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SWOSU Research and Scholarly Activity Fair 2015

Jason L. Johnson
Southwestern Oklahoma State University, jason.johnson@swosu.edu

Description

Welcome to the **Twenty-Second SWOSU Research and Scholarly Activity Fair**! On display today are 103 presentations involving 169 student researchers, writers, performers, and artists, and 40 faculty sponsors encompassing scholarly activity from the Departments of: Accounting, Computer Science, and Entrepreneurship; Art, Communication, and Theatre; Biological Sciences; Chemistry and Physics; Education; Engineering Technology; Finance, Management, and Marketing; Language and Literature; Music; Nursing and Allied Health; Pharmaceutical Sciences; Psychology; and Social... **Read More**

The Twenty-Second Annual

SWOSU Research Scholarly Activity Fair

April 14, 2015

Memorial Student Union Ballroom

12:00 - 3:00 p.m.

Twenty-Second Annual
SWOSU Research and Scholarly Activity Fair
Tuesday, April 14, 2015

Welcome to the Twenty-Second SWOSU Research and Scholarly Activity Fair! On display today are 103 presentations involving 169 student researchers, writers, performers, and artists, and 40 faculty sponsors encompassing scholarly activity from the Departments of: Accounting, Computer Science, and Entrepreneurship; Art, Communication, and Theatre; Biological Sciences; Chemistry and Physics; Education; Engineering Technology; Finance, Management, and Marketing; Language and Literature; Music; Nursing and Allied Health; Pharmaceutical Sciences; Psychology; and Social Sciences.

I wish to extend my personal thanks to all who played a part in making this event happen, particularly: President Randy Beutler and Provost James South, for their support of research and scholarly activity at all levels throughout the University; Dr. Yolanda Carr, Director of the Office of Sponsored Programs (OSP), for spearheading the organization of this event, and Diane Fitzsimmons of OSP; Mr. Robert Barnes and his staff for setting up our facilities and providing refreshments; and, finally, the members of the University Research and Scholarly Activity Committee for their dedication and weeks of hard work to make this event a reality.

Most of all, congratulations to all faculty, staff, and administrative sponsors who dedicated significant time and effort toward integrating students into various forms of scholarly activity. Student research is now recognized as an essential ingredient in undergraduate education. It fosters independent, critical, and creative thinking skills, providing the unique opportunity to apply theories accumulated in various classrooms toward problem solving in the real world. And, from the student's perspective, there's the added excitement of potentially being the first to make a discovery, understand a problem, provide a solution, and/or make a creative contribution to the world.

Sincerely,

Dr. Jason Johnson, Chair
University Research and Scholarly Activity Committee

Committee Members

Dr. Randy Barnett	Dr. Faruk Khan	Mr. Ed Klein
Dr. Denise Landrum-Geyer	Mr. Jess Parker	Dr. Richard Tirk
Dr. Muatasem Ubeidat	Dr. Yolanda Carr (ex-officio)	

Poster Presentations

Please Note: The following presentations will begin at 12:30pm within the Student Union. Students on odd numbered panels are asked to be available in front of their posters from 12:30-1:30pm; students on even numbered panels are asked to be available in front of their posters from 1:30-2:30pm.

1. **Designing a Test Stand for Solar Pumps.** Jeremy A Weimer, Cassidy Baker, and Matt Mercer (Mr. Brad Fitzgerald) Department of Engineering Technology

   Our team has spent the last few months working closely with a local Weatherford company to assess their current equipment that they use to test the operation and efficiency of the pumps that they manufacture. Their satisfaction with the accuracy and reliability of the test results has not been very high, and we have been tasked to improve this. After reviewing their current equipment and running it through a series of tests to gauge its operational accuracy we had decided to design a new test stand from scratch for them that operated on a different measuring methodology. Our presentation will take you through the steps of designing the table and stand that everything will mount onto, selecting a flow meter applicable to the unique range of pumps that our customer has, to selecting a computer system that will log, record, and print results for each tested pump. See the unique challenges associated with creating a niche piece of equipment while maintaining a high level of accuracy in test results and striving to keep costs down with the bill of materials.

2. **Team Wind Tunnel: Engineering Technology Department**. Thomas C Hooper, Brady H Lutz, and Matthew S Facklam (Mr. Brad Fitzgerald) Department of Engineering Technology

   We are in the Capstone 2 class and will be displaying on what we have been working on for the Stafford Air & Space Museum. Given the wind tunnel we learned how to setup, operate it, and come up with certain designs for the museum, and will be showing all that we have learned as a group.

3. **Participatory Graphic Design for Cultural Heritage Preservation**. Dr. Siriporn Peters, Department of Art, Communication, and Theatre

   This research focuses on the investigation of the contribution of Participatory graphic design for enabling Native American communities to preserve their knowledge and intangible cultural heritage. This research aimed to generate knowledge for the graphic design field and participant communities. The qualitative research was employed as the research methodology. The participants were the representatives of the Cheyenne and Arapaho tribes of Oklahoma. This research used Participatory Design as a design method and approach. The research is guided by two main research questions. 1) What intangible cultural heritage do Cheyenne and Arapaho tribes want to safeguard? 2) What can the SWOSU graphic designers contribute which aids the Cheyenne and Arapaho tribes in safeguarding their tribal knowledge? The preliminary research findings reveal the following: First, language is the most important intangible cultural heritage that the Cheyenne and Arapaho tribes intend to preserve and safeguard. The Cheyenne and Arapaho tribes pass on their ancestors' knowledge and cultural heritage mainly through oral tradition. Therefore, the native language is the essential vehicle for them to safeguard their ancestors' knowledge and cultural heritage. Secondly, there are few written records because the Cheyenne and Arapaho tribes do not have a writing system. In the past, they had signs and symbols as their records. The elders and knowledge keepers are the ones who know and understand the meaning of the signs and symbols. Currently, there are a few knowledgeable members of these tribes. Even though there are some English translations of written records, they are only syllabic. Some words cannot be translated exactly as the original words. Finally, songs, storytelling, and performing arts are also essential to the intangible cultural heritage of the Cheyenne and Arapaho tribes. Graphic designers can create visual communication and use modern technology to capture and disseminate the knowledge and cultural heritage as VDO, printed and digital books, and motion graphics. The participants and stakeholders also agree that digital graphic design and an online system will be able to help them to collect, preserve, and disseminate their knowledge and cultural heritage effectively. Therefore, my new research intends to continue to collect and create motion graphics and online systems with/for the representatives of the Cheyenne and Arapaho tribes of Oklahoma so that they can continue preserving their ancestors' knowledge and safeguarding their intangible cultural heritage.

