

Abstracts

The 2nd Annual Student Scholars Symposium

March 28, 2013

1. Paper Presentation – Bible

School Gun Violence - A Resolution Proposal.

Grant Carey and Earl Lavender.

This paper presentation addresses the issue of school violence, specifically gun violence. There is much debate about what to do. Gun activists on one side oppose restrictions on gun ownership while parents, students, and faculty place their priority on school safety. In this presentation the issue is being tackled from the perspective of the shooter. Many school shooters commit suicide thereby limiting opportunities to discuss school violence and ask the all-important question, why? Why turn to violence and specifically why use a gun at school? Can understanding why these school shootings occur help prevent them in the future? Addressing issues surrounding gun violence in schools is important but what are the debates missing and what actions can be taken to reduce school gun violence.

2. Paper Presentation – Bible (Graduate)

Does God have a Moral Effect on the Spirit of the Times?

Joshua Stutzman and Lee Camp.

In his book, *The God Delusion*, Richard Dawkins has three major arguments to discredit current ideas about Christian morality: First, morals can be explained by evolution. Second, morals do not come from scriptures (he focuses on the Bible). Third God of the Bible causes people to behave immorally. He argues that altruistic feelings are evolutionary mistakes; I submit they are signs of divine compassion toward one's neighbor. He concludes that the Hebrew Bible has excessively cruel Sabbath laws; I submit that for its time, the Sabbath laws were a day of freedom for the oppressed, and this ethic has continued to evolve into our current society. Finally, he criticizes that the Hebrew God as a racist ethnic cleanser; this is a difficult criticism, but I submit that the Judeo-Christian definition of neighbor has been broadening until it reached its ultimate expression in the universal neighborliness taught by Christ.

3. Paper Presentation – Biology

Chronic Wasting Disease.

Daniel Bloemer and John Lewis.

Chronic wasting disease (CWD) is a part of the group transmissible spongiform encephalopathies which cause progressive neurodegeneration and death in cervids. CWD was first discovered at Fort Collins, Colorado in a captive mule deer herd in 1967. The disease has now spread to free ranging cervid populations in 15 states, the closest to Tennessee being Missouri. Oral transmission is the key in the spread of CWD especially in winter when cervids congregate around cropland food sources. Because of the risk to cervids, the Tennessee Wildlife Resources Agency (TWRA) currently samples the state's population of white-tailed deer for CWD. Most tests for CWD are executed postmortem through the removal of retropharyngeal lymph nodes and brain stem extraction. As of January 2013, no CWD-positive cervids have been detected in

Tennessee; however, the potential for CWD to spread to white-tailed deer is a distinct possibility. Two current methods of dealing with CWD outbreaks include depopulation in both captive and free ranging herds and quarantine in captive herds. Depopulation in free ranging herds is very difficult to accomplish but is believed to have been achieved in New York. The TWRA currently has a plan of action in place if a positive CWD test is detected. The goal of this literature review is to aid in updating and expanding the current plan in order to provide a clear, comprehensive plan of action that is informed by scientific information and the experiences of CWD-Positive states.

4. Paper Presentation – Biology

Prevalence of Canine and Feline Infectious Diseases in South Nashville.

Morgan Furs, Hannah Stephen and Florah Mhlanga.

Several studies have shown that viral infections such as Feline Leukemia Virus (FeLV), Feline Immunodeficiency virus (FIV), Feline Herpes virus (FHV), Canine Parvovirus (CPV), and Canine Corona Virus (CCV) are still widely distributed among domestic cats and dogs respectively. Their prevalence varies geographically, and with associated risk factors such as age, sex, population density, breed reproduction and health status. Little is known about prevalence of these infections in Southern Nashville. Information on the prevalence of important infectious diseases will be crucial in understanding the distributions and epidemiological parameters related to these infections. The objectives of this study were to determine the prevalence of canine and feline infectious diseases in South Nashville and to determine the risk factors for infection. Data on 100 feline and 100 canine patients recorded from 2009-2012 was obtained from Belmont Animal Clinic. Information collected included type of infection, breed, sex, age, body condition, behavior, reproductive status and vaccination history. Prevalence was determined as the number of cats/dogs with positive serological tests divided by the total number of animals evaluated. Chi-square tests were used to determine association between the risk factors and infection. Canine Tracheobronchitis (18%) and Parvo-virus (12%) were the most prevalent among canine infectious diseases. Feline herpes virus (21%) followed by FIV (17.3%) were the most prevalent among feline infectious diseases. Reproductive status, vaccination history and living conditions were significantly associated with prevalence of both canine and feline infectious diseases ($P < 0.05$) while sex, breed and age were not significantly associated with prevalence ($P > 0.05$).

5. Paper Presentation – Biology

Study of the Effect of CD-10 on Invasiveness of Cancer Cells, Using the Cell Line MDA-MB-231.

Brenna Cosminsky and Beth Conway.

CD-10 is a gene that is over-expressed in lowly invasive cancer cell lines. Because of this finding, we hypothesized that when CD-10 is incorporated into a highly invasive breast cancer cell line's genome, invasiveness of the cells would decrease. During the beginning of our studies,

we used PCR to amplify CD-10 from a cloning vector so that we could subclone the gene into a mammalian expression vector. After doing so, we did restriction enzyme analysis to verify that CD-10 inserted into the expression vector in the correct direction. Once verified, we transfected MD-MBA-231 cells with the CD-10 expression vector, and confirmed through RT-PCR that CD-10 was over-expressed. From two independent transfections, we observed a decrease in breast cancer cell invasion in CD-10 transfected cells. These preliminary results suggest that over-expression of CD-10 inhibits invasion in breast cancer cells.

6. Paper Presentation – Education (Graduate)

Application Date and Other Factors Influencing Higher Education Success for Students at Nashville State Community College.

Elizabeth Carol Reid, George Frogge and Trace Hebert.

In 2010, the Tennessee Higher Education Commission changed its allotment of funding to an outcomes-based system. This meant that universities and colleges received money based on factors including associate degrees, certifications, and job placement rather than on enrollment as higher education institutions had formerly done. This new funding prompted change in higher education as institutions began to examine strategies to increase student retention and academic success. Nashville State Community College has been operating with an open access practice, which allowed students to apply and register up to the day before the start of the semester. Nashville State Community College wanted to know whether the date of student application and registration impacted student success as defined by the number of credits earned in a given semester. Wishing to continue its open access practice, Nashville State Community College wanted to compare the successful completion of those students who applied and registered for classes during the week immediately prior to the start of classes with those who applied prior to that week; changes based on this comparison may maximize the probability of successful completion of courses. In addition to examining application and registration dates, this study also examined student characteristics including financial assistance status, ethnicity, gender, parent education level, ages of students, developmental math enrollment, developmental reading enrollment, and developmental writing enrollment. This study examined characteristics of students who applied and registered at different times.

7. Paper Presentation – English

Ask and Ye Shall Receive.

Anna Uselton, Kayleigh Butterfield, Patricia Denney and Stacia Watkins.

