to 3:00 pm
Formal Presentations Session 2 (Details on Page 6)	3:00 pm to 4:30pm
Awards, Closing Remarks, Reception to immediately follow	4:30 pm

PRESENTATIONS: SESSION 1

- 1:00 **Oleksandr Dubov**
 “Religious Coping in the ICU”
 Center for Healthcare Ethics
 McAnulty College and Graduate School of Liberal Arts
 Abstract Number: 22
- 1:15 **Candice Shaughnessy**
 “Franz Schubert: Spirituality in Song”
 Performance
 Mary Pappert School of Music
 Abstract Number: 74
- 1:30 **Shelley Kobuck**
 “The Ethical Principle of Cooperation as a Determinant of Moral Agency in Nursing Home Leadership”
 Healthcare Ethics
 McAnulty College and Graduate School of Liberal Arts
 Abstract Number: 70
- 1:45 **Belinda Hasanaj**
 “Authorship Attribution Methods in Albanian”
 Mathematics and Computer Science
 McAnulty College and Graduate School of Liberal Arts
 Abstract Number: 66
- 2:00 **Daniel Levis**
 “Theophany as a Model of Sacramental Presence”
 Theology
 McAnulty College and Graduate School of Liberal Arts
 Abstract Number: 4
- 2:15 **Ronald Whitaker**
 “Beyond the Touchdowns and Slam-Dunks”
 Educational Foundations & Leadership
 School of Education
 Abstract Number: 25

PRESENTATIONS: SESSION 2

- 3:00 **Benjamin Burkholder**
 "Misquoting Jesus?: John 1:18 as a Test Case"
 Theology
 McAnulty College and Graduate School of Liberal Arts
 Abstract Number: 46
- 3:15 **Katherine Lukaszewicz**
 "Henry Wasson of Shadyside: Continuity and Change in an Elite Pittsburgh Neighborhood"
 Public History
 McAnulty College and Graduate School of Liberal Arts
 Abstract Number: 31
- 3:30 **Rock Vomer II**
 "The Effect of Shortening Muscle Contractions on Dystrophic Muscle."
 Department of Physical Therapy
 Rangos School of Health Sciences
 Abstract Number: 50
- 3:45 **Alicia Broudy**
 "[Cyber]feminism in the Era of Web 2.0 and the Rhetoric of the Feminist Blog"
 English and Women's and Gender Studies
 McAnulty College and Graduate School of Liberal Arts
 Abstract Number: 29
- 4:00 **Thomas Workman**
 "Post-adoption depression: A case for recognition"
 Counselor Education
 School of Education
 Abstract Number: 3
- 4:15 **Andrew Boggess**
 "Development of analytical methods for the quantification of organic toxins in the serum of children with autism and matched controls"
 Bayer School of Natural and Environmental Sciences
 Abstract Number: 60

SPECIAL AWARDS

Bayer School for Natural and Environmental Sciences
Award for Graduate Research-Excellence in Graduate Research:
2 awards, \$300 each

Center for Catholic Intellectual Tradition & Spiritan Studies Award
for Graduate Student Research: **2 awards, \$300 each**

McAnulty College and Graduate School of Liberal Arts:
Outstanding Poster or Presentation: **\$250**

School of Nursing Award for Graduate Research: **\$250**

Provost's Award for Outstanding Scholarship: **\$250**
Honorable Mention:
2 awards, \$125 each

ABSTRACTS*

*Abstracts appear in random order. Abstracts of students who were unable to attend are not listed.

3 Post-adoption depression: A case for recognition

Thomas Workman, Dr. Waganesh Zeleke | Faculty Advisor: Waganesh Zeleke, Ph.D.
Counselor Education

ABSTRACT: This presentation aims to describe the concept of Post adoption Depression (PAD) based on a thorough literature review and a qualitative study that explored PAD in the context of four International adoptive parents' experiences.

Recently, depression as one of the issues that may follow adoption has come into the lens of research. The symptomatology associated with this depression has been coined Post-adoption Depression (PAD) by various researches. Although PAD is not formally recognized as a diagnosis, a clear set of depressive symptoms is apparent in adoptive parents after adoption. The symptoms associated with PAD are similar to those of Post-partum Depression, which is recognized as a formal diagnosis, but the precipitating factors differ greatly. Post-partum Depression is often associated with hormonal changes within the mother. Such a causal relationship does not exist with adoptive mothers. The failure to recognize PAD as a formal disorder poses multiple limitations for providing effective services and treatment. Treating clinicians must first be able to properly identify PAD to determine proper treatment. The understanding of the phenomenological events that lead to the experience of PAD must be understood before effective treatment services can be provided.

In this presentation, the symptomatology of PAD and factors leading to the development of PAD will be presented through case studies. The effects of PAD on both the adoptive parents and the adoptee will be discussed. Possible preventative methods and areas for continued research to determine efficacy of treatment methodologies will be outlined.

4 Theophany as a Model of Sacramental Presence

Daniel Levis | Faculty Advisor: Maureen O'Brien, Ph.D.
Theology | McAnulty College and Graduate School of Liberal Arts

ABSTRACT: A metaphysical approach to the sacraments has dominated Roman Catholic theology since Thomas Aquinas. Contemporary, postmodern theologians like Louis-Marie Chauvet and Jean-Luc Marion have put forth theologies of the church and sacraments that are not dependent on the metaphysical system. Glen Ambrose summarizes some of these attempts to overcome onto-theology. This paper examines theophany as a model of sacramental presence. Theophany as a model is able to address some of the limitations of onto-theology while also applying themes from contemporary theology.

The Burning Bush narrative from Exodus 3 is examined with the lens of Chauvet's sense of symbol. The gift mediates the presence of the giver in such a way that the gift is the giver. The mystery surrounding the burning bush is that Moses communes with God through the bush. Materiality in theophany and

sacraments can mediate God's presence.

Central to sacraments as theophany is the notion of God's presence being both revealed and concealed. This is understood alongside Marion's concept of Idol and Icon. A theology of God's presence in the Temple according to 1Chronicles 28 is that the earthly Temple is only a pattern of the heavenly Temple. God's presence is in the earthly Temple, but not restrictively or exhaustively. The Temple acts as an Icon, pointing to greater realities. Sacraments as theophany both reveal and conceal God.

Theophany considers the communal and ethical dimensions of the sacramental life. Lastly, this approach to the sacraments could be an area for ecumenical discussion. Because it is rooted in Biblical theology, people from various traditions can immediately find common ground in the transformative presence of God as manifested in sacramental theophany.

5 The Relationship: Poverty, Education, and Prison

Benjamin Keller

ProDEL | School of Education

ABSTRACT: Within the American cultural and political landscapes, we often accept that children raised in poverty are less likely to succeed in school, and that people who struggle in school are more likely to end up within the legal system and therefore prison. We accept this, and think that there is little that can be done about it. The problem is too big, and the details are too complicated. This, however, is not true. We must first become informed and aware of the reasons behind what is often termed the "school to prison pipeline," and the pervasive ways that this pipeline affects our culture, our economy, and our future. If I am permitted to present, I hope to be part of this first step; helping people become informed and aware.

7 Neuroprotective effects of Piceid

Sneha Potdar, Mayur Parmar, Jane Cavanaugh, Ph.D. (Faculty Advisor)

Pharmacology | Mylan School of Pharmacy

ABSTRACT: Natural dietary supplements are being hailed as age defying as they grow in popularity and, in some cases, present a sustainable medical solution for people around the world. Within the next few decades the aged population in the U.S. will be greater than ever before, driving up the demand for cost-effective medicine for the elderly. One of the major health problems in the elderly are motor deficits, caused in part, by loss of dopaminergic neurons. Oxidative stress is known to play a part in this neuronal loss.

Resveratrol, a natural compound found in grapes and wild blueberries, has properties as an antioxidant, anticancer and anti-inflammatory agent. Our lab has also found that resveratrol protects dopaminergic-like cells (SH-SY5Y) against oxidative stress. However, resveratrol has low bioavailability, making it important to find alternative compounds with similar properties. Piceid (RV8), an analog of resveratrol, is more lipophilic and has greater bioavailability than resveratrol. We found that RV8 was able to protect SH-SY5Y cells against oxidative stress caused by high dopamine concentrations at 12hr. We also found that RV8 mediates neuroprotection through the MAP kinases ERK1/2 and ERK5, which

have been previously shown to increase cell survival and proliferation. The neuroprotection afforded by RV8 was lost when ERK1/2 and ERK5 were blocked independently. In order to test if the apoptotic pathway was also involved in RV8 mediated neuroprotection, we also examined the expression of Bcl-2, an anti-apoptotic protein, following dopamine +/- piceid exposure. Cells exposed to dopamine alone showed reduced Bcl-2 levels. RV8 pretreatment inhibited this dopamine-induced loss of Bcl-2. Overall, these findings suggest that the neuroprotective effects of RV8 are mediated via the activation of ERK1/2, ERK5 and anti-apoptotic proteins.

8 Disempowering Standardized Tests

Peter Mathis

Educational Foundations and Leadership | School of Education

ABSTRACT: In order to challenge some of the imposed solutions that have been implemented within the educational setting, we must analyze the current forms of standardized testing in order to understand the value that is placed on these tests. The education world is currently in an age where assessments are corrupting the infrastructure of school systems and, more importantly, tarnishing the development of students. I will begin with the history of assessment and introduce the concept of consequential validity. In a broader sense, I will address some of the problems with standardized tests, and explain how evidence-centered assessment design (ECD), if used appropriately, can address some of these problems. When student learning becomes compromised, it can create a high leverage problem that navigates through schools, academy and communities. Staying consistent with the ECD approach, I will then propose a framework for implementing stealth assessments through the use of gaming, which revolves around the concept of consequential engagement. This framework will serve as an opportunity for an alternative way to view assessment, which can be used as a catalyst to promote transformation within the field of education. Finally, in order for true transformation to occur, there will need to be a collective action taken by the educational community. I will conclude with laying out the importance of building networked improvement communities (NIC) within the field of education. This form of improvement research will link communities who challenge the status quo and are showing improvement, which then can build a stronger transformation foundation.

9 Importance of Early Childhood Interventions

Irem Bilgili | Faculty Advisor: Susan Munson, Ph.D.

Special Education | School of Education

ABSTRACT: Early childhood education is the most important part of lives and our personalities are shaped during these years. According to literature, the early interventions are proven to have higher success rate in decreasing the symptoms of disabilities. However, every child is unique and they have different needs. Therefore, intervention methods are differentiated to meet their individual needs. This poster presentation is going to focus on importance of early interventions, as well as implementing individualized early interventions.

10 Stories of Faith, Stories of Humanity

Nisha Gupta

Clinical Psychology | McAnulty College and Graduate School of Liberal Arts

ABSTRACT: This participatory action project fuses phenomenological research methods with creative media technologies to instigate empathy, kinship, and dialogue across diverse faith communities, through a digital storytelling platform called "Stories of Faith, Stories of Humanity" [www.storiesoffaithstoriesofhumanity.com]. I transform research participants' intimate and poignant faith stories into creative short films which can be showcased online to the mainstream public. The ten diverse stories highlight the existential roles that faith plays in people's lives, no matter their religious affiliation: roles such as comfort, acceptance, modesty, and love. The platform seeks to incorporate social media elements that enable the public to create and upload their own digital faith stories to the website, and also connect online with individuals of other faith communities to share in their personal experiences of faith. This project's ultimate vision is to harness community storytelling to facilitate empathic understandings of faith as both an individual and shared human phenomenon.