4. **Snake, Mouse, and Hawk Fable Example**. Taylor R Brophy (Dr. Kelley Logan) Department of Language and Literature

By writing my own fable I was able to further understand the different elements involved and why they are important, individually and as a whole, to the meaning of the fable. With the use of a poster board, my project is able to illustrate the different components of the fable that I wrote and make the flow more visible to the audience. Not only does my project illustrate the story part of my fable, but it also breaks down the characters, setting, and theme involved. By analyzing my fable in small manageable sections the viewer is able to understand all the aspects of fables in general. My project serves as a sort of experiment into the make up and understand of the genre of fables. My understanding of the genre was broadened as well as my insight into the elements involved by writing my own fable. My project is significant and important to the research community because if serves as a guide for viewers of how to read, understand, and write fables.

5. **Riddle Me This**. Shannon N Eidenshink and Ashley N Comstock (Dr. Kelley Logan) Department of Language and Literature

   "Riddle Me This" is a research project that originated in World Folk Literature class. The purpose of this project was to demonstrate how different demographics can have an effect on a person's ability to understand and solve riddles. We first gathered respondents to interview and asked them demographic questions such as age, region born and raised, schooling background, ethnicity, languages, family and religious background, occupation, and hobbies. The respondents name and gender were also recorded. If hobbies included reading, television, or movies, we asked them to specify the genres that they preferred within the category. After demographics were recorded, we continued by asking the riddles to the respondents. During the interviews, we kept record of how long it took the respondents to form an answer, if they got it right or wrong, and how they reacted to hearing the correct answer if they did not have an answer or a wrong answer. We compiled all of this information to demonstrate how a person's demographics can affect their ability to understand and solve riddles.

6. **Team Kodak: Engineering Technology Department.** Haden G Hedges, Dalseron C Njie, and Chaz L Mattocks (Mr. Brad Fitzgerald) Department of Engineering Technology

   We are in our senior Capstone II class and will be presenting our project design for Kodak. We redesigned a new glue station table for Kodak by using our knowledge from previous classes to create and come up with a finalized design. At the Research fair we are going to present what we have done and show our SolidWorks designs and have a 3D model to show.

7. **Improving Female Retention in STEM**. Ms. Madeline L Baugher[1] and Ms. Cindi R Albrightson[2], Department of Accounting, Computer Science, and Entrepreneurship[1] and Department of Engineering Technology[2]

   Women make up slightly more than one half of US residents, yet their participation in engineering and computer science remains below 30% of enrolled college students and has declined since 2004. Could this be due to gender bias?

8. **Educators: An Examination Of Teachers And Choices Made During The Holocaust**. Sarah l Caffey and Kiley l Brennfoerder (Ms. Patricia Perkins) Department of Education

   How often have we heard on the news or read in the paper about a teacher protecting the children in their care from harm? It may have been a shooting incident, a tornado, or a danger on a field trip. What motives lead an individual to risk his/her own life to help another?
   Teachers are among the first role models for children. During the Holocaust, many teachers betrayed their professional and personal obligations to their students while others chose to help the children in their care. What attitudes and circumstances influenced teachers' actions? What motives and pressures led so many teachers to abandon their students? Why did other teachers make the choice to help?
   Effective teachers are interested in human beings, how they treat each other and why. Developing a better understanding of the hows and whys of human behavior will have an impact on classrooms.

9. **Crisis In Corrections**. Dr. Dan R Brown, Department Of Social Sciences

   This presentation will examine the impact of the "truth in sentencing law" enacted by the state of Oklahoma in 1999. The presentation will analyze the issues caused by the law including prison overcrowding, rioting by prisoners and the unsafe Conditions in Oklahoma prisons.

10. **Civil Forfeiture**. Evan J Edler (Dr. Dan Brown) Department of Social Sciences

    Civil forfeiture is an alarming yet little known practice used by law enforcement. Unlike its counter part, criminal forfeiture, where an item is seized due to its use in a crime, an item that is seized under civil forfeiture doesn't have to be used in a criminal way, in fact, law enforcement can seize something via civil forfeiture without charging the owner of the item in question of a crime. Also, any revenue from this civil forfeiture goes directly into the pocket of law enforcement. I plan on making a presentation outlining what civil forfeiture is, and show examples of it being used in Oklahoma.

11. **Chaos in Capital Punishment**. Mary C Iliff (Dr. Dan Brown) Department of Social Sciences

    This presentation will examine the current controversy in the lethal injection process in the state of Oklahoma. The Oklahoma statutes require drug protocols using three different drugs to complete the execution. The presentation will analyze the increasing difficulty in obtaining these required drugs and the state of Oklahoma's efforts to comply with the 8th Amendment that prohibits cruel and unusual punishments.