The Lipscomb University Writing Studio (LUWS) was formerly located within the English Department, though unaffiliated. The space was elusive and secluded, which was not advantageous to our goal of rebranding the LUWS. At the beginning of academic year 2012-2013, the Lipscomb University Writing Studio was relocated to the Academic Success Center (ASC), which also houses our university's Math Lab, Peer to Peer Mentoring, athletic study hall, offices, and miscellaneous tutoring and studying programs. The ASC is located in our university

library, a more visible space, and its visibility has increased student awareness of the LUWS. The LUWS's new location has also presented our staff with operational, spatial, and social issues. Because of increased visibility, visits to the LUWS have surpassed those of previous years, and we anticipate this increase to pose a challenge at peak times this semester. Also, the collaboration between the different tutoring programs presents consultants with social challenges involving interpersonal interaction and demarcation of different tutoring programs physical boundaries. We propose to share with our audience a comparison and contrast of the LUWS's former space and operations with the changes which have transpired since we have moved to the ASC. In order to assess these changes, we have conducted student surveys among three different client groups: those who attended consultations in our former space only, those who have been attending consultations in the ASC, and those who attended consultations in both spaces. Our presentation will also be informed by the theories of writing studio spatiality articulated by Nancy Grimm and Michael Dickel and by our own observations of the LUWS's transition.

8. Paper Presentation – English

The Flame Relit: An Analysis of The Sacred and Profane in Brideshead Revisited.

Kayleigh Butterfield and Jan Harris.

In 1945 Evelyn Waugh broke from his reputation as a primarily comic author by writing the highly acclaimed *Brideshead Revisited*. While many of Waugh's other works presented biting social commentary using extreme (one might even say absurd) satiric wit, *Brideshead* is often deemed a serious Catholic novel that sheds light on humanity's relationship with the Divine. The subtitle of the book, "The sacred and profane Memories of Captain Charles Ryder", is what first informs readers that this story is one of finding faith among the fallen, and it also reveals the identity of *Brideshead*'s first person narrator, Charles Ryder. Most of the story consists of Ryder narrating on his past life spent at *Brideshead* manor. Many of Waugh's contemporaries claimed that Ryder's first person, past tense narration detracted from the novel's credibility. However, because this is a story of finding the sacred amidst the profane, Waugh's decision to cast Ryder as an imperfect narrator acts to link the spiritual themes of the book to its formal elements. Ryder's biases, flaws, and foils interfering with the plot is an intentional tool, furthering Waugh's goal to find divine purpose in the ordinary.

9. Paper Presentation – English

Fluoride in Drinking Water: A Complex Controversy.

Andrew Melchior and Sonya Borton.

There are many issues of great importance in our society today that are not commonly known or thought of. Water fluoridation, which refers to the adding of fluoride to municipal water supplies with the intention of reducing tooth decay, is one of those issues. Although, it affects the majority of Americans every day, most do not think much about it and that is a serious problem for many reasons. Over the last several years, public interest in this issue has grown rapidly and many people have questioned the practice. While proponents of fluoridation will

insist that fluoride is effective and poses no ill effects, there is a great deal of evidence to the contrary that needs to be addressed. In addition, there is great concern among many scientific experts whether fluoridation is a safe, ethical, and effective program. Individuals should take time to inform themselves on this issue. There are many immediate concerns that should be brought up at the very mention of water fluoridation. These include the fact that is a poor medical practice due to the lack of informed consent, which is one of the main principles of modern medicine. Likewise, it is important to remember that fluoride is not a nutrient, because no disease is caused by a lack of fluoride. These components relating the issue of water fluoridation have not been addressed thoroughly and must be discussed and debated scrupulously. This debate will not be concluded anytime soon, due to the complexity and controversy surrounding the matter.

10. Paper Presentation – English

Moments of Being and the Eternal Community in *To The Lighthouse*.

Jadrienne Myhre and Jan Harris.

Virginia Woolf was fascinated with duality's two worlds, two times, the common and the eternal occurring simultaneously and the unique moments when we break from common experience to see the eternal. James Joyce called these transcendent moments epiphanies; Woolf calls them moments of being. In *To The Lighthouse*, Lily Briscoe participates in a moment of artistic creation leading to her moment of being, but her experience, unlike those of Joyce's solitary protagonists, is born out of community. Both Lily's creative process and her revelation at the end of the novel are influenced by other characters, specifically Mr. Ramsey, Mrs. Ramsey, and Mr. Carmichael. In addition to community, the concept of art is crucial to Lily's vision: art is an ineffable experience, evoking the sacred, and Woolf crafts art as a vehicle to the transcendent moment. Through artistic practice, Lily's vision recalls the communal sentiments and theological implications of the Eucharist. As a celebration of Christ's sacrifice, this sacrament is communion with those physically present and with the eternal church, past, present, and future. Like the Eucharist, Lily's moment of being sacred beyond explanation, art as its catalyst offers her a purer view of reality, binding community across time and space.

11. Paper Presentation – English

The Point.

Anna Uselton and Kim Reed.

Transitioning the Lipscomb University Writing Studio to the Academic Success Center has presented operational, spatial, and sociological issues. We would like to examine the positive challenges discerned from comparing and contrasting the ARC to the former LUWS. Our methodology for analyzing these issues comprises student surveys, academic research, and self-observation.

12. Paper Presentation – English

Preserving the Peace in Graham Greene’s *The Quiet American*.

Moriah Claud and Jan Harris.

Graham Greene’s novel, *The Quiet American*, is considered one of his most carefully constructed political novels. The struggle of the story’s narrator, Thomas Fowler, to decide what the price he is willing to pay for peace reflects Greene’s themes of faith and doubt in his religious novels. Fowler, who claims to be apathetic, recognizes that Alden Pyle’s ideology is wrong and dangerous, and because Pyle refuses to see the danger in his actions, he must die before more innocent lives are lost. Behind Fowler’s motive of preserving peace, there is Phuong—the quiet Vietnamese girl who left Fowler for Pyle. Pyle’s innocence does not allow him to see that the ideology driving the political force he is involved in is both dangerous and wrong. Fowler, who prides himself on not belonging to the war, is moved to action when he realizes that Pyle’s ideology is a threat to the woman he loves and the Vietnamese civilians like her. Fowler decides to relieve human suffering and restore peace even if it means being complicit in Pyle’s death.

13. Paper Presentation – Family and Consumer Sciences

From the Classroom to the Neighborhood: Relationship Education in Real Life.

Clare Corley, Faith Fallin, Whitley Foster, Camille Fraser, Kelsey Gainey, Lindsay Hamrick, Autumn Harper, Chelsey Piper, Kelsey Shipman, Caroline Wolfe and John Conger.

Drawing on a published framework for family life education programs and using a nationally recognized program, students in the Senior Seminar course led the program as their capstone experience. There was great diversity in ages, socioeconomic backgrounds, ethnicity, and life experiences with the students and the class participants. Program materials had to be modified, and numerous “lessons” were learned regarding cooperation with community partners when taking university curriculum to a “street” culture. This presentation reviews some of the insights gleaned from this experience, and offers suggestions for future directions and partnerships, with feedback and evaluation from participants and instructors.

14. Paper Presentation – Family and Consumer Sciences

Hassles and Uplifts.

Emily Dunn, Tara Dunton, Faith Fallin, Page Parker, Caitlin Phelps, Melissa Wilson and John Conger.