11 Regulators of Biofilm Formation in the Pathogenic Fungus, *Candida albicans*

Nina Zywith, Andrew C. Bishop, Jana Patton-Vogt, Ph.D., Ellen S. Gawalt, Ph.D (Faculty Advisor)

Chemistry and Biochemistry | Bayer School of Natural and Environmental Sciences

ABSTRACT: The fungal pathogen, *Candida albicans*, is one of the most common hospital acquired infections worldwide. Critically ill patients, including those with various forms of cancer, are particularly susceptible to this infection. The pathogenicity of *C. albicans* is enhanced by its ability to grow on the surface of medical devices in the form of biofilms. Biofilms are complex networks of ovoid and filamentous cells that communicate with one another through secreted molecules, known as quorum sensing molecules, to relay information about cell density and environmental conditions. Currently only a handful of these molecules have been identified. *C. albicans* strain WT-DAY185 was grown under planktonic and biofilm conditions. The extracellular media was collected after growth and analyzed via direct infusion-TOF-MS and LC-TOF-MS. This combination of mass spectrometry approaches will be used to profile additional extracellular metabolites that regulate biofilm formation.

12 Fenobam works as a non-rewarding analgesic in mice

Neil Lax, David George, Ben Kolber, Ph.D. (Faculty Advisor)

Biology | Bayer School of Natural and Environmental Sciences

ABSTRACT: Chronic pain is a widespread condition in the United States. Despite its prevalence, chronic pain sufferers do not have many choices for relief. Recently, antagonists of metabotropic glutamate receptors (mGluR) have been shown to have the potential to act as new analgesic drugs, possibly providing chronic pain sufferers with a new option for relief. In order to test the effectiveness of novel mGluR antagonists, our lab uses the analgesic conditioned place preference (aCPP) assay. In this behavioral assay, animals with a painful injury become conditioned with an analgesic drug, such that the drug becomes reinforcing only when pain relief is experienced. The purpose of this study was to

evaluate the analgesic properties of the mGluR5 antagonist, fenobam, using the aCPP assay and compare its effects to morphine, a drug with known analgesic and addictive properties. This study used female C57Bl/6J mice with spared nerve injury (SNI) surgery. In the SNI surgery, the tibial and common peroneal branches of the sciatic nerve are ligated, while the sural branch is left intact. This manipulation induces hyperalgesia in the ipsilateral paw, modeling chronic pain. Following the surgery, the mice were injected with fenobam (30 mg/kg intraperitoneally) or morphine (10 mg/kg subcutaneously) and were paired with the same physical environment in the aCPP apparatus for three consecutive days. We were able to show that fenobam induced a statistically significant preference for the SNI group of mice, while not affecting the control group of sham-operated mice. We also showed that morphine induced preference in both the SNI and sham groups of mice. The data suggest that fenobam is only rewarding in the context of a painful injury, while morphine is rewarding, regardless of pain. These results show that fenobam may be a promising, non-addictive drug in the future for patients suffering from chronic pain.

15 Protecting neurons against proteotoxicity in vivo

Negin Nouraei, Jessica M. Posimo, Rehana K. Leak, Ph.D. (Faculty Advisor)

Pharmacology | Mylan School of Pharmacy

ABSTRACT: Proteotoxic stress from protein misfolding is a central feature of neurodegenerative diseases and can lead to hallmark protein inclusions. For example, both Parkinson's and Alzheimer's disease are characterized by protein inclusions in the hippocampus. Atrophy in the hippocampus is associated with deficits in memory in both disorders. The major goal of the present study is to develop an animal model of hippocampal proteotoxicity so that protective therapies can be tested in vivo. Our secondary focus is to develop a relatively rapid and sensitive means of assessing cellular damage by using a 16-bit Odyssey Infrared Imager to quantify neuronal loss and glial activation. We injected the proteasome inhibitors MG132 and lactacystin into the mouse hippocampus to elicit proteotoxicity and neuronal loss. Proteasome inhibitors are toxic because they prevent the degradation of misfolded proteins through the proteolytic barrel of the 26S proteasome. MG132, a reversible proteasome inhibitor, did not elicit more damage than its vehicle, dimethyl sulfoxide, at concentrations of 0.5 $\mu\text{g}/\mu\text{l}$. However, lactacystin, an irreversible proteasome inhibitor, did elicit neuronal loss in the hippocampus at 5-10 μg . Neuronal loss was measured by immunostaining for the neuronal marker NeuN. Glia were stained with the astrocytic marker GFAP. NeuN and GFAP markers were both decreased in the ipsilateral hippocampus by lactacystin. Our next goal is to test whether the glutathione precursor N-acetyl cysteine is able to protect against lactacystin toxicity. N-acetyl cysteine has been shown to improve cognitive deficits in Alzheimer's disease and reduce the symptoms of blast injury in soldiers during combat. At the conclusion of these studies, we will have established a cost-effective animal model of neurodegeneration and identified whether or not N-acetyl cysteine can protect neuronal and glial structures against proteotoxicity in vivo.

16 Anagrams and Animals: Teaching Poetry

Ella Macklin, Christine Wolfe | Faculty Advisor: Rick McCown, Ph.D.

ProDEL | School of Education

ABSTRACT:

Background: Teaching poetry more efficiently and effectively to students with exceptionalities in an urban setting is achievable and yields significant academic as well as aesthetic results. This action research study was designed to discover the commonalities and differences in how exceptional students in gifted and learning support classes approached an anagram poetry lesson.

Teaching Points: Wolfe and Macklin, both experienced teachers who taught students who are African American, read about the characteristics of those who are gifted (Ford, Harris, Tyson & Troutman, 1999). They let students use strengths tallied by Ford, et. al: oral communication, mobility, active involvement, and the chance to be interdependent. They utilized the teaching practices of Lucy Calkins (Calkins, 1994): that teachers teach a mini-lesson, allow students to write, confer with teachers or each other, revise and re-write.

Summary: The students wrote on a subject of interest: animals, so motivation worked well! Reference materials increased knowledge about animal characteristics, species, habitations, and Latin classifications. Both groups found it initially challenging to produce poetry from the anagram portion. However, the following goals were met:

- expressed creativity in poetic form and expanded their poetic vocabulary
- researched information on the characteristics associated with animals
- developed editing skills-punctuation, capitalization, spelling, type

17 Toni Morrison's Beloved: Beloved's Role in Pushing

Samina Ali

English | McNulty College and Graduate School of Liberal Arts

ABSTRACT: Toni Morrison's *Beloved* tells the story of Sethe, a former slave, and her journey in reconciling her past in order to create a promising future. Through a mix of (re)memories, encounters with the supernatural, and connections with those who have similar experiences, Morrison's characters piece together their fragmented lives and form a voice after being silenced from the traumatic effects of slavery. While Sethe attempts to repress and ignore the memories of her previous abysmal life for her daughter Denver's well-being, such an act seems to hinder Denver's development, leaving Denver without a community, culture, or identity. It is through the character of Beloved, an entity that forcibly brings the haunting memories of slavery to the surface, that I believe Denver begins to construct an individual identity. Because of Beloved's influence, Denver accepts her cultural-historical narrative and become a responsible citizen, caring for her mother while asserting a strong self-hood. In this sense, Denver's success becomes representative of a promising future for African Americans after slavery, with the ability to reconcile the past and learn from it, allowing history to aid in the formation of identity, but not act as the sole definer of subjecthood and self-conceptualization. My paper explores how Beloved functions as a tool that enables Denver to understand her mother's narrative, reconnect with her community, and learn about her own cultural-historical narrative in order to confront and move on from the past, ultimately allowing a hopeful future for her generation and those to come.

18 Effects of Elevated Total Dissolved Solids (TDS) on the Survival and Behavior of the Semi-Terrestrial Salamander, *Desmognathus ochrophaeus*.

Megan Morrissey, Dr. Sarah Woodley (Faculty Advisor), Dr. John Stolz (Faculty Advisor)

Center for Environmental Research & Education | Bayer School of Natural and Environmental Sciences

ABSTRACT: Elevated total dissolved solids (TDS) have been observed in streams in Southwestern Pennsylvania due to mine drainage and unconventional natural gas development as well as industrial activities, sewage treatment plant effluent, road de-icing salts, and irrigation. TDS refers to the concentration of dissolved inorganic salts in water including major cations (K^+ , Ca^{2+} , Mg^{2+} , Na^+) and anions (CO_3^{2-} , HCO_3^- , SO_4^{2-} , Cl^-). Little is known about the effects of elevated TDS on amphibian survival and behavior. To understand the chronic effects of elevated TDS, a semi-terrestrial salamander (Allegheny Mountain Dusky Salamander, *D.ochrophaeus*) was repeatedly exposed to one of three solutions that varied in TDS and chemical composition. Solutions were created based on the ion content of previous field samples and diluted to a TDS of 1,000ppm and 2,000ppm. Animals were exposed to fresh solutions every day for 26 days and locomotory activity, weight, and feeding were measured. There were significant effects of elevated TDS on survivorship, feeding, and locomotory activity, although effects differed depending on the chemical composition of the solution. Compared to control animals exposed to synthetic spring water, animals exposed to a solution that was high in sulfate experienced reduced survivorship and decreased locomotory activity. Animals exposed to a solution that was high in chloride experienced reduced feeding activity. Further research is needed to assess the impacts of the particular ions present in the TDS on amphibian behavior.

19 Chronic elevation of the stress hormone, corticosterone, slows cutaneous wound healing in a terrestrial salamander (*Desmognathus ochrophaeus*)

Jessica Thomas, Sarah Woodley, Ph.D. (Faculty Advisor)

Biological Sciences | Bayer School of Natural and Environmental Sciences

ABSTRACT: In vertebrates, a physiological response to a stressor is the activation of the hypothalamic-pituitary-adrenal (HPA) axis. One level of this activation is the release of glucocorticoid hormones, such as corticosterone (CORT). CORT has a number of physiological and behavioral roles including regulating glucose metabolism, vascular tone, and anti-predator behaviors as well as having effects on reproduction and immune function. Specifically, chronic elevation of CORT is immunosuppressive in lizards, birds, and mammals; however, little is known of the relationship between CORT and immunity in amphibians following metamorphosis. To analyze the effects of chronic CORT elevation on amphibian immunity, we monitored cutaneous wound healing in both male and female salamanders exposed to daily stress treatments over the course of 30 days. Subjects that had received a daily dermal CORT patch healed more slowly than controls and subjects that had been handled daily. This suggests that under chronic conditions, CORT suppresses the inflammatory phase of wound healing. Also, females healed significantly less than males in all treatment groups, suggesting that females may be more energetically limited than males.