12. **Quality Ladder and Firms' Survival**. Dr. Jieun J Chang, Department of Social Sciences

    This paper explores the impact of product quality on firms' survival in the US wireline high-speed Internet market. Economic theory suggests a positive relationship between product quality and market structure. Increased competition in the market leads to higher quality. Internet connection speed is considered as a critical aspect of product quality in consumers' subscriptions to the Internet. The range of connection speeds is significantly wide within a market. In the midst of intense competition, the Internet connection speed has even lowered. To close this gap, this paper focuses on income inequality in a market. In markets with greater income inequality, increased competition may lead firms to lower their product quality. While rival firms compete to serve high-quality of products, lowering product quality can improve firms' survival rates. This paper uses information on the connection speeds of the Internet obtained from the National Telecommunications and Information Administration. Based on US Census Bureau data in 14 US states for the years 2010, 2011, 2012, and 2013, empirical findings of this study can present a wider range of product quality in greater income inequality markets. This result implies a positive relationship between firms' survival rates and quality downgrading.

13. **Corporate Inversion**. Matthew J Mauldin (Dr. Hank Ramsey) Department of Finance, Management, and Marketing

    Corporate Inversion has become a growing problem in corporate America. It involves moving headquarters abroad in order to dodge the United States corporate tax rate. Corporate inversion is a problem because the United States government is missing out on a lot of tax revenue that could be used to lower the national debt. This raises the overall question, "Is corporate inversion unethical"?

14. **CEO Thrives, Market Dives**. Angie M Deviney (Dr. Hank Ramsey) Department of Finance, Management, and Marketing

    How do we know a corporation's main goal is to be what it should be, to maximize shareholders wealth? If a corporation is giving the CEO and executive team outrageous compensation packages, are they truly maximizing shareholders wealth? We might assume that the CEO and executive team's total compensation would be very strongly correlated with the company's stock price. After looking into Hoover's Business Information and logging multiple companies' executive compensations and their stock prices, we've tested the correlation of these items. The outcome demonstrates that our assumptions are not necessarily true. If CEO and executive's compensations are not strongly correlated with stock price do we assume that these compensation packages are not in fair alignment with the rest of the company? Do we assume that CEO's have influence to leverage their pay even when the company is not doing well? Do

we assume that the corporation is not maximizing all shareholders wealth just the executive team's wealth?

15. **The Best Method to Determine Whether Sterile or Clean Technique is Needed While Performing Wound Care.** Kenda D Case, Sara D Elkins, Kassie R Jackson, Morgan C Nance, Paisley Sperle, and Morgan Wermy (Dr. Kathy Wolff) School of Nursing and Allied Health

    Sterile technique is the preferred method for wound care. The Center for Disease Control (2015) estimated that 1.7 million infections and 99,000 associated deaths occur each year due to nosocomial infections in the United States alone. However, some recent studies found that there was no significant difference in the incidence of infection between clean technique and sterile technique. These findings led to the following scholarly activity project question: What is the best method to determine whether sterile or clean technique is needed while performing wound care? Methods included conducting a literature review, a policy and procedure review, and observation of wound care techniques in the clinical setting. Although the literature review did not identify specific, universal guidelines for each method, it suggested that sterile technique should be used in surgical procedures, invasive procedures, immunocompromised patients, and nursing procedures with patients who are at high risk of developing nosocomial infections. A consensus was also noted that nurses should continue to use their judgment in deciding which method to select based on the patient's health status, type of wound, and setting. The policy & procedures and observations of would care techniques were consistent with findings in the literature. Implications for nursing practice, education, and research were provided.

16. **Best Practice: Metered Dose vs. Nebulizer for Treatment of Asthma**. Shelby Bolton, Tashiana Holley, Talesha Kittler, Andrienne Lapewe, Nikole Mingura, D'Lisa Pool, and Sara Robinson (Dr. Kathy Wolff) School of Nursing and Allied Health Sciences

    According to the Centers for Disease Control and Prevention, 3,345 deaths were due to asthma in 2011, many of which were avoidable with proper treatment and care (as cited in "Asthma & Children Fact Sheet," 2014). Some recent studies found that there was no significant difference in the effectiveness of nebulizers vs. metered dose inhaler in the administration of inhaled medications. These findings led to the following scholarly activity project question: What is the best practice for administering inhaled medications: Nebulizer vs. Metered dose? Methods included conducting a literature review, a policy and procedure review, and observation of inhaled medication techniques in the clinical setting. The conclusions derived from the literature review were that metered dose inhalers and nebulizer treatments were equally effective in delivering albuterol. When taking into account other factors, metered dose inhalers are safer, more convenient, and cost effective; however, there is no difference in the effectiveness of medication delivery. A consensus was also noted that nurses should continue to use their judgment in deciding which method to use based on the patient's health status, type of asthma, and setting. The policy & procedures and observations of inhaled medication techniques were consistent with findings in the literature. Implications for nursing practice, education, and research were provided.
    (2014). Asthma & Children Fact Sheet. Retrieved from http://www.lung.org/lung-disease/asthma/resources/facts-and-figures/asthma-children-fact-sheet.html#3

17. **Best Method for Physical Restraint for Children Ages 2-6**. Brianna Clark, Joel Curtis, Aaron Daugherty, Franki DeLuca, Diamon Miller, and Cheyenne Mitchell (Mrs. Angela Gore and Dr. Kathy Wolff) School of Nursing and Allied Health Sciences

    Restraints in medical situations involving pediatric patients are common and have caused controversy due to the many objections following premature application. There are many types of restraints and all should be considered when implementing a plan to restrain a patient. Potential complications that could arise from restraints can include "…health problems such as chronic constipation, incontinence, pressure sores, emotional problems, isolation, and loss of ability to walk or perform other activities" (Atlanta Legal Aid Society, 2011, p. 2). These findings led to the following scholarly activity project question: What is the best method of physical restraint for children ages two to six within a pediatric medical facility? Methods included conducting a literature review, policy and procedure review, and observing restraints in the clinical setting. Although the literature review did not identify the best method to physically restrain a pediatric patient, a consensus noted that physical restraint should be used only as a last resort. After alternatives to restraints such as distraction, imagery, and play therapy have been considered, clinical holding is the first solution that should be proposed. The literature review also noted that clinical holding, a form of restraint, is one of the least intrusive methods and does not cause as much emotional stress as some other restraint methods. Implications for nursing practice, education, and research were provided.