Hassles are irritants or annoyances. “Uplifts” are positive events that can bring feelings of well-being and sources of pleasure, making one feel joyful, glad, or satisfied. Some hassles and uplifts occur on a fairly regular basis and others are relatively rare. Low-income single mothers have some intense challenges of managing their lives and families. These challenges are often compounded by daily hassles, but these challenges may be offset by significant uplifts, buoyed

by positive outlooks and attitudes. Hassles and uplifts have been found to be related to mental and physical symptoms, but little is known regarding their ability to manage routine family resources and activities. Furthermore, new types of hassles and uplifts may have emerged in the three decades since the concepts were first measured. This exploratory study of a small, selective group of single mothers sought to determine contemporary hassles that are present in their daily lives and routines, as well as the types of uplifts that help in the daily management of family and resources. Comparisons were made with the factors that were reported in studies from previous decades to determine emerging trends in reported factors.

15. Paper Presentation - Foreign Languages

Life and Learning through Gabriel García Márquez's *Del amor y otros demonios*.

Lily Scott and Ted Parks, Kelly Kidder.

Setting his short novel *Del amor y otros demonios* in Spain's New World empire, Nobel laureate Gabriel García Márquez centers his tale of illness, demonic possession, and aberrant love around a bishop and a physician attempting to treat a girl suspected of rabies. The novel suggests that failing to treat the totality of a person's being and misconstruing the relationship between the physical and spiritual can be fatal. In the story, the church manipulates the patient for its benefit, seeking to prove that faith alone will heal, rendering the physician and his science powerless. In this paper, I explore the relationship between my own recorded observations collected during a guided practicum at Nashville's Siloam Family Health Center and García Márquez's text. In my analysis, I contrast the tension between physical and spiritual concerns in the novel and the intentional linkage of these areas that I observed in my clinical experience.

16. Paper Presentation - Foreign Languages

Why Do They Dress That Way: The Unique 'Plainness' of Lifestyle of the Various 'Anabaptist' Groups in the Midst of American Society.

Alexander Givant, Hunter Mayberry, Brad Oster, Katy Wanger and Charles McVey.

The religious reformation that exploded across Europe in the early 16th century gave rise to many interpretations. Many followed the basic tenants projected by Martin Luther's teaching, centering around the supremacy of Holy Scripture as the sole guide for a life of faith. Taking this basic determination even further than Luther or the Swiss Reformer Ulrich Zwingli as being capable of completely changing one's life were the groups collectively known as the 'Anabaptists' or 're-baptizers'. While these groups certainly believed firmly in this concept of adult baptism, and it is for this doctrine that they are best known and labeled, again their most important teaching was that of a person's own responsibility to hear and respond to God's Word without intervention by the secular world. These religious groups were persecuted by Catholic and Protestant authorities alike, due primarily to the fanaticism of some, such as the group in Münster, Germany. However, most of them were humble, insightful, prayerful students of the Bible and prepared to give up anything necessary to hold true to that vital connection to God. Many died or were driven to the steppes of Russia, the mountains of Canada or southeastern

Pennsylvania. Eventually, all of these German-speaking groups came to North America and we know them today as the Amish, Mennonites, Hutterites, Moravians, Brethren. Part I of our presentation will represent the basic similarities and differences now existing among these groups.

17. Paper Presentation - Foreign Languages

The Simple Life: Personal Reflections, Lessons Learned from Anabaptist Theology

Molly King, Bennett Rigney, Josh Crafton and Charles McVey.

Pursuant to a study of the cultural and theological history of Anabaptist groups in North America, students now reflect on life teachings they feel are applicable to Christian living outside the circle of Anabaptist religious groups today. They will share spiritual realizations that have come to them from their study of Anabaptist theology in the light of God's Word. How does one live the 'simple life' of faith in today's busy and technologically advanced America? How does one draw closer to God personally when caught up in the hectic pace of American life and religion today?

18. Paper Presentation - History, Politics and Philosophy

Global Brew - The Geographic Impact of Coffee.

Zachary Warrick and Tim Johnson.

Coffee, the little caffeine-packed seed of the coffee tree, has been important to humanity since its discovery in the murky fog of pre-history. Now, more than ever, coffee is a vibrant and important commodity throughout the globe. The influence of coffee, both historically and into modern times, is integrally tied to its geography. This paper seeks to examine the importance and impact of coffee both historically and currently by tracing it geographically through five major themes: coffee's growth region, mobility, globalization, impact on nature-culture (i.e., coffee's role in human/land interaction), and finally coffee's role in the landscape of human culture.

19. Paper Presentation - History, Politics and Philosophy

The Successful al-Qaeda: Why is al-Qaeda so effective on global terrorism under the principles of cultural geography.

Caesar Tang and Tim Johnson.

Cultural geography is an interdisciplinary subject that attempts to explain how and why certain cultural products and norms spread or reject by other cultures. Inside the discipline there are five areas that scholars investigate, including region, cultural landscape, globalization, mobility, and nature-culture. Terrorism has been a heated topic this recent decade because of the September 11 Attacks in 2001 committed by al-Qaeda. Even though there was the War on Terror responded by the United States towards terrorism, which overthrew the Taliban and the Saddam Hussein

regimes and killed the terrorist mastermind Osama bin Laden, al-Qaeda is still in operation today. By looking at al-Qaeda using the five areas in cultural geography, each of them offers insights on how the terrorist group operates. From region and cultural landscape, they provide the information of where does the terrorist group operates and where it trains its recruits. From globalization and mobility, they express how the terrorist group promotes itself. And from nature-culture, it talks about how the environment is influenced by the attacks launched by the terrorist group. From these information, they provide a better look on al-Qaeda and allow us to draw understanding onto the terrorist group and attacks in the future than merely few religious extremists trying to undermine everyone's interest.

20. Paper Presentation – Kinesiology (Graduate)

Physical Fitness Status of the Average Lipscomb Freshman: A Descriptive Analysis of Aerobic Capacity, Muscular Endurance, and Body Composition in PE 2012 Students.

Erin Gainey, Hannah DeWalt and Kent Johnson.

High levels of physical fitness are positively associated with academic success, self-esteem, and quality of life. Physical fitness norms are helpful in understanding one's physical fitness status relative to a comparable population. One hundred and ten Lipscomb underclassmen enrolled in PE 2012 in the Fall of 2012 participated in a battery of physical fitness tests including a timed 1.5 mile run, a 1 minute push-up test, a 1 minute sit-up test, a sit-and-reach flexibility test, and skinfold body composition measurements. Descriptive statistics were run on the data from all PE 2012 classes. When compared to national norms for college-age students, the average Lipscomb female ranked above average in push-ups (27.5 ± 8.9), average in sit-ups (29.0 ± 7.3), very good in sit-and-reach ($35.1\text{cm} \pm 7.4$), poor in aerobic capacity ($34.3\text{ml/kg/min} \pm 5.9$), and very poor in percent body fat (29.2 ± 4.6). When compared to national norms, the average Lipscomb male ranked above average in push-ups (37.3 ± 12.4), average in sit-ups (37.2 ± 5.9), good in sit-and-reach ($29.9\text{cm} \pm 6.9$), fair in aerobic capacity ($42.5\text{ml/kg/min} \pm 7.1$), and good in percent body fat (14.7 ± 5.8). These statistics provide key teaching points for health and physical activity courses at Lipscomb University, as both male and female students should be encouraged to improve their aerobic capacity in order to reap the physical, emotional, and cognitive benefits of a healthy fitness profile.