20 Application of the Rule of Intention (Niyya) to justify End-of-Life Decision Making in Islamic Perspective

Aiyub Alwehaibi | Faculty Advisor: Dr. Henk ten Have

BIOETHICS | McAnulty College and Graduate School of Liberal Arts

ABSTRACT: In Islamic societies, Islamic law (Sharia'h), established upon the Holy Qur'an and Sunnah, is the legal foundation for all individual and communal matters in daily activities. Besides, bioethics and religion are not two separable elements in Islamic societies, which explains why reference to the Sharia'h plays such a significant role in Islamic bioethics. Any opinions regarding bioethics should remain anchored to the Sharia'h to be legitimate; otherwise, they risk losing credibility, or even losing the possibility of being presented in public. On the other hand, intention (Niyya) is a central concern in Sharia'h as being stated in the hadith: Actions are defined by intentions, and to every person what he intends. In general, Muslim jurists treat intent as definitive of human actions most of the time. Not different from other societies, in Islamic societies, decision making in caring for terminally ill is a stressful duty for all involved parties. The attitudes, however, towards the issues vary between healthcare professionals, patients, patients' families, and religious authorities since each party also holds other obligations in addition to common Islamic religion. Medical professionals must combine their professional ethics, while patients, their families, and religious authorities consider society and custom as well. Acknowledging of each involved party's intention would possibly justify for or oppose to any course of actions in making decisions for end-of-life patients. Two ethical issues analyzed on the poster include euthanasia and palliative care in Islamic perspective.

21 Influence of water on NIR calibrations

Md.Nayeem Hossain, Benoît Igne, Carl A. Anderson, James K. Drennen, Ph.D. (Faculty Advisor)

Pharmaceutical Science | Mylan School of Pharmacy

ABSTRACT: Quantitative analysis by near infrared (NIR) spectroscopy involves the establishment of the relationship between spectra, related to both physical and chemical information of a sample, and the corresponding parameter(s) of interest. To make a model robust, other sources of variability, not directly related to the element(s) to predict should be included in the calibration sample. One of the potential sources of variability is moisture. Raw materials may have different moisture levels as a function of the manufacturing lots, the geographic location of a plant, storage conditions, or the seasons. In a traditional calibration effort, tablets are often made at the same time and no robustness to moisture is built into the model. The objective of this work was to study the effects of moisture on the performance of a near infrared tablet assay calibration and evaluate strategies to build insensitive to variations in moisture. Tablets composed of acetaminophen, lactose, microcrystalline cellulose, HPMC and magnesium stearate were manufactured using laboratory scale equipment. A full-factorial design was used to vary acetaminophen (5 levels), and excipient ratios (3 levels) to generate tablets for calibration and test. Tablets were placed in humidity chambers over saturated salt solutions and equilibrated to 11.5%, 32%, 52% and 75% RH, respectively. Calibration and test tablets were scanned at each moisture level. Following spectral collection, the acetaminophen content was determined by HPLC.

Test samples, stored at the alternate relative humidity conditions, were predicted. When the moisture level was different between calibration and test sets, the prediction error increased, indicating a degradation of the model performance when moisture variance was unaccounted for. A second calibration approach combining several moisture levels into a global PLS model was performed. These models gave significantly lower prediction errors for the test set than the individual models applied to all samples.

22 Religious Coping in the ICU

Oleksandr Dubov

Center for Healthcare Ethics | McAnulty College and Graduate School of Liberal Arts

ABSTRACT: A number of studies have explored the impact of religious beliefs on medical decisions and coping with life-threatening illness. It has been shown that religion provides a sense of meaning, comfort, control and personal growth while facing critical illness. While it is known that the religious way of coping in patients with life-threatening illness is often associated with receipt of intensive life-prolonging care near death, there is need for more research to better understand the mechanisms for this association. Using the existing evidence, this article proposes to describe the role of spiritual coping in preferences at end-of-life. Drawing on the published research, it will attempt to identify and describe ways in which religion may influence patients' medical decisions near the end of life. The article will look at four components of the decision making process such as illness perception, prognosis communication, eliciting values and setting goals of treatment. It will attempt to identify certain religious factors and biases present in each of these four steps that may influence the intensity of care received near death. Accounting for the physicians' struggle to maintain discretion and transparency in the face of uncertainty, the study will discuss some possible avenues for conveying value judgments and presenting futility of treatment in a language understood by the religious patients. The importance of supporting spiritual needs of patients with life-threatening illness will be highlighted.

23 A Contribution Of Orthodox Christianity To Global Bioethics: The Integral Relation Between Dignity, Vulnerability & Hospitality

Rabee Toumi

Center for Healthcare Ethics | McAnulty College and Graduate School of Liberal Arts

ABSTRACT: A pluralistic world, reaching consensus in matters of bioethics has proved to be difficult, especially with the political polarization that nurtures inimical differences. Therefore, it is attempted in this presentation to show that agreement may be reached when anthropological commonalities are highlighted and rightly understood. It is argued that, depending on Orthodox Christian theology and hermeneutics, an anthropocentric approach to bioethics is promising to reach middle grounds among various value systems. The Orthodox Church understands anthropology as embedded in Christology; an inclusive Christology that enshrines Jesus Christ as the prototype of all human beings, through His kingship, prophecy, and priesthood. These Christological functions highlight the commonality among all humans especially in regards to their dignity, vulnerability, and universally-cherished hospitality.

When appreciating innate and mutual human dignity and vulnerability, healthcare workers and bioethicists would approach emerging dilemmas with a spirit of hospitality. Within this hospitable mindset, gratitude and compassion are central to address the existential anguish and exposed mortality that accompanies illness especially at the end of life. Hospitable medical practice, built on authentic anthropology, can be a constructive answer to many bioethical dilemmas through nourishing genuine solidarity between patients and physicians.

24 A Systematic Review Of QoL And Cb In Pd.

Rahul Khairnar, Corry Bondi, Megan Brewster

Pharmacy Administration | Mylan School of Pharmacy

ABSTRACT: OBJECTIVES: To review disease- and condition-specific QoL instruments and their psychometric properties in Parkinson's disease (PD), treatment options, and caregiver burden (CB). METHODS: A systematic literature search was conducted among peer-reviewed journals from January 2008 to December 2012 on quality of life (QoL) of PD patients or patients undergoing drug therapy in electronic databases such as Pubmed, PsycINFO, CINAHL, and Cochrane. A full review was conducted on articles that met the inclusion criteria. The search was limited to English language, full text availability, humans, and within five years; however, no time-frame was stipulated for CB. Meta-analyses, systematic reviews, or studies conducted exclusively outside the United States were excluded. For studies assessing CB, instruments not validated in PD population were excluded. RESULTS: The review identified seven disease-specific and two generic instruments assessing QoL in PD, 13 instruments recommended by the Movement Disorder Society in assessing QoL in patients undergoing drug therapy, and 12 instruments that assessed CB. A description of the domains, scaling, and psychometric properties of the instruments were included. Instruments ranged from comprehensive scales assessing all aspects of PD to recently developed instruments designed to assess a specific component of PD such as "wearing off" periods or freezing of gait. In PD patients undergoing drug therapy, four studies were identified that assessed patients in early PD and two studies focused on levodopa-induced motor fluctuations. Common domains assessed by the CB instruments were clinical, socio-demographic, emotional, and functional factors. Overall, Unified Parkinson's Disease Rating Scale and Zarit Caregiver Burden Inventory were the most widely used instruments. CONCLUSIONS: Multiple factors contribute to the QoL in PD patients and their caregivers including disease severity, unpredictable disease progression, and adverse effects of treatment. This review highlights the instruments and their psychometric properties in PD and serves as a useful resource for researchers and clinicians.

25 Beyond the Touchdowns and Slam-Dunks

Ronald Whitaker | Faculty Advisor: Rick McCown, Ph.D.

Educational Foundations & Leadership | School of Education

ABSTRACT: This research explores how African American male student athletes who compete in revenue sports at predominately White institutions (PWIs) experience and perceive the climate on their campus and team. Stereotype threat is utilized for the conceptual framing of this proposal. Further, stereotype threat will also be applied to analyze the experiences of African American male student

athletes at PWIs. Preliminary findings indicate (1) negative stereotypes being an ubiquitous reality for Black male student athletes at White institutions, (2) the importance of athletes feeling validated by their coaches, (3) their desire to connect with Black male faculty and support staff, and (4) participants becoming cognizant of the business of collegiate athletics. This study offers suggestions into the types of programs, services, psycho-educational workshops, and interventions that predominantly White institutions might consider for their revenue playing African American male student athletes.

Keywords: stereotype threat, Black men, collegiate athletics, higher education

They must contend, of course, with the connotations and social reverberations of the traditional dumb jock caricature. But Black student athletes are burdened also with the insidiously racist implications of the myth of innate Black athletic superiority, and the more blatantly racist stereotype of the dumb Negro condemned by racial heritage to intellectual inferiority (Edwards, 1984).

26 Characterization of *Bacillus firmus* strain SWPA-1

Samir Joshi, John F. Stolz, Ph.D. (Faculty Advisor), Lucas Eastham

Center for Environmental Research and Education | Bayer School of Natural and Environmental Sciences

ABSTRACT: The large quantity of flowback water generated during unconventional natural gas extraction in the Marcellus Shale contains elevated levels of Total Dissolved Solids (TDS). Microbial growth is stimulated in these fluids after pumping in the well, and during storage in open impoundments for reuse causing problems in recycling and management. Common problems due to microbes include odors, altered fate of heavy metals, bioclogging, and biocorrosion of equipment. The current study was conducted to isolate a single microbial species from flowback water enrichment cultures and characterize it. An isolate was obtained by plate streaking and serial dilution methods and maintained on a nutrient broth medium with high TDS. Phylogenetic analysis using the 16S rRNA sequence revealed that bacterium was most closely related to a strain of *Bacillus firmus* isolated from hypersaline environments. The bacterium was found to be aerobic, spore forming, gram-positive, rod. Designated strain SWPA-1, it was capable of growing over a wide range of salinities (0-12% NaCl). Biofilms were formed at air-medium interface in cultures that had been incubated for few weeks. Its ability to form spores and biofilm may confer biocide resistance to some extent. This study suggests that flowback water harbors microbes well adapted to high salt conditions uncommon in the local fresh water ecosystem.

27 Using Self Assembled Monolayers (SAMs) as Solid Supports for Catalysis of Tridentate Nitrogen Ligands

Marc Neiswonger, Ellen S. Gawalt, Ph.D. (Faculty Advisor)

Chemistry and Biochemistry | Bayer School of Natural and Environmental Sciences

ABSTRACT: In the 1930's, a process that forms carbon-carbon bonds through the use of radical chemistry was developed, known as Kharasch addition or atom transfer radical addition (ATRA). ATRA works well with α -olefins but for other monomers, such as styrene, it doesn't work as well. Groups began to transition towards metal catalyzed ATRA in the 1950's to aid in selectivity of the monomers. This process works well for all monomers, but the major drawback is that any metal complex needed is

very high. One potential way to limit the amount of metal complex needed is to use a solid support to couple the metal complex to. The type of solid supports that were studied were self assembled monolayers (SAMs). SAMs are a monomolecular layer that are adhered to a solid support such as a metal (stainless steel) or a wafer (Si). SAMs have a reactive head group that interacts with the surface, a carbon chain, and a tail group that can be used for additional chemistry such as coupling other organic compounds. 16-phosphonohexadecanoic acid (COOH-PA) and N,N-bis(pyridylmethyl) amine (BPMA) was coupled to the tail group of the SAMs using carbodiimide coupling. This system was analyzed by DRIFT spectroscopy and MALDI-ToF MS. CuCl₂ was bound to the BPMA and ATRA was performed using CCl₄ as an initiator, ascorbic acid as a reducing agent, and 1-octene as the α -olefin. These reactions were analyzed using nuclear magnetic resonance (NMR) spectroscopy.