18. **Best Shift Hours for the Health and Safety of the Nurse and Patient**. Erin Fields, Julie Johnston, Tonya Pollman, Kourtney Speece, Corrine Stanley, Rachel Stout, and Venia Trevino (Mrs. Angela Gore and Dr. Kathy Wolff) School of Nursing and Allied Health Sciences

    Twelve hour shifts are the preferred shift of the majority of nurses. There have been concerns about safety risks for nurses and patients during twelve-hour shifts being higher than during eight-hour shifts. These findings led to the following scholarly activity project question: What are the best shift hours for the health and safety of the nurse and patient? Methods included conducting a literature review, and clinical observations on how different shift lengths affect nurses. Although the literature review did not suggest one shift length as being safer, some recent studies found that there is not much difference between twelve and eight hour shifts in nurse fatigue, drowsiness, or difficulty of concentration. Additionally, findings showed that the quality of patient care, care delivery, medication administration, and incident reports are the same for both shifts. The clinical observations were consistent with findings in the literature review. Implications for nursing practice, education, and research were provided.

19. **Soothing Methods for Patients From Birth to Up to Two Years**. Nichole M Brandt, Valerie Chain, Kylee Cradock, Kristi Erwin-Winters, Jennifer Shelburne, Anna Smith, Rachel Taber, and Jordan Wayland (Mrs. Angela Gore and Dr. Kathy Wolff) School of Nursing and Allied Health Sciences

    The significance of providing optimal soothing techniques addresses safety as a priority, followed by improved health and decreased financial burden placed upon the family. When children are admitted to the hospital or just need to see the doctor they experience many different emotions, and each child's reaction is unique. Many young children experience fear, anxiety, stress, and become very upset and inconsolable. The nurse will need to use a technique to help calm the child while providing a safe environment and quality care. Recent research revealed multiple methods that alleviate a distressed child's fears and anxiety while they received medical attention. These findings led to the following scholarly activity project question: Which soothing method is effective in calming patients' birth to one year of age? Methods included conducting a literature review and observation of soothing techniques in the clinical setting. Although the literature review did not identify specific, universal guidelines for each method, it suggested that each soothing method provided equal therapeutic response according to each infant's situation of distress. Methods that were observed included the kangaroo hold method, sucrose sucking method, and the play therapy method. There are many different techniques in calming an infant patient. Since each infant is unique, one method may work for one infant while a different method may calm another. The policy & procedures and observations of soothing methods for infants were consistent with findings in the literature. Implications for nursing practice, education, and research were provided.

20. **The Best Method to Prevent Burnout in the Nursing Profession**. Shaylon Bishop, Jim Enoh, Joshua Hall, Dajona Lewis, Shane Martin, Alicia Richey, and Baylee Sheperd (Dr. Kathy Wolff) School of Nursing and Allied Health Sciences

    Social support is a common technique in preventing burnout in the nursing profession. The effects of burnout need to be taken seriously. The results of overworked and "burnout" nurses can lead to patient abuse, whether that is verbal, physical, or mental. How the nurse is affected also needs to be taken into consideration, as far as home life is concerned. Negative feelings, which contribute to an unsafe work environment, and also personal feelings are detrimental to the workplace. According to Vahey, Aiken, Sloane, Clarke, & Vargas (2004), approximately 1 in 5 hospital nurses report wanting to leave their job within one year and more than 40% have a high score for job-related burnout. These findings led to the following scholarly activity project question: What is the best method to prevent nursing burnout? Methods included conducting a literature review, a policy and procedure review, and observation of potential burnout in the nursing profession in the clinical setting. Although the literature review did not identify one specific, best method to prevent burnout, preventing nursing burnout is accomplished by a multitude of different factors. First and foremost, it must be acknowledged that burnout is indeed a problem. There are numerous solutions to burnout prevention that range from hypnosis to clinical supervision. According to the literature review, it is not only the manager's responsibility to recognize the signs and symptoms of burnout, but the responsibility also falls on the nurse to take precautions to preventing burnout by taking care of themselves and performing self-care activities that contribute to the well-being of the nurse's mental and physical health. A safer and more positive work environment can contribute to decreasing the nurse's level of burnout and is directly correlated to patient care. Implications for nursing practice, education, and research were provided.

21. **Music Therapy Service for K-12 Institutions in Tulsa, Oklahoma: A Proposal.** Jacqueline E Cox (Dr. ChihChen Sophia Lee) Department of Music

    The presentation will summarize the findings concerning how music therapy services may benefit the K-12 educational institutions in Tulsa, Oklahoma. A review of research literature discussing the efficacy of music therapy with children with autism spectrum disorder, attention deficit hyperactivity disorder, emotional-behavioral disorders, second language learners and early intervention will be included. Data associated with school performance, the parental and administrative supports as well as potential funding resources for music therapy services, and music therapy service goals and objectives will be analyzed and compared among various K-12 educational institutions.