21. Paper Presentation – Education (Graduate)

Evaluating the Efficacy of the Complete College Tennessee Act of 2010: A Qualitative Analysis of Student Persistence and Leadership Among Colleges and Universities in Tennessee.

Julie Doochin, Celeste Brown, Melva Black and Teresa Clark.

This research grows out of a context of national and state pressure for fundamental educational reform. Many policy makers believe that the American educational system is failing to prepare its students with the skills necessary to become successful citizens in a 21st century global economy. The Obama administration has called for greater access to higher education and

charged public higher education institutions with facilitating increased degree completion. In order to increase graduation rates and produce graduates with the skills necessary to meet local business needs in Tennessee, the Tennessee legislature passed the Complete College Tennessee Act (CCTA) to reform public higher education in Tennessee by moving from an enrollment-based funding formula to a performance, or outcomes-based formula. By tying funding to outcomes, State lawmakers hoped to encourage Tennessee's universities and colleges to effectively implement the CCTA's stipulations, and as a result increase students' levels of educational attainment. Since the CCTA was enacted, there has not been a comprehensive research approach assessing the changes that institutions have made. Neither has there been any comprehensive research on the reactions to and perceptions of the CCTA itself, among the stakeholders within the effected institutions. This research study seeks to fill that gap by examining perceptions of the CCTA's efficacy, as well as its tangible impact upon public colleges and universities in Tennessee through case studies at three public Tennessee higher education institutions.

22. Paper Presentation – Psychology (Graduate)

Adaptive Behavior in Autism Spectrum Disorders.

Rebecca Johnston and Shanna Ray.

A key feature of autism spectrum disorders is an individual's inability to translate cognitive potential into real life potential. This lack of adaptive skills can inhibit a child with ASD to function independently. Past research has found that persons with autism exhibit greater deficits in adaptive skills versus those matched for age and IQ; however, there is disagreement in research as to the extent of these deficits. The current study sought to clarify the extent to which these deficits are autism-specific through an examination of data from a national archive of rigorously characterized individuals with autism spectrum disorders. This study utilized various phenotypic measures to gauge the extent to which an autism specific relationship is present within the Vineland Adaptive Behavior Scale. This investigation demonstrated that the autism specific adaptive behavior profile, which was reported in previous literature, was not present within this study; however those with autism spectrum disorders exhibited specific deficits within the domains of Socialization, Communication, and Daily Living skills.

23. Paper Presentation – School of Computing and Informatics

The Role of MVC in the Undergraduate Computing Curriculum.

Roxanne Spielvogel, Heidi Henline and Becky Tallon.

As competition in the job market continues to rise, it is becoming more and more important to provide undergraduate curriculum that meets industry expectations. Clearly defined curriculum that aligns with industry trends will breed more qualified, knowledgeable students, who will succeed in the job market. By examining the use of the Model-View-Controller (MVC) methodology in the web development industry, this research will help define the importance of it in relation to industry standards. Once MVC's status has been defined, our research project will

explore its level of difficulty to determine where it would fit into the current curriculum. In order to reach a conclusion on this topic, scholarly articles have been assessed, other university approaches to MVC have been considered, and a survey of industry professionals is being reviewed by the IRB. After the survey is accepted, it will be sent out to industry professionals for their feedback. A test MVC project is also being designed and will be completed before the symposium. Meanwhile, initial research activities have revealed MVC is rooted in the computer science field and has a small footprint in the web development industry. While MVC has gained popularity among industry professionals, it is mainly used to create robust web applications rather than average sized websites. Further exploration of this subject will help us place the MVC methodology into the curriculum in order to align it with industry expectations and better equip students for the job market.

24. Performance – Biology

The Art of Scientific Pursuit.

Cameron Gilliam and Kent Gallaher.

Rarely, it seems, does one consider the scientific pursuit of knowledge and its application kindred to the performing arts. They are presented in most circumstances as clearly defined and opposing routes with little to no cross over. The extraneous and the absurd can step foot in the two—can dabble and blur the lines—but no one of repute or excellence should philander with this boundary. In reality, the performing arts and the sciences are not only quite similar, but are mutually inclusive. Both require a measure of creative prowess, analytical engagement, social investment, general curiosity, adaptive abilities, and diligence and perseverance in the face of adversity and even utter failure. The artist and the scientist must embrace each other, both as a community and as an individual, if they are to achieve oneness and thus reach their/his/her full potential. A piano piece with accompanying vocals, a theatric monologue, and a lyrical dance will accompany the presentation of a paper.

25. Performance – English

Diaphragmic Race.

Jadrienne Myhre and Jan Harris.

This poem celebrates the rare gift of being alive, using the cycle of breath and images from nature as a vehicle to understand the thrill of being a living thing.

26. Performance – English

Gabriel.

Jadrienne Myhre and Jan Harris.

In this poem, the speaker addresses a child with Down's Syndrome, mournful for the gap between them. However, the focus is on love and how it can be present, perhaps even more fully, when there is no conversation.

27. Performance – English

Mountain Alyssum.

Jadrienne Myhre and Jan Harris.

This poem follows the life of a rock flower, using its existence as a mechanism to view mortality and beauty. The fragile flower is contrasted with the rock on which it grows.

28. Performance – English

Needle's Eye.

Jadrienne Myhre and Jan Harris.

This poem is a memory of an older person seeing a child, and realizing that the busyness of life is a facade, masking the essential and beautiful purposes of a life.

29. Performance – English

Then and Now: Two Poems, Two People, One Past.

Mary Sealy and Stacia Watkins.

Bury My Heart: The Battle of Wounded Knee wasn't so much a battle as it was a Reaping, for the People had been taken and Sown in that place, expected to live only on the hard ground, surrounded by rabid White Wolves. A misunderstanding leading to a massacre of old and young, of blind eyes and deaf ears. Where the house sits now: Where the house sits now, was once the site of a sacred Indian ritual, but there are no Poltergeists here, only the Earth's memories of its People. Their songs and prayers I hear in my sleep as they try to tell me of their pasts and impart their wisdom to me. I try to embrace them every night, but wake with their ancient language on my tongue and their spirits in my eyes.

30. Performance – English

Transitions.

Julia Rox and Jan Harris.

We are all swimming in time, moving in relation to each other, changing. We are being refined and redefined. Transitions explores those changes in memories, experiences, and images. In late October the water trembles as I brushed the dust from the porcelain tea set that sits next to my bed, a present from my 5th Christmas. It would not go in the boxes that lay like closed mouths on the flight patterns of North American wild birds confident in the finality of their destination. I wondered if the person who would come back to this room, if the me who would return at Christmas time would shift southward to cover 2,500 miles of open sky. , miss these things like I missed them now. I cried because I knew that she wouldn't.

31. Performance – Foreign Languages

French Poetry Reading.

Cecelia Ramsey, Ellen Findley, Cindy Loyola, Ellen Findley, Mary Kate Grant and Valery Prill.