29 [Cyber]feminism in the Era of Web 2.0 and the Rhetoric of the Feminist Blog

Alicia Broudy | Faculty Advisor: Laura Callahan, Ph.D.

English and Women's and Gender Studies | McNulty College and Graduate School of Liberal Arts

ABSTRACT: In 1843, Margaret Fuller observed the need for woman to be formally educated, and in 1929, Virginia Woolf called for a room of one's own. Feminist literary critics followed suit and implored women to take up the pen. Today, we have countless female authored blogs at our fingertips. Literally. This project considers the rhetoric of feminist narratives as they appear in the spaces of the internet. I call upon cyberfeminist studies of the 1980s and 1990s to observe the ways in which early forms of the internet marginalized and appropriated women. I turn then to the era of Web 2.0—the era of the personal blogs and webpage templates and I observe how these spaces have enabled the circulation of feminist narratives. I argue that progress has been made for women in the spaces of the web. Popular feminist blogs, for example, help to reproduce socially charged narratives on a global scale and in real time; we're creating memes that speak to gendered issues; and we're participating in political discussion forums.

I look specifically to the feminist blog, Jezebel, and I consider the rhetoric of the feminist blog as it implicates users of the web. While I acknowledge that progress has been made, I ask how we can harness this technology to pursue global issues and to spark social action. Specifically, how can such spaces be used to the benefit of those who cannot—due to cultural and socioeconomic constraints—access a computer or the internet?

30 Using the Multimedia Principle to Teach Theater

Ramona Broomer | Faculty Advisor: Joseph Kush, Ph.D.

Graduate Dept of Instructional Technology | School of Education

ABSTRACT: Dr. Richard E. Mayer, a professor of psychology developed 14 Multimedia Learning Principles, to date based on research aimed at realizing the potential of using words and pictures to promote human understanding (Mayer, 2009). This presentation explores the use of one of these principles, the Multimedia Principle which states that people learn more deeply from words and pictures than from words alone (Mayer, 2009). Increasingly Introduction to Theater courses are being offered fully online, and/or as large section face to face classes with 70 or more students. Currently there are

approximately 2420 universities offering Introduction to Theater courses in America (Peterson, 2013). The discipline of theater is the enactment of a dramatic performance on stage in front of a live audience (Wilson, 2011). Introduction to Theater provides exposure to the performing arts that can generate an appreciation for theater and other humanities.

The Multimedia Principle can be applied by systematically integrating words, and pictures to help convey various components associated with the study of this art form. Universities have allocated funds and installed instructional technology resources. However, many instructors do not have the proper training to adapt existing instructional content using technology. Utilizing the Multimedia Principle in Introduction to Theater courses can result in instructional content that is more relevant and engaging.

31 "Henry Wasson of Shadyside: Continuity and Change in an Elite Pittsburgh Neighborhood"

Katherine Lukaszewicz | Faculty Advisor: Joseph Rishel, Ph.D.

Public History | McAnulty College and Graduate School of Liberal Arts

ABSTRACT: This paper examines historic Devonshire Street in Pittsburgh's Shadyside neighborhood during the years 1910-1930. While the upper-class status of these families precludes an inclusive analysis of the city as a whole, the written records of Devonshire's residents manage to reflect the changes of the larger world. The paper considers ten addresses on Devonshire Street, but pays particular attention to the household of Henry Wasson, one of the few residents to make his home on Devonshire for the duration of 1910-1930. But while Wasson was a figure of continuity on Devonshire, the country around him changed markedly, and his remarkable life reveals these upheavals. His political career as a Republican operative was impacted by momentous occasions: Taft's loss to Wilson; the institutions of the Eighteenth and Nineteenth Amendments; and the advent of commercial radio. Henry's personal life is also a sign of his times: he sent a son to war, mourned a matriarch, and celebrated marriage and remarriage.

Any study of Devonshire's households at this time necessitates consideration of the live-in help who served these families. While the records about such people are quieter than are the records about the well-known Henry, census records offer evidence enough to also reflect trends in the larger world, particularly around patterns of immigration to the United States.

This paper, largely descriptive and somewhat analytic, reflects public history practices by connecting its conclusions to the narrative of the Wasson household. Its contents rely almost exclusively on primary sources, such as Hopkins maps, census records, contemporary newspapers and magazines, city directories, and wedding and funeral records. It also includes quantitative analysis based on the census records of 1910-1930.

32 Predicting Sagittal Plane Landing Kinematics With Lower Extremity Muscular Power Tests

Paul Cacolice, Christopher R. Carcia, PhD, PT, SCS, OCS (Faculty Advisor); Jason S. Scibek, PhD, ATC (Faculty Advisor)

Rehabilitation Science | Rangos School of Health Sciences

ABSTRACT: Context: Anterior cruciate ligament [ACL] injuries remain a frequent occurrence in female collegiate athletes. Existing methods to predict ACL injury risk from landing kinematics require

sophisticated equipment, expertise and time that prohibit large scale use. Utilization of field based tests to predict landing behaviors would create a practical risk identification method.

Objective: Develop regression equations that predict tibiofemoral sagittal plane landing kinematics from the results of lower extremity [LE] muscular power tests.

Design: Descriptive laboratory study. Independent variables were single leg triple hop [SLTH] distance, counter movement vertical jump [CMVJ] height, and watts generated with the Margaria-Kalamen test [MK]. Dependent variables included sagittal plane tibiofemoral angle at initial contact [IC] and sagittal plane tibiofemoral angle excursion [EXC]. Alpha levels was set a priori at $Pd .05$.

Patients or Other Participants: Twelve female, NCAA D-1 lacrosse athletes (age= 18.6 ± 0.79 ; mass= 65.7 ± 19.6 kg; height= 169.2 ± 7.0 cm) participated.

Interventions: Participants performed five single LE landings while equipped with electromagnetic sensors (Ascension Technologies, Shelburne, VT) and 3D motion tracking system (Innovative Sports Training; Chicago, IL). The participant then performed a randomized order of the three standard field based tests of LE power [SLTH, CMVJ, MK].

Results: Linear regression models were not significant to predict IC ($P = .87$) or EXC ($P = .16$) from the three tests of LE power.

Conclusions: The power tests utilized were unable to predict sagittal plane landing behaviors in a small sample of female lacrosse athletes. An investigation utilizing a larger sample or inclusion of athletes from other collegiate sports would be indicated.

33 Application of BTEM Technique in Raman Analysis

Md. Anik Alam, Dr. James K Drennen III, Dr. Carl A Anderson (Faculty Advisor)

Pharmaceutics | Mylan School of Pharmacy

ABSTRACT: A eutectic system is a mixture of components that melts at a lower temperature compared to its constituents. API and excipients can form eutectic system and alter physico-chemical behavior of drug products. Identification and characterization of eutectic systems can be critical for understanding drug performance. Spectroscopic characterization is a potential means of characterizing eutectic systems and is fast and non-destructive. However, substantial analysis of spectral data is necessary as a result of overlapping peaks in the data.

Salicylic acid and benzoic acid is a well-known binary eutectic system. Vibrational properties of these molecules were investigated individually as well as in eutectic system by Raman spectroscopy. A combination of backscattered and transmission Raman methods were employed in order to capture surface and bulk information about the samples.

In the eutectic system, vibrational energy of molecular bonds can retain its original energy state as well as shift to a different energy state due to eutectic structure formation. The spectra resulting from eutectic sample can be comprised of pure-component spectral bands and novel or altered vibrational bands corresponding to the presence of eutectic structure. These novel or altered vibrational bands typically overlap with pure component spectra and specific features can be difficult to extract. Band Target Entropy Minimization is a self-modeling curve resolution approach for reconstruction of pure-component spectra from mixture spectra. This technique was employed to extract information about novel or altered vibrational bands based on Shannon entropy minimization. The variance in the mixture

spectra that was not explained by pure-component reconstruction was considered an effect of the eutectic structure.

36 Pseudomonas aeruginosa Group I Pilin Frequency and Glycan Charge Distribution

Tara Kennedy, Peter Castric, PhD (Faculty Advisor)

Biological Sciences | Bayer School of Natural and Environmental Sciences

ABSTRACT: Pseudomonas aeruginosa Group I Pilin Frequency and Glycan Charge Distribution

Pseudomonas aeruginosa is a Gram-negative, rod-shaped, opportunistic pathogen involved in numerous hospital acquired infections. This bacterium produces type IV pili, an important component in bacterial cell motility and host attachment, which are composed of individual protein monomers called pilin. There are five groups of pilin based on PCR product size, accessory genes, and primary sequence. My research focuses on the group I pilin which are a substrate for glycosylation. The glycan is shuttled into the pilin glycosylation pathway from the O-antigen biosynthesis pathway for lipopolysaccharide (LPS) production. Furthermore, the various glycans that can be added to the pilin monomers can contribute one of three charges: 0, -1, and -2. Each glycan can be placed into one of eleven types based on gene conservation; I have designated these as R types. Utilizing PCR methods, I have characterized the distribution of the group I pilins and the charge type associated with each of 207 *P. aeruginosa* isolates. I have found that within this collection of isolates, ~53% are producing group I pilins. In addition, ~61% of group I pilins are glycosylated with an R5 glycan which contributes a -1 charge to the pilin. According to my results, group I pilin producing *P. aeruginosa* make up the majority of pilins in these clinical isolates. Additionally, there appears to be a selection for a specific R type, R5, within these group I pilin producing strains. Overall, this work will provide valuable information about how the group I pilin glycan R type may be selected for and contribute to *P. aeruginosa* virulence.

38 Effect of Alkyl Chain Length on Carboxylic Acid Self-Assembled Monolayers on Ti-6Al-4V

Gavin Buckholtz, Ellen Gawalt, Ph.D. (Faculty Advisor)

Chemistry and Biochemistry | Bayer School of Natural and Environmental Sciences

ABSTRACT: Effect of Alkyl Chain Length on Carboxylic Acid Self-Assembled Monolayers on Ti-6Al-4V.

The formation of methyl-terminated carboxylic acid self-assembled monolayers (SAMs) with even numbers of carbons, from eighteen to thirty, was investigated on the oxide surface of Ti-6Al-4V and component metal oxides. Modified surfaces were characterized using diffuse reflectance infrared Fourier transform spectroscopy (DRIFT), matrix assisted laser desorption ionization-time of flight mass spectrometry (MALDI-TOF MS) and contact angle analysis. Infrared spectroscopy indicated that using aerosol spray deposition techniques, stable, all-trans SAMs of octacosanoic (28 carbons) and triacontanoic (30 carbons) acids were formed on the alloy. Films were similarly formed on titanium and aluminum oxide. The surface of vanadium oxide exhibited limited reactivity. MALDI-TOF MS confirmed that formed films were monolayers, without multilayers or aggregates present. Water contact angles are indicative of the presence of hydrophobic methyl groups at the interface. This stable carboxylic acid

SAM formation could be a useful alternative to phosphonic acid SAMs for corrosion resistance and other applications.