22. **How Rhythm Facilitates the Mind of a Child with Autism.** Alexandra G Robison (Dr. ChihChen Sophia Lee) Department of Music

    This presentation will summarize my preliminary findings on how musical rhythm facilitates the learning behaviors, such as memorization, of a child with autism.

23. **The Effect of Early Intervention Music Therapy and Preventing Eating Disorders.** Madison B Steh (Dr. ChihChen Sophia Lee) Department of Music

    This presentation will explore the use of Pre-teen music therapy intervention, which consists of selected music therapy techniques, along with a couple non music therapy techniques, on their effectiveness in promoting positive body image and preventing possible future eating disorders.

24. **Rationale for The Neural Associations of the Brain with Sound and Synesthesia.** Kyle S Chai (Dr. ChihChen Sophia Lee) Department of Music

    This presentation will first introduce synesthesia, going into detail about the conditions brief history, what is known about it, and what people with the condition live with. The different associations the brain makes when introducing numbers or letters on a page can look to the client as being in a color that it is not physically printed, and not only do they see the letter differently, they can feel it, smell it, and hear it. Sounds, like the letters, create different reactions as well, where people can feel the sound, they can see it, and smell it. In this trial, the volunteers will be exposed to different tones, and select a different color to be matched to those tones, in order to see if there is a repeating pattern and if there is, then there is a correlation between the sound and the senses, which is a push to make more standard understandings of the way synesthesia functions.

25. **Rationale for Music Therapy in the Neonatal Intensive Care Unit.** Jacie L Hutcherson (Dr. ChihChen Sophia Lee) Department of Music

    Music therapy in the NICU has been an influence in several different areas. In many cases infants who experienced music therapy also experienced a shorter and faster recovery time. Live music is often used in the NICU. Live music makes a difference and is known to help infants to sleep longer and fall asleep easier. Music therapy is used to alleviate pain and stress but has none of the risk that medications can result in.

26. **The Effects of Caregiver-led Music Therapy Interventions on the Emotional States of Dementia Patients.** Hunter D Stevens (Dr. ChihChen Sophia Lee) Department of Music

    The study will investigate the effectiveness of music therapy intervention led by caregivers on the emotional states of dementia patients they care for. Recruited caregivers will be instructed by the a Board-Certified Music Therapist (MT-BC) and upper-class student music therapist (SMT) on the implementation of music therapy protocol then lead twenty (20) 30-minute one-on-one sessions to the dementia patients under the supervision of MT-BC and SMT. The evaluations by the caregivers on dementia patients' emotional states will be compared with that prior to the music therapy intervention.

27. **The Utilization of Music Technology in Music Therapy.** Richard Lindsey (Dr. ChihChen Sophia Lee) Department of Music

    Music technology has been integrated in music therapy practice in many different forms. Although this technology is available, training is not required in undergraduate education for music therapists. Electronic

music technologies may provide opportunities that traditional acoustic instruments may not be able to. A standardized curriculum involving frequently used technologies in the music therapy setting could prove to be beneficial for client's quality of life in the music therapy setting.

28. **Music Therapy and Schizophrenia**. Josiah T Langley (Dr. ChihChen Sophia Lee) Department of Music

    Schizophrenia is a mental illness that can slowly lead a person to suicide if not helped. It can cause hallucinations, delusions, poor attention span, and emotional apathy. People with this disease often hear voices in their head. Sadly after a while they start to believe the voices are real. Music therapy has been known to keep schizophrenic patients oriented and redirected back to reality. Articles found addressing music therapy and schizophrenia will be discussed along with music therapy treatments that can be useful in treating schizophrenia.

29. **The Effects of Group Creative Arts Music therapy Interventions on College Freshmen Facing Adjustment Difficulties.** Wei-Hsuan V Tu (Dr. ChihChen Sophia Lee) Department of Music

    The presentation will first summarize factors resulted in additional anxieties to college freshmen in such as Social interaction, Academic performance and Relationship, following the details of study, including the recruiting process, interview, treatment, and scales adopted for evaluations in the pre and posttest phase. The implementation of creative arts techniques such as Clay making, drawing and dancing combined with music to address the adjustment difficulties college freshmen face will be explained.

30. **Music Therapy Techniques that Address Anxiety within Eating Disorders.** Brooke A McCullough (Dr. ChihChen Sophia Lee) Department of Music

    Eating disorders have the highest mortality rate within mental health disorders. Information on eating disorders and how anxiety is a part of the disorder are discussed. Case studies over clients with anxiety and clients with eating disorders are presented for more information on techniques used that can be used during Music Therapy interventions to address clientele goals.

31. **Effect of Gender on Perception of Pain in Those Being Bullied**. Christopher J Stevens (Dr. Stephen Burgess) Department of Psychology

    The National Educational Association estimates that every 7 minutes a child is a victim of bullying and 85% of the time there is no student or adult intervention. One factor that may affect whether someone intervenes is the evaluation of the experienced pain during bullying. Perception of pain in others is affected by several psychological, behavioral and contextual factors (Sullivan et al., 2006). The communication model of pain proposes that the sender's (the person thought to be experiencing pain), pain behavior, the receiver's sensitivity to features of the senders' behavior and the receiver's attitudes and beliefs may affect the perception of pain in others (Craig, 1998). In the present study, we explored differences in perceived pain in others between males and females. Participants were 70 primarily Caucasian freshmen college students (mean age = 19.2). Participants completed a series of scenarios designed to portray a variety of bullying types (e.g., cyber, physical, emotional) and severities. The scenarios were extensively piloted to identify those that represented a range of scores on these factors. The scenarios varied by type of bullying (physical or emotional emphasis), gender of person being bullied, and age of the person being bullied. No significant differences in ratings of perceived pain experienced during being bullied based on gender of rater were observed. There were also no significant interactions between gender of rater and the scenario factors examined.