Poetry recitation in France begins at a young age. School children memorize and recite poetry as an integral part of their education and their culture. This love of poetry carries through into their adult years where poetry maintains its place of value in the hearts of the French. In fact, the French National Theatre reserves several nights throughout the year for recitation of famous French poems. Following this tradition of recitation, four French students have personally selected poems to recite in the original French language. Translated poems will be provided so that listeners may appreciate the beautiful meaning of the poems while listening as well to the beauty of the rhythm and language. Selections include, *La mort du loup*, by Alfred Vigny, *Élévation* by Charles Baudelaire, *Demain dès l'aube* by Victor Hugo, and *Pour faire le portrait d'un oiseau*.by Jacques Prevert.

32. Performance – Music

Bach's Chaconne for Unaccompanied Violin from Partita No. 2 in D Minor.

Grace Kimbrough and Marcia Hughes

J.S. Bach wrote Six Sonatas and Partitas for Violin Solo, a staple of the solo violin repertoire, while working at the court of Prince Leopold in the early 1700s. At this time in his musical career, Bach transitioned from sacred to secular compositions and began writing more instrumental music. The Chaconne is the fourth, final, and climactic movement of the D Minor Partita and is the only chaconne in the entire set of sonatas and partitas. Brimming with crisp chords and complex harmonies, a chaconne is a melody that is built over an unchanging chord progression but a changing bass line. This particular chaconne begins with ringing minor chords, giving the piece a bold beginning. The Chaconne includes several passages of differing thematic elements, yet with each passage fitting cohesively into one grand compositional work, a work

only feasible by a musical master like J.S. Bach. This technically demanding piece is approximately eighteen minutes in duration and brims with a myriad of musical complexities in which Bach requires the performer to utilize the full spectrum of the violin's dynamic range, expression, and tonal color. Stormy passages precede quiet, introspective passages, and vice versa, requiring the performer to switch between opposite characters and styles with quickness and ease. All in all, Bach's Chaconne from his second partita is truly a masterpiece, one that highlights the beautiful timbre and emotive expression of the violin in every possible way.

33. Performance – Music

Nightfall.

Christon Carney, Carmen Saunders, Justin Bowen and Sally Reid.

Nightfall is an original song cycle for mezzo-soprano and piano in three movements with texts by three authors. The opening movement, "Autumn Twilight," employs the use of intermittent notes in the piano's higher register symbolizing falling leaves as evening dies and creates an introspective atmosphere. The second movement, "The Night," begins with a consistent flowing melody to reflect the transition into night's dark ambient firmament. This idea is later met by the peaceful stillness that leads to the coming climax in the third movement set in the darkest of the night when stars are most visible. "Evening Star" embodies the essence of night and the spirit of the evening. The star mentioned in the text represents the celestial body of hope and brings the set to a close as the repeating quarter note, which reflects the star's distance and the passing of night, fades away.

34. Poster – Biology

A Screen for Genes Involved in Spicule Formation in *C. elegans*.

Cameron MacQuarrie, Sean Salonga, Maria Asencio and Bonny Millimaki.

Neural development involves much cell-cell communication in order to orchestrate the complex processes that result in neural differentiation, cell migration, and changes in morphology. Since these processes are very similar in both humans and *Caenorhabditis elegans* (which share >50% gene homology), *C. elegans* is a great model organism for researching neural development. The development of neural cells can be observed through the formation of the male spicule, which is composed of two neurons and is easily observed on the *C. elegans* body. Furthermore, the signaling molecules involved in spicule formation have yet to be identified. To identify novel genes involved in neural development, we performed an Ethyl MethaneSulfate (EMS) mutagenesis. From this random genetic screen, we observed 35 phenotypic mutations that could potentially be associated with neuronal development. One of the mutants isolated was LU-6 which has a bend at the base of the spicule and an inability to project the spicule. In order to identify the gene affected in LU-6, we performed single nucleotide polymorphism (snp) mapping using the genetic differences between two isolated populations of *Caenorhabditis elegans*, Hawaii and Him-5. Through this study we hope to uncover the signaling molecules involved in spicule formation and neural development.

35. Poster – Biology

ECE-1 and CD10 Protein Expression in Invasive Breast Cancer.

Elizabeth Belles and Beth Conway.

Endothelin-converting enzyme 1 (ECE-1) and CD10 are two metalloproteases that have been linked to breast cancer progression through undefined mechanisms. In other cell types, ECE-1 increases invasion by activating endothelin-1 (ET-1), a vasoconstricting peptide, whereas CD10 degrades ET-1. We hypothesize that in breast cancer cells ECE-1 promotes invasion and CD10 inhibits it. To test this, ECE-1 and CD10 protein expression levels were measured in the highly invasive MDA-MB-231 and the low invading MCF-7 breast cancer cells. Unexpectedly, ECE-1 protein was increased in MCF-7 cells. While this finding appears to contradict the hypothesized invasive effect of ECE-1, further study of isoform-specific functions may clarify this result. Interestingly, we did observe decreased expression of CD-10 in the highly invasive MDA-MB-231 cells; this observation supports our hypothesis that CD-10 negatively regulates breast cancer cell invasion and suggests that down-regulation of CD-10 may contribute to the invasive phenotype of these breast cancer cells.

36. Poster – Chemistry & Biochemistry

Synthesis and Characterization of the Anticancer Metal-Based.

Ryan Bowen and John Smith.

Cisplatin is among the most widely used anticancer drugs in history. The success of cisplatin in treating various types of cancer has led, through the years, to the search for and development of other metal-based anticancer drugs, but dangerous side effects resulting from the biological activity of the metal are often associated with these metal-based compounds. Previous studies have shown that metal-based imaging agents can be selectively delivered to tissues of interest using a drug-linker-peptide targeting system. We have extended this targeting system to the delivery of cisplatin, using suitable linker molecules (such as 6-aminohexanoic acid) and peptides that target receptors over-expressed by tumors against which these drugs are active. The first step in forming the drug-linker-peptide therapeutic agent, the synthesis of the cisplatin-(6-aminohexanoic acid) complex, proved difficult and required extensive modification of known literature procedures. Mass spectrometry and FTIR spectroscopy data indicate successful preparation of the drug-linker complex, and molecular mechanics calculations predict the drug-linker complex to be comparable in its mode of action to unmodified cisplatin. Selective delivery of active metal-based anticancer drugs such as cisplatin could mean lower dosages, reduced side effects, and more effective treatment for cancer patients.

37. Poster – Chemistry & Biochemistry

Vitamin Levels in Moringa.

Quyen Nguyen, Noura Mahdi and William Tallon.

The purpose of this research is to measure the vitamin content in Moringa leaves. Some specific vitamins are our main focus include: Vitamin A (retinaol), B1 (riboflavin), B9 (folic acid), B12 (cobalamin), C (absorbic acid), D (calciferol), and E (tocopherole). Theses vitamins are mainly chosen because of their efficacy upon youth development. Some of the important effects consists of stabilizing the immune system and assisting the body?s defenses, cell replacement, muscle and bone growth development, as well as providing normal growth function of the nervous system and other organs. This study is conducted using high-performance liquid chromatography (HPLC) method to generate standard calibration curves for each vitamin based upon peak areas presented in the chromatogram. A summary of our procedure and the results will be presented.

38. Poster – Civil Engineering

Lipscomb Portraits.

Minh Nghiem and Joe Morgan.