39 Dealing with loss and grief International Adoptive Families

Eric Perry, Dr. Waganesh Zeleke (Faculty Advisor)

Counselor Education and Supervision (PhD) | School of Education

ABSTRACT: This presentation will provide an overview of data and literature related to the experience of loss and grief by international adoptive families. Adoption is a circle of loss and gain experienced by both adoptees and adoptive parents. Research results show that all parties involved in the adoption, including birth parents, adoptive parents and adoptee(s), are dealing with feelings of loss and continue grieving the loss for long periods after the adoption placement made. The aim of this presentation is to address the dynamic grieving process of international adoptive families based on the results of an exploratory research study that examined the experience of 25 adoptive families who adopted 35 children from Ethiopia and reside in Montana. Qualitative data was collected from a small number of participants to further explain obtained quantitative data in the context of four participants experiences.

The results of this study indicate that international adoptive parents experienced feelings of ambiguous loss related to what the child could have been, had he/she not been exposed to toxic chemicals in utero, or abused and neglected after birth, or abandoned in the orphanage. Adoptive parents can also struggle to cope lingering grief from infertility. While parents are coping with these feelings, the adoptee must also struggle with the separation from their biological family as well as their culture and place of origin. The influence of these grieving processes on the relational development of both adoptee and parents in the new family system will be discussed using the examples from study.

41 Effect of proinflammatory cytokines on NSPCs

Apurva Kulkarni, Lauren A O'Donnell, Ph.D. (Faculty Advisor)

Pharmacology | Mylan School of Pharmacy

ABSTRACT: Viral infections in the central nervous system (CNS) are characterized by the infiltration of lymphocytes into the brain parenchyma and the release of pro-inflammatory cytokines. The effects of cytokines on neural cell function and survival varies between cell types, may depend upon the expression of endogenous signaling molecules. Both inflammatory and developmentally-regulated cytokines alter the activity of neural stem/ progenitor cells (NSPCs), which are critical for CNS development and repair. Moreover, the plasticity and fate of NSPCs are affected during viral CNS infections. Interferon-gamma (IFN^γ) is a cytokines that is released in response to a viral infection in the brain. The interferons signal via the Jak/STAT signaling pathways, which are also activated by developmental cytokines during cell fate decisions. We will test the hypothesis that the interferons influence NSPC differentiation through Jak/STAT signaling. Specifically, we will show that IFN^γ activates STAT1 and STAT3 proteins in the NSPCs, which triggers differentiation into the astrocytic lineage. Through these studies, we will define the role of the inflammatory response in modulating NSPC differentiation during viral infections.

42 Aphasia Workshop for Occupational and Physical The

Emily Million, Rebstock, Alicia; Boran, Molly; McGowan, Caitlin; Deluliis, Maria; Cohen, Jacqueline; Kozar, Sarah; King, Deeanna; Walsh, Gabrielle; Atton, Emily Faculty Advisor: Sarah E. Wallace Ph.D

Speech-Language Pathology | Rangos School of Health Sciences

ABSTRACT: Individuals with aphasia, an acquire language disorder, may experience persistent challenges understanding other s speech and language and producing their own novel utterances to communicate. Effective communication is critical when providing rehabilitation services and medical care because it increases patient participation and engagement. The purpose of this study was to examine the effectiveness of a workshop designed to provide healthcare professionals instruction in how best to communication with people with aphasia. Four occupational therapy and physical therapy students increase their accuracy on pre/posttest questions about aphasia following the workshop. Improvements were most evident on questions related to auditory comprehension impairments as well as difficulties with reading and writing. Responses to open-ended questions on an exit survey indicated that the participants felt they benefited from the role play and demonstration of communication strategies. The responses also included the request for a discipline-focused presentation for future workshops. Finally, to increase participant attendance, the future workshops could be added to mandatory course activities.

43 Activity and Gene Expression of Steroid Sulfatase During Differentiation in the Human MG-63 Preosteoblastic Cell Line

Natasha Dias, Kyle W. Selcer, Ph.D. (Faculty Advisor)

Biology | Bayer School of Natural and Environmental Sciences

ABSTRACT:

Estrogen is important in maintaining bone density. Postmenopausal women have low circulating levels of estrogen but high levels of estrone sulfate and dehydroepiandrosterone sulfate. Conversion of these precursors to estrogen may help maintain postmenopausal bone density. Steroid sulfatase (STS) converts sulfated steroids into their active forms. STS occurs in bone, but little is known about its regulation. We are investigating the activity and expression of STS in the human preosteoblastic cell line MG-63. MG-63 cells differentiate under the influence of osteogenic supplement, leading to extracellular mineralization. We studied STS in cells grown in medium alone (OS-) or grown with osteogenic supplement (OS+) over 21d. Cell proliferation was nearly exponential in OS- cells, but slowed in OS+ cells. STS activity increased substantially over time in OS- cells, but showed only a small increase in OS+ cells. STS gene expression in OS- and OS+ cells, (quantitative rtPCR) revealed an approximately 75% increase in STS mRNA expression in the OS- cells. Bone cell differentiation was assessed by alkaline phosphatase activity and osteocalcin gene expression (rtPCR). Alkaline phosphatase activity increased substantially in the OS+ cells and only slightly in the OS- cells. Osteocalcin gene expression was high in OS- cells throughout the time course, but was high only during d2-d11 in OS+ cells. Our data indicate that activity and expression of STS is higher during the early stages of bone differentiation. These results

suggest that STS is regulated during bone differentiation and may play a role in bone development.

46 Misquoting Jesus?: John 1:18 as a Test Case

Benjamin Burkholder | Faculty Advisor: William Wright IV

Theology | McAnulty College and Graduate School of Liberal Arts

ABSTRACT: Bart Ehrman contends that the text of the Greek New Testament manuscripts have been corrupted through the transmission process of scribal copying. In particular, he argues that scribes have intentionally altered certain New Testament readings in order to write their theology into the New Testament. His conclusions, which were originally published in *The Orthodox Corruption of Scripture*, were later published at the popular level in his work, *Misquoting Jesus*.

This paper evaluates one of the textual variants that Ehrman cites as evidence for his view: John 1:18, which says, No one has seen God at any time; the only begotten God who is in the bosom of the Father, He has explained Him (NASB). While some Greek manuscripts read only begotten God like the above version, others read only begotten Son. Ehrman argues that the reading of only begotten God is an intentional alteration that a scribe made in order to support a high Christology (i.e. that Christ is God). Since the only-begotten God reading is primarily limited to the Alexandrian text-type, the likely origins of the only-begotten God reading are in Egypt. With a limited origin of provenance, I evaluate the ways in which the early Christian writers from Egypt actually use John 1:18 in their theological arguments. After surveying the relevant Christian writers (Clement of Alexandria, Origen, and the Gnostic writings), there is no evidence of the Egyptian Christians actually using the only-begotten God reading to support a high Christology. In the end, I conclude that Ehrman's assertions of how John 1:18 was corrupted cannot actually be demonstrated from the evidence we have from early Egyptian Christianity. In fact, the evidence suggests it was not altered for theological reasons and that only-begotten God is likely the original reading.

47 Survey of well water contamination in a rural...

Shyama Alawattegama, Renee Krynock, Matthew Bricker, Jennifer Evans Rutter, Tetiana Kondratyuk and John F. Stolz, Ph.D. (Faculty Advisor)

Center for Environmental Research and Education | Bayer School of Natural and Environmental Sciences

ABSTRACT: The recent increase in unconventional shale gas extraction (USGE) using hydraulic fracturing and associated claims of ground water contamination has raised awareness of ground water issues. The Woodlands, a community of 190 households in Butler County, Pennsylvania that relies on well water, reported changes in water quality and quantity concurrent with USGE activities. In an effort to determine the extent of contamination and if a correlation existed, residents participated in a survey and well water samples were collected and analyzed. Base maps of the study area were created identifying current horizontal wells, legacy mining operations and topography. Fifty-six out of the 143 respondents indicated changes in water quality or quantity since 2010. Water analysis found elevated levels of chloride, iron, and manganese with 25 households above the Maximum Contaminant Level (MCL) for manganese. Review of available pre-drilling and post drilling reports suggest possible causal relation.

48 Effects of a Passy-Muir Speaking Valve and a Diaphragmatic Pacer on Swallowing

Function: a Retrospective Case Study

Hilary Lovett, Robert Masterson, CCC-SLP (Faculty Advisor)

Speech Language Pathology | Rangos School of Health Sciences

ABSTRACT: Patients with traumatic brain and spinal cord injury who require tracheostomy and pulmonary support via mechanical ventilation can face significant challenges in returning to normal swallowing function and effectively communicating their needs and wants. We describe a young male who had a diaphragmatic pacer and tracheostomy who was seen for an outpatient Modified Barium Swallow study who demonstrated significant improvement in swallowing function while he was on a ventilator and using a Passy Muir Speaking Valve. The proposed mechanism of improvement for swallowing is increased lung volume and improved respiratory and swallowing coordination. Further research and description of the patient's respiratory and swallowing function may assist others with this unique clinical challenge

49 The Orgelbuchlein of J.S. Bach

Tyler Randolph | Faculty Advisor: Ann Labounsky, Ph.D.

Sacred Music | Mary Pappert School of Music

ABSTRACT: Johann Sebastian Bach, who lived from 1685 to 1750, was arguably the greatest and most influential figure in German baroque music, and also the greatest composer in the organ realm. One of J.S. Bach's crowning jewels in the organ repertory is the Orgelbuchlein. The Orgelbuchlein is a collection organ chorale preludes for the church year. The collection is generally believed to have been composed mostly during Bach's Weimar period.

Translated into English, Orgelbuchlein means The Little Organ Book and is also referred to as The Liturgical Year. The Orgelbuchlein is a collection of forty-six chorale preludes based on Lutheran chorales, or congregational hymns. Bach had originally planned to write 165 chorale preludes according to his original manuscript and it is unknown why he only composed forty-six. The first thirty-three pieces are based on the liturgical calendar starting with the season of Advent. The rest of the pieces, (numbers 34 through 46), relate to Christian life, the Lutheran Catechism, and other general topics. In my poster presentation for the Graduate ResearchRE Symposium I will explore the life of Johann Sebastian Bach focusing chiefly on his time in Weimar and what led to the creation of the Orgelbuchlein. Concurrently, the display will overview the history of the chorale and the chorale prelude which paves the way for its culmination on Bach's great work.