32. **Learning by Doing: Project-Based Introductory Statistics.** Ms. Kristin R. Woods, Department of Psychology

    Problem: Statistical analysis plays a significant role across the sciences and is arguably the most salient point of intersection among diverse disciplines given that scientists constantly communicate information on varied topics through the common language of statistics. Despite its central importance however, the teaching of statistics is limited by numerous challenges that are not easily overcome with traditional pedagogical approaches. While many statistics courses teach the mathematics or application of methodology, few convey the necessary skills of approaching a scientific problem from a statistical perspective. In this way, the "tools" that students are commonly provided, often do not serve them well given real world challenges or convey the same "rich, complicated context, and decision-making issues present in the experience of real application" (Nolan & Temple Lang, 2009). Methods: Using a project-

based approach, the most significant challenges faced by instructors and students can be creatively tackled with FREE learning materials and an innovative teaching model. The learning materials and teaching strategies were designed to be structured enough to allow students to consistently move forward with their research projects, yet broad enough to encourage students to creatively and independently explore their questions by actively driving the decisions involved in inquiry. The resulting curriculum provides training in flexible application of knowledge, opportunities to analyze data in real world contexts, and education about statistical concepts through computing. Results: This poster will describe the course around the six recommendations of the ASA-endorsed Guidelines for Assessment and Instruction in Statistics Education (GAISE), which foster opportunities for project-based work through the emphasis on the use of real world data, active learning, conceptual understanding rather than memorization, and the use of technology. Conclusions: This pedagogical approach empowers introductory statistics students with a passion-driven, project-based curriculum.

33. **How Fatherly Involvement Relates to Teenage Pregnancy and Perception of Sexual Behaviors**. Alexis A Schroeder (Ms. Kristin Woods) Department of Psychology

    Lack of father investment or the absence of the father does relate to how early adolescents start to get involved in sexual activities and how early adolescent pregnancies happen (Mendle, Van Hulle, Brooks-gunn, Emery, Harden, Turkheimer, D'Onofrio, Rodgers, Lahey, 2009). Today, there are around 820,000 teen pregnancies happening each year, with 80 percent of those unintended (Familyfirstaid, 2015). The purpose of this study was to examine the relationship between fatherly involvement and pregnancies in adolescents. The sample was drawn from the first wave of the U.S. National Longitudinal Study of Adolescent Health (AddHealth), which included adolescents in seventh through twelfth grade. Chi-square analyses and bivariate graphs were used to examine the relationship between adolescent pregnancies and time spent with their father. The results suggest that there is a statistically significant relationship between how involved the father is in the female adolescents' life with how adolescents perceive risky sexual behaviors from an early age. In conclusion, those that had an absent father or a less involved father were more likely to engage in risky sexual behaviors and get pregnant at an early age. The findings of this research coincide with the results of previous research, which taken together suggests that female adolescents with a strong relationship with their biological father are less likely to engage in risky sexual behaviors at an early age.

34. **The Association between Religious Practices and Substance Use Among American Adolescents**. Alexandra K Jordan (Ms. Kristin Woods) Department of Psychology

    Individuals who reported that religion was important to them reported little or no use of substances, such as alcohol, tobacco, marijuana, inhalants, tranquilizers, cocaine, crack, ecstasy, and problems with drugs and alcohol (Kliewer & Murelle, 2007). Both religious attendance and the importance of religion to the individual were associated with less marijuana use (Leonard, 2006). Adolescents involved in religious activities, such as youth groups, were more likely to abstain from substance use and other risky health behaviors (Ebstyne & Furrow, 2008). The purpose of this study was to examine the relationship between religious practices (being of a religious affiliation, religious importance, attendance, the attendance of youth activities) and substance use (alcohol, cigarettes, marijuana, and other drugs) in adolescents. The sample was drawn from the first wave of the public access U.S. National Longitudinal Study of Adolescent Health (AddHealth) database, which includes adolescents in seventh through twelfth grade. An In-Home Questionnaire, a self-administered survey, was used to assess the various adolescent factors. The survey contained detailed questions on the frequency, quantity and patterning of each topic. Chi-square and multivariate graphs were used to examine the relationship between adolescent substance use and religion, the importance of religion, attendance of religious services, and the attendance of youth group activities. The results suggest that religion, the importance of religion, and attendance of religious services and youth group activities, were all significantly associated with the adolescents trying cigarettes, the regularity of their smoking, and the number of days the participants drank alcohol in the past 12 months. ANOVA and multivariate graphs were also used, and the results suggest that there is a statistically significant association between the number of days smoked in the past 30 days, number of cigarettes smoked on each day smoked, and lifetime use of marijuana, and religious practices. There was also a statistically significant association between the number of days using chewing tobacco in the past 30 days and importance of religion, frequency of prayer, and how often adolescents attended youth activities. In conclusion, the individuals who reported being of a religious affiliation, religion being important to them, attending religious services, and attending youth group activities were less likely to use substances such as alcohol, cigarettes, marijuana, tobacco, and other drugs. The results of this research coincide with the results of previous research, which together suggests that adolescents who are involved in religious

practices are less likely to use alcohol, cigarettes, marijuana, and other risky substances.