My project was inspired by the portrait-drawing ambition. I have been sketching, specializing in face portrait, for almost two years. The feeling of interacting with other people, and learning about someone that I might meet once in my life encourages me to do more art work through portrait-ing process. I started questioning myself if I could make a new cornerstone in my art career. | My attention was attracted by seeing many pictures of Lipscomb students, athletes, and professors around the campus, such as dining room, Bennett student center, the auditorium. I have always been concerned about people who work for Lipscomb every day, but are never mentioned in any documents or captured in any photos. I am also worried the faces of retired faculty members, or alumni will be forgotten. Therefore, should I create a collage containing familiar contemporary faces on campus that will live as time goes by? | I have been asking my professors, friends, current students, and other faculty members around campus for their permission to include themselves in my collage, while collecting their autographs. I want the portrait to be as true to the sketched person as possible. Portraits and autographs would make my collection valuable. | After a five-month working period, ?Lipscomb Portrait? is completed with 108 portraits and autographs, and painted purple, Lipscomb?s traditional color.

39. Poster – Dietetics (Graduate)

The Assessment of Online Media Created as a Means to Positively Impact Perceptions of Current and Potential Preceptors for Lipscomb Dietetic Interns.

Lindsey O'Brien and Anne Lowery.

The purpose of this study was to determine if online media, an e-newsletter created by the current dietetic interns, was an effective and efficient marketing tool to positively impact perceptions of current preceptors and reach potential preceptors through sharing of program activities, accomplishments and current nutrition-related topics. A significant challenge exists among dietetic internships associated with universities to partner with healthcare facilities and registered dietitians for preceptorships. Determining effective methods of marketing to preceptors is critical to future growth. The first edition of the E-newsletter was released in December to all current preceptors and the district presidents for distribution to members of the Tennessee Academy of Nutrition and Dietetics. Following distribution via email, a ten-question survey was created through www.SurveyMonkey.com and emailed to assess perceptions of the newsletter and internship program pre- and post-viewing. 32 surveys were completed with 21 having read the newsletter prior to survey completion. 87.5 % of the 21 readers found the information to be accurate and relevant. 18.2% of readers had an increased awareness of the internship program, including comments such as, “Great level of diversity in their experience that mirror the real world experience...” and “I am impressed with the interns and their involvement ...” 92.3% of respondents prefer receiving the newsletter via email versus print. Two more editions will be distributed this program year. Although the study may have provided more robust results had the survey measured perception following multiple newsletters, it is obvious that online media was effective as a marketing tool.

40. Poster – Dietetics (Graduate)

An Assessment to Evaluate Knowledge Pertaining to Public Policy and Advocacy of the Dietetic Intern.

Patricia V. Sheehan and Anne Lowery.

According to the Accreditation Council for Education in Nutrition and Dietetics (ACEND), participation in “legislative and public policy processes as they affect food, food security, nutrition, and health care” is a core competency for the supervised practice component of entry-level dietitian education programs. Dietitians at any experience level should be knowledgeable in the area of nutrition public policy. The emphasis of most Dietetic Internships (DI) on Medical Nutrition Therapy often overshadows attention on community nutrition experiences. Consequently, questions on the Registration Examination for Dietitians pertaining to public policy processes are frequently answered incorrectly. This study seeks to assess the need for specific training regarding public policy and to examine the effectiveness of such training. An online module entitled Public Policy for the RD was created specifically for this research (<http://nutripolicy.wordpress.com/public-policy-for-the-rd/>). The module was designed to assess participants’ knowledge before and after completing the unit using pre- and post-tests powered by www.SurveyMonkey.com. All participants (n=24) were enrolled in DIs within the state of

Tennessee during their involvement. Interest in future involvement in public policy increased from 2.75/5 to 3.59/5. When asked what a piece of legislation starts as, 29.17% correctly answered “an idea” on the pre-test and 90.91% on the post-test. A basic familiarity with components of the Farm Bill went from 50% to 90.91%. Knowledge of the number of locations a restaurant must have to be covered under menu labeling legislation went from 33.33% to 90.91%. There was a clear increase in interest and understanding on all but one question.

41. Poster – Dietetics (Graduate)

Determining the Basic Process of Starting a Backyard Chicken Flock in the Nashville, Tennessee, area.

Glyna Dickerson and Anne Lowery.

Hen ownership is increasing in popularity across the country, not only in rural settings but also in densely populated urban areas. The rise of interest in backyard poultry is due to several factors including a movement toward getting closer to ones food, environmental concerns, the desire for increased food quality, and creating a family fun hobby. Metro Nashville passed an ordinance on January 18, 2012 allowing most zones in the Metro Nashville area to own backyard hen flocks. Understanding the law pertaining to raising poultry can be tricky and often times difficult to decipher and filter through. Poultry keeping laws vary county-to-county and city-to-city, and can be superseded by individual subdivision restrictions. There are several choices to make once you decide to start a flock. Choosing a chicken breed can be based on several factors including egg size, egg color, and amount of eggs produced, chicken temperament and temperature hardiness of the bird, or based purely on the chicken’s physical appearance. Data was obtained for this self funded project through several mediums including extensive research, personal interviews with chicken owners, and a survey created through www.surveymonkey.com that was sent to Nashville area registered dietitians to access the knowledge and interest regarding urban flocks. The benefits of starting a backyard flock by far exceed the necessary effort; take surprisingly less time, money, and labor than one would envision, and can be a very rewarding process.

42. Poster – Dietetics (Graduate)

Differences and Similarities between the Health Systems in Peru and the United States and Their Implications for Cross-Cultural Education.

Mackenzie Reeser and Anne Lowery.

This self-funded research outlines similarities and differences between the health systems of the United States and the metropolitan city of Lima, Peru. The goal of the research is to learn new ways to collaborate among diverse cultures and within individual cultures in order to share ideas and improve patient care. Information was obtained during two six-day trips to Lima with an Indianapolis-based university professor who travels to Lima annually to teach Peruvian doctors in a healthcare management class. The trips included visits to local private hospitals and discussions and interviews with Peruvian healthcare professionals. The results of the interviews and discussions were the realization that there are similarities to how U.S. facilities provide care

in the public vs. private sector, but significant differences in interdisciplinary team interactions in healthcare centers in Lima than what is typical in the U.S. The Peruvian healthcare providers are much more focused on each individual provider focusing solely on his or her specialty than on working in teams to provide care. Because of the current emphasis on effective interdisciplinary teams in the U.S. healthcare system, it is important to understand multicultural viewpoints on such teams before attempting to apply the method in other cultures. The Indianapolis professor hopes to train the Peruvian doctors to work as a part of interdisciplinary teams at their respective hospitals and care facilities, and these results will be helpful for her training programs as well as those of other educators involved in teaching a multicultural student base.

43. Poster – Dietetics (Graduate)

Grant Writing: Effective Recommendations for Dietetic Professionals.

Brittannie Stanley, Lisa Mathews and Anne Lowery.