50 The Effect of Shortening Muscle Contractions on Dystrophic Muscle

Rock Vomer II, Durham, Emily; Ross, Erika; Kostek, Matthew (Faculty Advisor)

Physical Therapy | Rangos School of Health Sciences

ABSTRACT: Background: Duchenne Muscular Dystrophy (DMD) is the most common lethal genetic disease in boys. It leaves the muscles very weak; activity and physical therapy are not usually recommended due to fear of further damaging the muscles, despite the lack of supporting evidence. Muscle force is produced during shortening or lengthening of the sarcomere (contractile unit of muscle). Shortening force production typically produces little to no damage in health muscle regardless of force/load or number of contractions. Thus, isolating this type of muscle use could be a safe intervention to strengthen the muscles of boys with DMD. Purpose: The goal of the present study is to determine the effect of low intensity and high intensity shortening muscle contractions on muscle function in the mdx mouse model of DMD. Design: Randomized control training protocol, 42 male mdx mice and 7 control (healthy) mice, approximately 5 weeks of age. Methods: The mdx mice were randomized into 2 experimental groups and 1 sedentary control group for each time point. Control mice received no treatment and are used for comparison purposes. The two mdx experimental groups received either low intensity or high intensity muscle stimulation via the sciatic nerve, on M/W/F of each week for 3 or 6 weeks. Results: At study conclusion muscle force production was quantified and muscles were extracted and examined for pathological and inflammatory changes. Three weeks of muscle contractions produced no differences in measures of muscle pathology but did significantly reduce inflammatory cell count. Force production analysis is currently ongoing. Presently, we conclude that shortening muscle contractions do not increase muscle pathology but do decrease inflammation in the muscles of mdx mice.

51 Aimé Césaire et la Négritude: A Plea for Wholeness

Chelsea Binnie | Faculty Advisor: Erik A. Garret, Ph.D.

Communication & Rhetorical Studies | McNulty College and Graduate School of Liberal Arts

ABSTRACT: This paper seeks to examine the négritude movement through the eyes of Aimé Césaire, who, in tandem with Léon Damas and Léopold Senghor, is largely credited with its founding in late 1930s Paris. For Césaire, négritude emerged through metaphor, imagery, prose, and poem, in an effort to reclaim wholeness in the condition of being black in the life world. Césaire's négritude manifests perhaps most notably in the 1939 publication of his epic poem, *Cahier d'un Retour au Pays Natal*, or Notebook of a Return to my Native Land. Césaire takes occasion to weave together both his own personal experience as a black man in the life world with that of his fellow Martiniquais as black beings in the life world throughout the lines of the *Cahier*. He fortifies the strength of his bond with Martinique and demonstrates the origin of his roots in his choice to personify black experience in the life world metaphorically and poetically through stirring images of Martiniquan countryside. The paper will begin with an exposition of what was going on in the life world that encouraged the meeting of its three founding fathers and subsequent birth of négritude in late 1930s Paris. From there, the paper will move to examine Césaire's use and resultant embodiment of négritude as present in his thought. Finally, the paper will engage in a close analysis of key passages from his epic poem, *Cahier d'un Retour au Pays Natal*, so as to explicate the plea for wholeness Césaire poetically enacts when he presents powerful images of the Martiniquan landscape. Césaire's conception of négritude serves to simultaneously reject its system of oppression, and through the act of proclamation, engages in the reclamation of wholeness in the experience of being black in the life world.

52 Return-Gift in Sacramental Theology with Special Reference to the Eucharist

Jeanette Tellish | Faculty Advisor: Fr. Sebastian Madathummuriyil

Theology | McNulty College and Graduate School of Liberal Arts

ABSTRACT: This paper first describes the Eucharistic prayers used during the mass to formulate return-gift in the Eucharist. The notion of return-gift is looked at from multiple perspectives. Once the Eucharist is received, a thanksgiving and return-gift are to be offered, according to Louis-Marie Chauvet. For Jean-Luc Marion, return-gift is viewed as a pure gift from God. Thus, there is no need for an obligatory return by the recipient. Catherine Pickstock, the final perspective, views return-gift, as well as the entire liturgy in general, as praying for the ability to pray. This concept is connected to imitatio Christi. After these perspectives are presented, it is shown how Chauvet's views are not in line with Pickstock's, who is the most contemporary author. Finally, a middle-ground is proposed, a new way of viewing return-gift. Points are pulled from both of their perspectives in this new view. This view is to have individuals giving thanks to God in their own way, whether it be in church or out within the community at large.

53 Examining the Concept of Homelessness

Anna Blake, Dr. Jinhee Kim (Faculty Advisor)

PreK-4 Education | School of Education

ABSTRACT: The purpose of this study is to explore how women in the ages of 20-25 comprehend the issue of homelessness. The study will take a slice of specific ages and gender to discover how these participants realize and consider the idea of homelessness. By analyzing their perspectives toward homelessness, this study can provide insights on how society views the notion of homelessness. This study also can lead prospective early childhood teachers to be professionally responsive to poor and disadvantaged children through being engaged in needs of the local community.

54 Targeting the Hepatitis C Virus with PNAs

Damian Mcaninch, Manna, Arunava, Danith Ly; Dr. Mihaela-Rita Mihailescu (Faculty Advisor)

Chemistry and Biochemistry | Bayer School of Natural and Environmental Sciences

ABSTRACT: The liver specific microRNA-122 (miR-122) has been shown to facilitate the replication and/or translation of the Hepatitis C virus (HCV). Although the exact role played by miR-122 in this process is not fully understood, it has been shown that one of the functions of miR-122 is to stabilize the HCV RNA genome. It has also been shown that miR-122 is a valid antiviral target, as locked nucleic acids (LNAs) developed against miR-122 abolished HCV replication. However, miR-122 has numerous other functions in the hepatic cell, which will also be affected by LNAs. In this study, we adopted a different approach by designing peptide nucleic acids (PNAs) against the highly conserved miR-122 binding sites within the HCV genome, and tested their antiviral properties. We demonstrated the ability of the PNA to bind specifically the 5' UTR of the HCV genome, with a low nanomolar dissociation constant. Moreover,

we showed that the PNA is able to invade the HCV 5'-UTR - miR-122 complex displacing miR-122, and thus preventing it from exerting its beneficial function upon HCV replication and/or translation.

55 Microwave Dissolution and Isotopic Analysis Method Development for Sample Processing of Radioactively Contaminated Samples

Logan Miller, Aurelie Soreefan, Matt Pamukcu, Mitch Rubenstein, H.M. "Skip" Kingston
Chemistry and Biochemistry | Bayer School of Natural and Environmental Sciences

ABSTRACT: Recent events such as the Fukushima Daiichi Nuclear Power Station disaster and the threat of nuclear terrorism emphasize the importance of rapid radioactive contamination assessment. Current methods require large field samples and lengthy sample preparation and analysis time. The purpose of this study was to examine the efficiency of microwave-enhanced sample preparation methods, for the rapid sample decompositions required for chemical separations and spectrometric analyses. A unique potentially field portable microwave unit, Milestone's UltraWAVE Single Reaction Chamber (MWSRC) Microwave has recently become available for the accelerated mineral acid digestion of samples.

Biological, botanical, sediment, and soil standards and standard reference materials (SRM) and/or reference standards of each of these types and were chosen as test matrices. SRMs were obtained from National Institute of Standards and Technology (NIST, Gaithersburg, MD). Each SRM contains metals known to be radioactive and are of nuclear interest. The MWSRC technology is suited for both laboratory and field analyses since various matrices can be rapidly acid digested simultaneously, reducing sample preparation time and increasing analysis efficiency. Plutonium, uranium, americium, and thorium were analyzed, along with other transition and rare earth metals, utilizing inductively coupled plasma - mass spectrometry (ICP-MS) and/or alpha spectrometry, following digestion. For validation of the microwave protocol radioactive contaminated samples of a Rocky Flats soil were chosen. This SRM was analyzed at Wright-Patterson Air Force Base (WPAFB) in collaboration with Applied Isotope Technologies (AIT) and Duquesne University.

56 Hydrogen generation by photoelectrochemical water

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Chemistry & Biochemistry | Bayer School of Natural and Environmental Sciences

ABSTRACT: Iron oxide n-Fe₂O₃ nanowire thin films were synthesized by thermal oxidation of Fe metal samples. The photo-catalytic activity of the n-Fe₂O₃ nanowires was investigated by measuring the rate of water splitting, in terms of photocurrent density. The n-Fe₂O₃ nanowires electrode showed photocurrent densities of 1.32 mA cm⁻² at measured potential of 0.0 V/SCE under solar simulated light of 0.1W cm⁻² with global AM 1.5 filter. Carbon modified (CM)-n-Fe₂O₃ synthesized by flame oxidation of Fe metal samples at 850°C exhibited an enhancement in photocurrent density for water splitting to 3.14 mA cm⁻² under the same applied potential and illumination conditions. Furthermore, CM-n-Fe₂O₃ thin film electrodes showed a negative shift in the onset potential for oxygen evolution compared to n-Fe₂O₃ nanowires.

57 A Kantian Theory of Higher Desires

Matthew Valentine

Philosophy | McAnulty College and Graduate School of Liberal Arts

ABSTRACT: In the Critique of Judgment, philosopher Immanuel Kant derives four comprehensive forms of pleasures: the Agreeable, the Beautiful, the Sublime, and the Good. Each is in turn derived from Kant's Table of Categories: the Agreeable from the Categories of Quantity, the Beautiful from Quality, the Sublime from Relation, and the Good from Modality. Each kind of pleasure is tied to a particular faculty or set of faculties of the mind. In the Kantian system of faculties, each faculty has a lower and a higher form. The lower form is in some way dependent on something external to it, while the higher form is independent and self-legislating. As Deleuze notes in Kant's Critical Philosophy, We may say that a faculty has a higher form when it finds in itself the law of its own exercise (4). Kant speculates that the faculties of knowledge, desire, and pleasure each have a lower form and a higher form, and yet only three of the four forms of pleasures he systematizes are derived from a higher faculty. The Agreeable is considered a personal preference based on the operation of a lower faculty, while the others are derived from a higher faculty. This oversight leaves a blind-spot within the Kantian system. He is able to account for lower pleasures, such as bodily pleasures, but not higher ones, such as romantic love, friendship, and familial bonds (each determined by a category: Unity, Plurality, and Totality, respectively). In this paper, I will expand upon the Agreeable and demonstrate how a new configuration of the faculties can account for higher pleasures. This configuration will hypothesize why we can maintain romantic relationships, friendships, and familial bonds, even when they no longer seem pleasant.

58 GABAergic Cell Involvement in Pain Processing

Katelyn Sadler, Caela Long, Benedict Kolber, Ph.D. (Faculty Advisor)

Biological Sciences | Bayer School of Natural and Environmental Sciences

ABSTRACT: Over 116 million Americans suffer from chronic pain. Current research strategies are aimed at understanding the complex neural networks involved in pain processing. The central nucleus of the amygdala (CeA) is one member of these networks that is known to process both pain and emotion. Immunohistochemical studies have shown that the majority of the neurons in the CeA of the rat, cat, and monkey express GABA (gamma-Aminobutyric acid), the main inhibitory neurotransmitter in the central nervous system. In these studies, we visualized and manipulated GABAergic cells in the context of inflammatory and visceral pain conditions to learn more about this cell population's role in pain processing. First, we used immunohistochemistry to stain for pERK (phosphorylated extracellular signal regulated kinase), a known pain marker, and GABA. Following a formalin injection into the right rear paw of a mouse, GABAergic cells were found to co-localize with pERK in the CeA. In addition to involvement in inflammatory pain, preliminary data suggests that GABAergic cells in the CeA are also involved in visceral bladder pain. Using the Cre/lox system of recombination and light-controlled ion channels, we are able to optogenetically activate GABAergic cells while using compressed air to distend the bladder of mice. Preliminary data shows that activation of GABAergic cells in the right CeA results in

increased pain-like responses during bladder distension. Future studies will investigate the contribution of GABAergic cells in the left CeA to pain-responses using the same model.