35. **The Association of Adolescent Drinking Behavior with Relationship to Parents**. Rachel M Yarnell (Ms. Kristin Woods) Department of Psychology

    A major public health problem in the U. S. is alcohol use in those under 21 years of age with 24 percent of youth reporting drinking and 15 percent reporting binge drinking (Centers for Disease Control and Prevention, 2014). Engaging in this risky behavior for underage youth resulted in approximately 189,000 emergency room visits in 2010 and over 4,300 annual deaths. Recent research looked at parents who consume alcohol in front of the adolescent and how that could influence the rest of the adolescent's life (Cranford, Zucker, Jeste, Puttler, & Fitzgerald, 2010). Results found that when a parent drinks alcohol in front of the adolescent then in adulthood the adolescent is more likely to use and abuse alcohol. The purpose of this study was to examine how an adolescents' relationship with their parent relates with drinking behaviors. The sample was drawn from the first wave of the U. S. National Longitudinal Study of Adolescent Health (AddHealth), which included adolescents in seventh through twelfth grade. Chi-square, correlation, and ANOVA analyses were used to examine the data. The results suggest that if the parent is present when the adolescent is consuming alcohol then alcohol consumption is lower and lack of parental presence increases amount and frequency of alcohol. Adolescents who partake in this risky behavior tend to be in more trouble with their parents. In conclusion, parental involvement in an adolescents' life is associated with alcohol consumption.

36. **Career Decision Self-Efficacy Assessment: Are scores consistent across two administration formats?** Morgan P Bressman, Aileen Aiello, and Jackie M Bivins (Dr. Jared Edwards) Department of Psychology

    For this study, we examined the relationship between a paper format and a computer (Microsoft Excel) administered format of the Career Decision Scale—Short Form (CDSE-SF) (Betz, Hammond, & Multon, 2005). The CDSE-SF is a 25 item, likert scale instrument that yields 5 subscales and a full scale score. A computer administered format allows for quicker administration, quicker scoring, and less chance of error in the transcription/scoring process. It allows for immediate feedback instead of the delayed feedback from using a paper format of the instrument. We wanted statistical evidence that a computer administered format was equivalent to the paper format.

37. **How Students View Diversity in Their Education: A Qualitative Examination**. Catherine J Schubert, Aileen Aiello, and Maci Glasscock (Dr. Jared Edwards) Department of Psychology

    One of the questions that we have about diversity is how students view it. Educators and administrators value diversity, but how do the students at our institutions view the diversity around them? Being from a small university in a rural area with students from small rural towns, we were especially curious about how our students would respond to open questions about how much diversity they perceived and what value they gave to that diversity in their college experience.
    This research provides insight into how students value and perceive the diversity around them in the university environment. It highlights the different perspectives of those with different cultural identities. One clear limitation is that this study was described as a study on diversity when students were invited to volunteer. The higher than normal rate of non-European American participants may be due to that, and there is a high likelihood that there is a difference between those who chose to participate in this study and those who chose other options.

38. **Values & Career Decidedness: Do extreme expectations equal career indecisiveness?** Jackie M Bivins, Aileen Aiello, Morgan P Bressman, and Maci Glasscock (Dr. Jared Edwards) Department of Psychology

    This study was designed to explore whether those with more extreme values (defined as number of always or never valued work values on the Knowdel work values card sort) had higher levels of indecision regarding their career choice. Decidedness and indecision were measured with the Career Decision Scale (CDS) by Osipow et al. (1976).

39. **Stress Management in Relation to Coping Style**. Gwendolyn E Burgess (Dr. Randy Barnett) Department of Psychology

    The population of juvenile delinquents is exposed to many potential stressors. There are potentially legal,

family, monetary, academic and other stressors present, and therefore having a style of coping that is effective, as well as effective stress management skills are important to the overall psychological health and achievement of the individual. Stress management skills are part of emotional intelligence or the ability to monitor one's own and other's emotions and to use this information to guide interactions and thoughts (Slalovey & Mayer, 1989). In other populations studied, emotional intelligence is associated with lower levels of stress and higher levels of adaptive coping (Austin, et al., 2010). Work with juvenile delinquents has been limited. In the present study, differences in coping styles and anxiety in relation to stress management skills were examined. 100 adolescent juvenile delinquent males (mean = 17.1) in a correctional facility participated. Measures of emotional intelligence (Bar-On EIQ-YV), coping styles (CISS), and anxiety (MASC) were obtained pre and post time in the facility. Somewhat surprisingly, those who differed in poor or adequate stress management skills did not differ significantly in anxiety level or coping style. However, the distribution of coping styles in the sample was overall much different from that seen among typical young adults. We found that overall the juvenile delinquents studied demonstrated high levels of poor coping styles and a high incidence of poor stress management skills. Within the group studied however, the expected relations among coping styles, anxiety and stress management skills were not observed.

40. **The Relationship between Stress, Sexualization, and Salivary Hormones**. Laura A Burleigh, Gwendolyn E Burgess, Patra Kositchaiwat, and Ashley Murray (Dr. Lisa Appeddu[1] and Dr. Melinda Burgess[2]) Department of Pharmaceutical Sciences[1] and Department of Psychology [2]

    The objectives of this study were to investigate the relationship between stress level and salivary hormones after subjects were asked to conduct poses that were either high or low in sexualization and power. This study is part of a larger experiment that followed the published methods of Carney, Cuddy, and Yap (2010) in evaluating cortisol and testosterone levels. Briefly, two sets of salivary samples were collected per subject before and after conducting a physical pose to evaluate whether any change from baseline occurred. A subset of 57 out of the 86 original samples were randomly chosen after stratification by treatment. Samples were stored at -40 degrees Celsius until analyzed in duplicate using Salivary Assay kits (Salimetrics, LLC). Factors that will be reported include: (1) changes in salivary alpha-amylase (as a proposed indirect indicator of adrenergic activity), estrogen, and progesterone levels, if any, (2) relationship of the three previous salivary components with cortisol and testosterone, and (3) their relationship with stress levels as self-reported by subjects. Results obtained from this study will be applied to future research designs which evaluate salivary hormones in test subjects exposed to different stimuli.