There are many reasons companies and/or individuals choose to write a grant. Grants are typically written for additional income to support ideas and projects. However, it's not all about the money. Receiving grant money for a project can lead to critical improvements in the community and the acquirement of new resources to accomplish goals important to the implementation and operation of the proposed project. With billions of dollars allotted each year to fund grants, it's smart to be equipped with the knowledge and tools necessary to tap into this segment of resources. The main objective of this poster is to educate the audience on how to write a successful grant application, one that will grab the attention of the grantor and reap the most benefits for the grantee. The following steps will ensure grant writing success: developing a unique idea, finding mentors/collaborators willing to provide knowledge and guidance, searching for the appropriate grant for the idea proposed, creating a realistic timeline, confirming that the idea and/or project will align with the mission and goals of the funder's organization, and finally, writing a skilled application and proposal. This poster introduces a "mock" organization entitled "Fun Factory: Fresh & Fit," a community-based health and activity center for at-risk youth. The daunting task of obtaining funds and resources to support a program will be addressed by walking the reader through the creation of "Fun Factory: Fresh & Fit," the detailed application process, and the staffing and budgeting processes.

44. Poster – Dietetics (Graduate)

The Influence of the Academy of Nutrition and Dietetic's Kids Eat Right Toolkit on Nutrition Knowledge of Teenage Athletes.

Natalie G. Johnson and Anne Lowery.

The purpose of this study was to assess teenage athletes' baseline nutrition knowledge and determine the influence of the Academy of Nutrition and Dietetics' Kids Eat Right (KER) Healthy Snacking in a Nutshell toolkit on the nutrition knowledge of teenage athletes. Teenage athletes (n=125) from Jackson Christian School in Jackson, TN voluntarily completed an anonymous six question survey before and after a KER Healthy Snacking in a Nutshell nutrition

education workshop to establish baseline nutrition knowledge and to assess whether the workshop increased athletes' nutrition knowledge. Results were analyzed using a dependent *t* test to compare the differences between means of the pre- and post-workshop overall survey scores. The results indicated that the athletes studied had a significantly higher mean score on the survey after the nutrition education workshop than on the pre-workshop survey, (5.8 ± 5.5 vs 3.9 ± 1.2 ; $p < 0.001$). Only 8.8% ($n=11$) of the athletes surveyed answered all questions correctly before the nutrition education workshop, while 53.6% ($n=67$) answered all questions correctly after the workshop. Sixty-seven percent ($n=84$) of the athletes had an increase in nutrition knowledge after the workshop. These findings suggest that teenage athletes are lacking in nutrition knowledge, and the KER Healthy Snacking in a Nutshell toolkit is effective in increasing the athletes' nutrition knowledge. This study emphasizes the need for nutrition professionals to be integrated into the middle and high school setting to improve the nutrition knowledge in teenage athletes.

45. Poster – Dietetics (Graduate)

Use of the Nutrition Care Process by Registered Dietitians in Tennessee.

Gina Heagy, Jessica Chultis and Anne Lowery.

The NCP is a methodology used by RDs to provide a uniform framework when delivering care to clients. The Academy of Nutrition and Dietetics encourages the implementation of the NCP in all areas of dietetics. Current literature addresses better ways to implement the NCP, but is limited in the actual use of the NCP in the field. The purpose of this study is to assess the use of the NCP among Tennessee RDs, assess the need for further education, and identify barriers to its application. Data was collected using a web-based survey created by interns of the Lipscomb University Dietetic Internship. The survey was anonymous and voluntary. The survey questions focused on background information and use of the NCP. Data for individuals were combined and analyzed using frequencies. Of the 36 RDs who completed the survey, 90% aged 20-29 use the NCP. Less than 60%, aged 30 and older, use the NCP. Of the participants, 100% in clinical management, 75% in clinical nutrition, 80% in sports nutrition/wellness, 67% in research/education, 50% in private practice, 25% in foodservice, and 0% in community/public health use the NCP. 89% have received NCP education/training and 71.4% feel they would benefit from additional education/training. Barriers to using the NCP include increased paperwork, absence of electronic medical records, and knowledge deficit. The results reveal that as age increases, NCP use decreases. There is a need for education/training across all disciplines of dietetics. Incorporating the NCP into computerized charting could increase the use of the NCP.

46. Poster – Math

Environmental Hazards of Electric Cars.

Jonathan Midgett and Gary Hall.

The goal of our project was to determine whether or not driving an electric car was more beneficial for the environment than driving a gasoline powered car. Factors that we needed to take into consideration were the amount of the pollutants generated by each power grid in the United States in order to supply the electricity used by electric cars, along with the average amount of pollutants produced through emissions by gasoline powered passenger cars driven in the U.S. By determining the amount of pollutants produced by each power grid, we could then compare the amount of pollutants produced per mile of both electric and gasoline powered cars on U.S. highways in order to determine which type is more environmentally friendly.

47. Poster – Math

Late for Class: A Parking Dilemma.

Erikka McIntyre, Michelle Valentin and Gary Hall.

Ask any student on campus what is one thing they would like to change and an overwhelming response is more parking. It was this that prompted a study to see how much parking was actually available to the Lipscomb community. This study only approaches parking from a capacity standpoint. There is no reference to cost. Parking lots on campus were surveyed to count the number of available spots. This was done once in the morning and once in the afternoon. The data was compared against the total number of spots on campus to determine the average parking capacity at Lipscomb. A capacity level of 90% is considered to be the optimal for parking. The reason a capacity of 90% is standard is to account for inefficiencies, such as a car illegally parked in more than one space. Once the data had been analyzed it was discovered that Lipscomb University operates at a parking capacity of 92% if the overflow lot at the Lipscomb Academy football field is included and 100.6% if the overflow lot is not included. Overall, the amount of parking available to the Lipscomb community is sufficient if the overflow lots are used. However, there are other factors involved in the use of the overflow lots, such as the safety of students walking from the football field lot after the shuttle service has stopped. In order to ensure safe and easily accessible parking for the Lipscomb community, we recommend an additional 600 spaces be added to Lipscomb campus.

48. Poster – Pharmaceutical Sciences

Characterization of HU-331 as a Cannabinoid Quinone Inhibitor of Topoisomerase II.

Kellie Regal and Joe Deweese.

Topoisomerases are essential enzymes that alter DNA topology to enable replication, transcription, and chromosome segregation. Due to the double-stranded DNA cleavage mechanism, topoisomerase II is an effective target for anticancer drugs, such as doxorubicin.

However, doxorubicin causes significant cardiac toxicity and can induce DNA damage resulting in secondary cancers. A cannabinoid-based quinone HU-331 has been identified as a potential anticancer drug that demonstrates more potency in cancerous cells with less off-target toxicity than doxorubicin. Reports indicate that HU-331 does not promote cell death via apoptosis, cell cycle arrest, caspase activation, or DNA strand breaks. Based on previous data, HU-331 has been categorized as a catalytic topoisomerase II inhibitor; however, the mechanism by which this compound works is poorly understood. We propose that HU-331 inhibits topoisomerase function by binding to the ATPase domain of the enzyme. Our results demonstrate that HU-331 inhibits topoisomerase II-mediated DNA relaxation at micromolar levels. These results implicate inhibition of the catalytic activity of topoisomerase, which would ultimately prevent cell division. Our results also demonstrate that HU-331 does not induce DNA strand breaks, decreasing the risk of secondary cancers. When added prior to the DNA substrate, HU-331 inactivates DNA cleavage and relaxation activities of topoisomerase II. Evidence from an ATPase assay demonstrates that HU-331 inhibits ATPase function of topoisomerase. We have thus far concluded that HU-331 impacts the catalytic activity of topoisomerase II by inhibiting the ATPase function. These results provide a promising foundation for the potential of HU-331 as an anticancer drug.