60 Development of analytical methods for the quantification of organic toxins in the serum of children with autism and matched controls

Andrew Boggess, Dr. H.M. "Skip" Kingston (Faculty Advisor), Dr. Scott Faber M.D., Dr. John Kern
Chemistry and Biochemistry | Bayer School of Natural and Environmental Sciences

ABSTRACT: A collaborative study between Duquesne University and The Children's Institute of Pittsburgh sought to quantify chemical, metallic, antioxidative, and psychological differences between children with autism spectrum disorders (ASD) and match-paired controls. Constraints on method sensitivity and micro-volume sample size required new sample preparation and analytical methods to be developed for the quantification of organic chemical toxins in blood serum. In this novel method, analytes are extracted via stir bar sorptive extraction, separated by gas chromatography, and directly quantified by isotope dilution mass spectrometry without the use of external calibration curves. This is the first stir bar sorptive method to demonstrate the feasibility of extracting volatile and nonvolatile analytes simultaneously. Following validation with certified reference standards, this method successfully quantified differences in toxin burden in the blood of thirty children diagnosed with ASD and thirty age, sex, and socio-economically matched pairs. All children in the study were found to have exposure to a suite of toxins unique to each child. Statistically significant differences were found in acetochlor, metolachlor, and toluene concentrations and a significant positive correlation was found to exist between the average serum toxin concentration and performance on the ASD rating scale. This is the first research to demonstrate a statistically significant correlation between total toxin exposure and performance on psychological tests for ASD.

61 Secretion of malaria transmission-blocking protein

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Biological Sciences | Bayer School of Natural and Environmental Sciences

ABSTRACT: Malaria is one of the most lethal infectious diseases. It causes over 1 million deaths annually, and more than half of the world's population is at risk of infection. The parasite that causes the disease, Plasmodium, is transmitted by the bite of infected mosquitoes. The transmission of Plasmodium from mosquitoes to humans can be prevented by introducing anti-malarial proteins into the mosquito midgut. One way to deliver these proteins into the mosquito is by a technique called paratransgenesis. Paratransgenesis is the genetic modification of the bacteria that reside within a host's body. *Asaia bogorensis* is a bacterial species that naturally inhabits the mosquito midgut and is easily transmitted through the host population, making it a good candidate for anti-malarial paratransgenesis. In order to utilize this species, it must be possible to secrete the anti-malarial proteins from the bacteria. Native secretion signals from the *Asaia* genome have been identified using an alkaline phosphatase (PhoA) reporter screen. Random *Asaia* DNA fragments were ligated in front of a leaderless PhoA gene to create a genomic library. This library was screened on selective media containing BCIP, a substrate which turns blue in the presence of secreted PhoA protein. Positive clones were sequenced to identify

the proteins directing their secretion. Thirteen unique secreted proteins were identified in the genetic screen, with two showing particularly strong secretion. The best candidates were fused with anti-malarial proteins. These fusion constructs were successfully secreted in vitro.

62 Psychological Assessment in Aphasic Populations

Terri Dilmore, Alex Kranjec, Ph.D. (Faculty Advisor) & Sarah Wallace, Ph.D.

Psychology | McNulty College and Graduate School of Liberal Arts

ABSTRACT: Aphasia is an acquired language impairment that often follows stroke or brain injuries. People with aphasia often experience persistent challenges understanding others' spoken language and producing novel utterances to communicate their intents. While there are several treatment strategies developed to help people with aphasia, a comprehensive assessment that describes the possible impact of their language impairments on their psychological state remains elusive.

Psychological assessment has been very useful in helping to recognize, describe and explain the subtle behavioral and relational aspects that may have been affected by a disorder. The Rorschach (1921) has historically been used as a projective measure to assess an individual's personality and ability to organize emotional and psychological thought. Although the Rorschach has been widely used within the fields of psychology and psychiatry, less is known about its clinical applicability in populations with speech and language impairments. The novelty of using this kind of psychological assessment in a neurologically impaired population and the possible value it might provide on understanding the psychological and language-related capacity of individuals with aphasia is of particular significance to the present study. To investigate the clinical value of using the Rorschach in patients with a spectrum of speech and language impairment, the following research questions will be explored:

1. Does the open-ended nature of the Rorschach provide a valuable platform for individuals with aphasia to describe their current mental state?
2. Do specific patterns of language impairment relate to patterns of emotional or social impoverishment as indicated by Rorschach assessment?

A mixed-methods research design is used. A preliminary summary of data compiled on a small group of participants (including background history, language testing, etc.) addresses the value of Rorschach testing in aphasics, and the relations between patterns of language impairment and results of projective personality assessments.

63 Journey of an Orphan: Along the Personal and Myth

Sugandh Dixit | Faculty Advisor: Eva Simms, Ph.D.

Psychology | McNulty College and Graduate School of Liberal Arts

ABSTRACT: The word orphan has been neglected in psychoanalytic literature (Akhtar, 2011). However, narratives of orphanhood tend to dominate the world of myths and tales. The present paper tries to explore, via Jungian psychology, the symbolic meaning of orphanhood in myths. By engaging with the Indian mythological figure Karna, this paper focuses on understanding the relevance of

abandonment in human self-development. The analysis is an effort to engage deeply into the symbolism that the legendary Indian mythical figure Karna reveals about our psychological struggle towards the realization of what Jung calls the Self our wholeness and feeling of being at home. The paper is dedicated to all the times we have felt abandoned in our lives and the psychological growth that such an absence can bring. In this paper the word orphan is used symbolically and does not necessarily refer to parental loss in childhood.

64 The Church Modes

Adam Fehrenbach | Faculty Advisor: Ann Labounsky, Ph.D.

Organ | Mary Pappert School of Music

ABSTRACT: Adam Fehrenbach *Organ Literature I* Research Abstract 1 October 2013 The Church Modes In this study of the church modes, the purpose is to research and explain the eight church modes. The intent is to discover what these modes were used for, how they were used, for whom they were developed, and their function in church music. Each mode, or scale, has a name Dorian, Hypodorian, Phrygian, Hypophrygian, Lydian, Hypolydian, Mixolydian, and Hypomixolydian. Each scale has a specific sound, and later becomes the sound to certain chants and melodies. As these modes are researched, they tend to have a mood about them, such as happy, sad, melancholy, and so on. This research will discuss how these modes became known to specific melodies and chants. Music, in its development, makes a great impact in the region of its discovery, and is then discovered by other composers during their travels. This study will show how these modes impacted different regions, and their music. The main focus will not be strictly with the medieval modes, or the modes throughout the ages, but how they travelled and were discovered by the English. The discussion will be how the English discovered the modes, how they used them, and how they were incorporated into their music. The poster for this research will depict all eight modes showing the scale with their corresponding name. There will be pictures of the composers who became famous for certain chant melodies. On this poster, there will also be famous chant melodies to see how these modes were incorporated into music practices. Bibliography Apel, Willi. *Harvard Dictionary of Music*, second edition. Cambridge, Massachusetts: The Belknap Press of Harvard University Press, 1972. Gillingham, Bryan. *Music in Medieval Europe: Studies in Honour of Bryan Gillingham*, Aldershot, England; Burlington, VT: Ashgate Pub., 2007. Grout, Donald Jay. *A History of Western Music*, revised. New York: W.W. Norton & Co., Inc. Kamien, Roger, *Music, an Appreciation*, 5th Ed. McGraw-Hill, inc., New York, New York, 1992. Papazian, Mary Arshagouni, *The sacred and profane in English Renaissance literature*, Newark: University of Delaware Press, 2008. Sadie, Sadie, ed., *the New Groves Dictionary of Music and Musicians*. Vol.12, Macmillian Publishers Limited, London; Grove's Dictionaries of Music Inc., New York, New York; Reprinted 1995.

65 Protecting the neonatal brain

Priya ganesan, Lauren O'Donnell, Ph.D. (Faculty Advisor)

Pharmacology | Mylan School of Pharmacy

ABSTRACT: Viral infections in the central nervous system (CNS) are associated with devastating

neurological consequences (mental deficits, seizures, and death), particularly in newborns. Despite mounting both innate and adaptive immune responses, neonates are often unable to control viruses in the brain and suffer extensive neuronal loss, potentially due to deficits in anti-viral cytokine production. In order to study the response of the neonatal immune system to viral CNS infections, our laboratory uses a transgenic mouse model (NSE-CD46) of neuron-restricted measles virus (MV) infection. NSE-CD46 mice express the human isoform of CD46, a MV receptor, under the control of the neuron specific enolase (NSE) promoter, allowing for infection only in CNS neurons. Adult NSE-CD46+ mice clear MV from CNS neurons in an interferon gamma (IFN γ)-dependent and T-cell dependent manner. In contrast to NSE-CD46+ adults, neonatal NSE-CD46+ mice succumb post-infection and show 100% mortality at 15 days post infection (dpi). Neonatal mice lacking IFN γ (CD46+/IFN γ -KO) succumb more rapidly than NSE-CD46+ neonates (100% mortality by 10 dpi) despite higher levels of CD4 and CD8 T-cell infiltration into the brain. In CD46+/RAG-2-KO neonates, which lack T- and B-cells, show reduced mortality in comparison to other immunocompetent neonates, with 20% of the pups surviving the infection. CD46+/RAG-2-KO neonates also have lower viral RNA in the CNS than immunocompetent NSE-CD46+ and immunocompromised CD46+/IFN γ -KO neonates. We hypothesize that MV control in CD46+/RAG2-KO neonates could be provided by IFN γ -producing natural killer (NK) cells. Current experiments aim to define the role of NKs in the enhanced viral control observed in CD46+/RAG2-KO neonates and to identify relative levels of IFN γ expression in adult and neonatal brains over the course of MV infection.

66 Authorship Attribution Methods in Albanian

Belinda Hasanaj | Faculty Advisor: Patrick Juola, Ph.D.

Mathematics & Computer Science | McNulty College and Graduate School of Liberal Arts

ABSTRACT: Many studies have been done on attributing authorship in different languages, but how well does text analysis on less-studied languages work? In this study we present our approach to perform authorship attribution in Albanian and compare the performance of methods on Albanian with the same methods' performance on English and Italian.

We collected two corpora to run the experiments on, an Albanian corpus containing 50 documents from 4 authors and an Italian corpus with 80 documents from 9 authors. While for English we used the English problems (A -H) from the AAAC corpus.

The Albanian documents were collected from the World Wide Web, while the Italian documents from the Liber Liber database. After dividing the documents into training and testing set, the Java Graphical Authorship Attribution Program (JGAAP) was used, with the following analysis methods: Support Vector Machines using Sequential Minimal Optimization and Nearest Centroid (with Intersection, Manhattan and Cosine Distance). These were combined with the features: Words, Rare Words and Character NGrams (N = 3, 4, 6, 8).

The results show that the performances obtained in the three languages are not independent from each other and that there is a strong relation between them.

The Pearson's product-moment correlation was: 0.86 (between Albanian and Italian), 0.6448 (Albanian and English), 0.6079 (English and Italian). Moreover, the Spearman (nonparametric) correlation was 0.6895 (Albanian and Italian), 0.5605 (Albanian and English), 0.5029 (English and Italian). All of these

results were highly significant ($p < 0.01$).

We notice a higher correlation between Albanian and Italian, which might come as result of the fact that they are both rich in vocabulary and morphology. The results lead us to believe that a set of best analysis methods used in one language can be good enough to use in other languages and that the results of testing in major languages can help guide work in less-studied languages.

67 Early Pipe Organ Design

Michelle Horsley | Faculty Advisor: Ann Labounsky, Ph.D.

Organ | Mary Pappert School of Music

ABSTRACT: For my research project, I would like to discuss the development of early organ consoles. I will explain how their configuration and stop-listing affected the music which was composed during this time.

The project will be divided into four geographic regions - Italy, Germany, Spain, and England - and special attention will be given to discussing how the early pipe organ was being used in each country and the various designs which are either still intact or otherwise documented demonstrate the cultural differences among these console designs. I will include blueprints of these early instruments and registrational listing, with translations.

I will explain intricacies of early music performance on such instruments and the physical differences which contributed to primitive performance technique. Some of these concepts include truncated manuals, smaller pedalboards, split keys, etc. Another important consideration in these instruments was the early temperaments or tuning systems to which they adhered. It is important to explain these thoroughly and their implications on not only performance practices but also compositional trends, in which many keys were favored over others for reasons of emotional and cultural affiliation.

I will include visual displays on a poster-board which will show the designs of early organs in these countries, with descriptions about how they would have been played. I will focus specifically on the couple hundred years leading up to the time of Bach and Baroque development (i.e. 1350-1650 A.D.).

68 The Relationship Between Athletic Training Student

Michele Kabay | Faculty Advisor: Paula Turocy, Ph.D.

Rehabilitation Science | Rangos School of Health Sciences

ABSTRACT: The purpose of this study was to 1) assess the critical thinking skill level of the athletic training student (ATs), at onset and end of the clinical education experience 2) to examine the influence of the students' critical thinking skills and the Clinical Instructors' (CIs) supervision responses to the changes in the students' critical thinking skills and 3) to compare the students' and the clinical instructors' perceptions of the CIs' supervision responses to the athletic training students' critical thinking skill levels.

Methods: A descriptive research study design was used. To explore the critical thinking skill levels of the ATs the California Critical Thinking Skills Test (CCTST) was used. Perceived clinical supervision responses of the CIs' to the ATs' level of thinking were analyzed using two tools developed for this study-ATS Perception of Clinical Instructor Supervision Response (S-PS) and the CI Self-Evaluation of Supervision

Response (CI-S) assessments. Data were collected at the beginning and at the end of the students' clinical education experiences. A sample of convenience was used from the CAATE approved programs in the state of Pennsylvania. Correlations and paired t-tests were used to analyze the data.

Results: The students demonstrated an overall moderate critical thinking skill level. The ATS perceived a statistically significant change in the CIs' supervision responses over the period of one clinical education experience. The data reflected no statistically significant changes in the CIs' self-perception of their supervision responses to the students' levels of critical thinking over time.

Conclusion: This sample demonstrated little improvement in CTS and exemplified the need for better ways to develop of higher levels of critical thinking during their entry-level athletic training preparation. Modifying the approach to clinical education supervision by the CI may improve the ATSs' levels of critical thinking.

69 The Function of the Ligamentum Teres

Benjamin Kivlan, RobRoy Martin PhD PT (Faculty Advisor), Hal Martin DO, Munif Hatem MD
Physical Therapy | Rangos School of Health Sciences

ABSTRACT: Background: The morphology and anatomical location of the ligamentum teres (LT) suggests it has a contribution to hip stability and may function similar to a ball and string model in limiting hip rotation. The purpose of this cadaveric study was to evaluate the function of the LT in limiting hip rotation in 18 distinct hip positions.

Methods: Six fresh-frozen pelvis-to-foot cadaveric specimens (12 hips) were skeletonized from lumbar spine to the distal femur preserving the hip ligaments. Hip joints were arthroscopically accessed through a portal located between the pubofemoral and iliofemoral ligaments to confirm the integrity of the LT. Three independent measurements of hip external and internal rotation range of motion (ROM) were performed in 18 precise hip positions of combined extension-flexion and abduction-adduction. The LT was then arthroscopically sectioned and rotation ROM reassessed in the same positions. A paired sample t-test was utilized to compare the average internal and external hip rotation ROM of the LT intact to resected conditions in each of the 18 positions. Alpha was adjusted to 0.0014 to compare the 36 measurements.

Results: The LT was the primary stabilizer and significantly influenced ROM in 8 out of the 18 hip positions tested ($p < 0.0014$). After the LT was resected rotation ROM increased in 34 of 36 measurements with a greater than $>5^\circ$ increase in 19 out of the 36 measurements. The greatest increases in ROM occurred when the hip was in 90° and 120° of flexion.

Conclusions and Clinical Relevance: This study supports the ball and string model for LT function in limiting hip rotation. The LT may function as a primary stabilizer to limit rotation when the hip is in 90° degrees or more of flexion. The LT is important in controlling hip rotation, confirming its contribution in hip stability.

70 The Ethical Principle of Cooperation as a Determinant of Moral Agency in Nursing Home Leadership

Shelley Kobuck | Faculty Advisor: Gerard Magill, Ph.D.

Healthcare Ethics | McAnulty College and Graduate School of Liberal Arts

ABSTRACT: Nursing homes have had negative connotations since their inception as almshouses for the aged and unworthy to go for care. They have gone through many transformations in the last 25 years since the passing of the Nursing Home Reform Act (1987) which focused on improving the quality of care, insuring resident rights, and standardizing processes for evaluating nursing home compliance for certification and licensing. As of 2009 there were 1.4 million people in nursing homes however there are still misunderstandings of their services and capabilities which adds to the perpetuation of negativity. This influences the decision-making of consumers for opting for other care choices and also impacts their trust in nursing homes by being led to believe that poor care is consistently rendered and ulterior motives are the norm. The need for a high level of moral agency is much greater to dissuade the general public from associating nursing homes with complicity. With that in mind, this paper will explore the ethical principle of cooperation as a determinant of moral agency in nursing home leadership. The evolution of organizational ethics in health care will begin the discussion through a historical perspective as well as the current status of organizational ethics. Moral agency will be defined through ethical theories and climates and the principle of cooperation will be examined in its two forms of material and formal cooperation. Issues of moral leadership in nursing homes will look at patient safety, resource allocation, social responsibility, and conflicts of interest. Guidelines for ethical decision-making will study organizational mission, vision, and values along with professional codes, regulations, rights, and policies. The last section will cover programs for accountability in the areas of corporate compliance, quality improvement, and risk management.

72 A Case Study of Online Community Ads

Yan Li

Multimedia | McAnulty College and Graduate School of Liberal Arts

ABSTRACT: Online communities have gone from the geek underground to main outlets affiliated with mainstream media in recent years. Because online communities are considered as a tool to promote the interaction between viewers, they have gained attention from marketers and businesses. Nowadays, a lot of ads come up in the online community. When these communities and ads come together, they not only create a new business model but also raise some new ethical problems. By analyzing six cases of American and Chinese online community ads, this case study explores the cross-culture differences in the ways that advertisers post the ads, how they manipulate the ads, and how they break the rules of TARES. Based on the different behavior patterns, this study goes in depth to investigate the impact of multidimensional ethical scales on behavioral intentions due to the cross-culture difference. In addition, this study aims to raise awareness about these issues among the public, explores the ways to spot the unethical ads, and suggests some ways to solve the unethical problems.

74 Franz Schubert: Spirituality in Song

Candice Shaughnessy | Faculty Advisor: Benjamin Binder, Ph.D.
Performance | Mary Pappert School of Music

ABSTRACT: Franz Schubert lived a short life; but in that time, he managed to compose an extraordinary output of song literature. His inward and honest relationship with God is demonstrated by the choice of poetry in his songs. Conventional spirituality did not interest Schubert; still, he clearly defined his inner spiritual beliefs in his personal letters and writings. Schubert struggled with his spirituality due to depression and inner turmoil related to his health and sexuality, but maintained his core beliefs.

In truth, any Schubert song with a text on a spiritual theme poses an issue for a performer ignorant of Schubert's objectives. Schubert's life events, choice of poetry and compositional response in his spiritual songs need to be addressed by the singer and pianist in order for them to give a more informed performance.

This project will examine three main spiritual ideas as they relate to Schubert's song composition: piety, death, and Pantheism. Possibly the most overtly spiritual of Schubert's songs, *Ellens Dritter Gesang* depicts Schubert's feelings towards piety. Schubert wrote frequently that following the performance of this piece, listeners were shocked by his piety. *Totengräbers Heimweh* illustrates Schubert's ideas and feelings about death. Death was a consistent issue in Schubert's life. This piece in particular outlines Schubert's positive feelings about death and his beliefs regarding the afterlife. Finally, the song *Die Allmacht* exemplifies Schubert's relationship with Pantheism. He speaks frequently in his personal writings of finding the oneness of God in nature. The playing of recordings and live performances of song excerpts will assist in the explanation of the subject matter.

In understanding Schubert's life and his views of spirituality, the singer and pianist are more likely to give a more informed performance, which emphasize the compositional intentions of Schubert's music.

76 An ethical analysis of the concept of disease mongering and its effect on healthcare, research, and patient safety

Barbara Postol | Faculty Advisor: Henk ten Have, Ph.D.
Healthcare Ethics | McAnulty College and Graduate School of Liberal Arts

ABSTRACT: The concept of healthy people taking medication they do not need might sound preposterous to many, however when this idea is examined in closer detail, it may be less uncommon than one imagines. The term disease mongering includes the medicalization of everyday problems or annoyances into an illness. Examining if disease mongering is valid is relevant for several reasons. Consumers may be led to believe they need medications for conditions that may not be necessary, which places health in jeopardy as medications are not without risk. This practice also places a strain on the medical insurance industry for medications that may be unnecessary, which everyone will ultimately pay for in insurance premiums. Disease mongering takes many forms and the influence it has on research and healthcare is far-reaching. Arguably, this is becoming more prevalent in medicine today and much of it has to do with profitable drugs used to treat these illnesses. The reason that these common conditions are now viewed as medical conditions may include the powerful role of the

pharmaceutical industry in healthcare today. For many illnesses, it is the pharmaceutical industry that is actively involved in defining diseases contrasted to the past of a more social construct of illness. Disease mongering leads to the integrity of research being compromised and potentially puts patients at risk who are being treated unnecessarily. Disease mongering gets away from ethical standards. The purpose of this poster presentation is to provide an ethical analysis on the concept of disease mongering and its effect on healthcare, research, and patient safety.