49. Poster – Pharmaceutical Sciences (Graduate)

Generation of Topoisomerase IIa Mutants with Altered Etoposide Sensitivity.

Elizabeth G. Gibson and Joe Deweese.

Topoisomerases are abundant nuclear enzymes that are essential for cell survival. These enzymes regulate DNA topology and remove knots and tangles in the genetic material by employing a double-stranded DNA cleavage mechanism. While the anticancer agent etoposide is highly effective at disrupting topoisomerase II function, etoposide is also metabolized into a catechol and a highly active quinone. To further study the mechanism of the quinone, we are developing topoisomerase IIa mutants with altered sensitivity to etoposide. Based upon published studies, we identified amino acid positions that may influence enzyme response to etoposide. Using a PCR-based mutagenesis process, we mutated Gly462 to Ala, Asp463 to Glu, Arg487 to Lys, Ala429 deletion, Gly534 to Arg, and Pro716 to Leu. Currently we are analyzing the catalytic activities of the mutant enzymes to determine whether the mutations impact etoposide sensitivity. Initial results demonstrate that four mutants are functional (R487K, D463E, DA429, and G534R), one mutant has activity too low to quantify (G462A), and one is currently being analyzed (P716A). In the presence of etoposide, D463E cleaves near wild-type (WT) levels, while DA429, R487K, and G534R respond less. When the ratio of enhancement in the presence of drug (versus no drug) is compared, DA429 has the highest level of enhancement and R487K and G534R have the lowest level. These results suggest that DA429 may be hypersensitive while R487K and G534R may be resistant to etoposide. Enzymes displaying resistance, like R487K and G534R, will be useful in clarifying the mechanism of etoposide quinone.

50. Poster – Pharmaceutical Sciences

Synthesis of 2-Methyl Meperidine Analogs: Studying the SAR of Opioids.

Emily Holder and Susan Mercer.

Opioids are the main drug class used for chronic pain, which provide analgesic and euphoric effects. However, they produce clinical side effects including central tolerance, dependence, respiratory depression, and constipation. Most opioids are substrates for P-glycoprotein (Pgp), an efflux transporter at the blood brain barrier that removes foreign substances from the brain. Meperidine is an exception to this classification because it does not have any Pgp activity. However, meperidine is readily N-demethylated by CYP3A4 forming a toxic metabolite. We hypothesize that introducing steric hindrance to the piperidine ring of meperidine at the 2- and 6-positions will prevent CYP3A4 access to the nitrogen eliminating the formation of normeperidine while maintaining opioid activity and non-Pgp activity. Structure-Activity Relationship studies of meperidine have been previously performed by adding methyl groups at the 3- and 5-positions of the piperidine ring with the reversed ester. The methylated reversed esters still retained opioid activity after these modifications which supports our hypothesis that the sterically hindered meperidine analogs will retain opioid activity. Herein, we focus on the synthesis of the 2-methyl meperidine analog. Beginning with 2-methylpiperidin-4-one, a Grignard reaction will introduce the phenyl and hydroxyl group at the 4-position. An alcohol to nitrile conversion will then be performed using InBr₃ and TMSCN, followed by methylation of the nitrogen. Finally, a nitrile to ester conversion using H₂SO₄ and MeOH introduces the ester at the 4-position resulting in the final 2-methyl meperidine analog. The ideal opioid would retain opioid activity, lack Pgp activity, and not undergo N-demethylation by CYP3A4.

51. Poster – Psychology (Graduate)

The Benefits of Trust in Relation to College Adjustment.

Erin Brosey and Paul Turner.

Throughout the years, numerous studies have been conducted on trust and its components such as trustworthiness and propensity to trust and how it works. Through these studies trust has been found to be linked with positive social aspects, but little research has been conducted on what exactly trust does for us. Knowing so much about trust itself, the question to be asked is, so what good is it? Does trust actually help us in our day-to-day life or, can it be linked to more negative daily consequences? To measure this relationship, I examined the interaction between trust and college adjustment in first semester freshman. The findings supported a relationship between trust and college adjustment as evidenced by a negative correlation between Rotter's Interpersonal Trust Scale and the Perceived Stress Scale, between the Faith in People Scale and Ryff's Scale of Wellbeing, and a positive correlation between Ryff's Scale of Wellbeing and perceived academic standing. Those who trust more and have more faith in people tend to experience less perceived stress and a greater sense of wellbeing respectively. Supportive negative correlations were also found between Rotter's Interpersonal Trust Scale and Rosenberg's Faith in People Scale indicating significant validity for the Faith in People Scale. A significant negative correlation was also found to exist between Ryff's Scale of Wellbeing and

the Perceived Stress Scale and between Ryff's Scale of Wellbeing and perceived academic standing indicating a commonality between the measures used for college adjustment.

52. Poster – Psychology (Graduate)

How Do God and Satan Work: Causal Attributions about Life-Altering Events.

Luyan Zhao and Shanna Ray.

Previous researchers have sought to determine how and why people attribute certain life events to specific. It has been suggested that when making a correlational relationship between an event and a higher power, people tend to attribute positive events to God and negative events to Satan. This particular study aims to gain a better understanding of how and why participants are willing to ascribe negative events to God. To explore these attributions, we conducted a mixed-method study of college students. Instead of just asking if these agents or higher powers played a role in the negative event, as questioned in previous studies, we will explore various understandings of the issue such as whether God or Satan caused, used, allowed, or helped a person cope with the event. We expanded our scope by looking at events that vary in type (physical health, mental health, and bad behavior) and severity (e.g. a skinned knee vs. terminal cancer). An internet based survey containing general questions about their beliefs and a series of vignettes with attribution ratings compose of the quantitative portion of our study. These results were then analyzed for statistical significance and correlational relationships. In addition, we have also asked each participant to provide a brief written statement of a personal experience in which God or Satan influenced the events in their lives. Due to time limitations, the qualitative component of our study will be analyzed at a later time.

53. Poster- School of Computing and Informatics

Applying Natural Language Processing with Naive Bayes Classifier to Classify Tweets.

Calvin Canada and Eddy Borera.

Natural Language Processing has been widely used to extract meaningful information | from human language that appears in phone dialogues, newspaper stories, emails, product manuals, etc... It has been successfully applied in word editors to check and correct spelling errors, in email applications to detect spams, and in spoken dialogue system to translate spoken words into texts and vice versa. In this research, we combine Natural Language Processing with machine learning techniques to classify tweets as either sad, happy, or neutral. The ability to classify tweets could be considered a useful resource for companies and organizations to track reactions of the mass or specific targeted consumers regarding their products or recently published statements. In our work, we designed feature functions for the Natural Language Toolkit framework, written in Python, and applied them to a Naive Bayes Classifier to classify recent tweets retrieved from the Twitterarchivist.com website. Randomly selected training data are fed in to the classifier before testing the overall classification model on randomly sampled test tweets. We analyze the classification accuracy results to determine if further modifications are needed in feature functions.