41. **Mapping the Invasion: Extent of the Tree of Heaven Population in Weatherford, Oklahoma.** Zach R Godwin, Jay S Stinson, Rachel L Wallace, and Maryanne Dantzler-Kyer (Dr. Lisa Castle) Department of Biological Sciences

    As part of our Terrestrial Ecology course, we complied data collected on the Tree of Heaven (Ailanthus altissima Simaroubaceae) population in Weatherford, Oklahoma near the Southwestern Oklahoma State University campus. The population was monitored in April 2011, October 2011, February 2012, and again in May 2014. Locations where the trees were found, total number at each site, and their location relative to other objects, such as houses and other buildings, were recorded. We mapped the trees within a kilometer of campus. Over 3,000 stems of Trees of Heaven were found, indicating an invasion unhindered by the recent drought.

42. **Five Years in the Life on a *Cyclanthera dissecta* Population**. Allison D Statton (Dr. Lisa Castle) Department of Biological Sciences

    Cyclanthera dissecta (Cucurbutaceae), also referred to as cut-leaf cyclanthera, is a weedy annual vine native to western Oklahoma, USA. A historical lack of interest in this species has lead to it being poorly studied even though it is closely related to known edible and medicinal species such as *Cyclanthera pedata* and some agricultural weeds. We have tracked changes in a population of *Cyclanthera dissecta* near Weatherford, Oklahoma, located in the western part of the state, for five years to determine the baseline population size and the effect of inconsistent weather conditions on this plant. We compare population size, average plant size, average number of fruit per plant, and each plant's geographical location for the five growing seasons. We utilize this information alongside environmental factors, such as droughts and early freezes, to better understand how climate change and human activity may influence plant growth and survival.

43. **Johnsongrass: Terrestrial Invaders**. Alexandra K Jordan, Emily D Morgan, Austin D Beisel, and

Catherine Patron (Dr. Lisa Castle) Department of Biological Sciences

Johnsongrass (*Sorghum halepense*) is an invasive grass that disrupts ecosystems, displaces native vegetation, causes cyanide poisoning in livestock, and prevents tree seedling establishment. An invasive species is defined as an organism that is not native and has negative effects on our economy, our environment, or our health. As preparation for an investigation into the effects of this grass at the SWOSU Deer Creek field site, we researched this species and its effects. Here we report on the economic and ecological impacts of Johnsongrass that has spread in other habitats.

44. **The Effects of Johnsongrass (Sorghum halapense, Poaceae) On Surrounding Vegetation; An Ongoing Investigation.** Humberto H Cervantes, Paage Nicoll, Huxley Owens, and McKenzie Smith (Dr. Lisa Castle) Department of Biological Sciences

    Johnsongrass (Sorghum Halapense, Poaceae) is an invasive grass. It is a problem because it impedes the growth of native vegetation and is difficult to control. As part of our investigation into the effects of Johnsongrass on primary production at the SWOSU Deer Creek field site, we established transects measuring above ground biomass at varying distances from a stand of Johnsongrass. We also measured and mapped the current extent of the population, which has visually expanded over the last five years. These measurements will serve as baseline data for ongoing monitoring of the invasion.

45. **Invasive Characteristics of the Tree of Heaven**. Kristen T Howard and Amber L Rinestine (Dr. Lisa Castle) Department of Biological Sciences

    Tree of Heaven (Ailanthus altisimia Simaroubaceae) is a well-adapted plant that is spreading through Western Oklahoma. Its many adaptations have made it successful in establishing a foothold in the unstable urban environment of Weatherford, OK. Its chemical substances prevent native plants from growing, and it can spread through diverse reproductive processes. As part of our Terrestrial Ecology class, we have compiled information from past students and online databases about the invasive characteristics of Tree of Heaven. We concluded that most of the Trees of Heaven in Weatherford were not intentionally planted, but represent an invasion from the few trees that were intentionally planted.

46. **Pollinators in Urban Environments.** Amber R Rymer (Dr. Lisa Castle) Department of Biological Sciences

    Increasing fragmentation and loss of natural habitat threatens many species of animals, including insects such as butterflies and bees that serve important ecological roles as pollinators. Urban gardens may serve as habitats for many insects. Pollinator use of native and non-native plants has been investigated, but the intended use of gardens by home owners has not. In order to determine how planting choice and pesticide use in gardens affect pollinator biodiversity, three categories of gardens were compared. Gardens were categorized as sprayed ornamental, non-sprayed ornamental, or non-sprayed pollinator specific gardens intended to attract pollinators and as the insects food source. The gardens were sampled at five dates from June through August 2014. Insects and plants from each site were identified and checked for biodiversity between garden types.

47. **Guilty by DNA Fingerprinting**. Paage F Nicoll (Dr. Muatasem Ubeidat) Department of Biological Sciences

    The advances in the forensic science field and in the technology of DNA fingerprinting are making solving cold cases somehow possible. Many crimes have gone unsolved for decades. Furthermore, many people were put in jail for crimes they did not commit based on the circumstantial evidences. With the help of DNA fingerprinting, many of these crimes were solved and criminals were identified and locked behind bars. This technique is being used also for paternity testing. The accuracy of the techniques is extremely high with almost no flaws. In this research, we will summarize the latest advances in this technology and its implications of the justice system in the United States and around the world.

48. **Comparative Analysis of *Dictyostelium discoideum* and *Myxococcus xanthus***. Canisia B Tatah (Dr. Muatasem Ubeidat) Department of Biological Sciences

    Dictyostelium discoideum is a powerful biomedical model organism to study developmental regulation and cellular signaling because of the ease of genetic, biochemical and cell biology approaches. Upon starvation, single-celled amoebae emit cAMP and migrate toward aggregation centers. This gives rise to a

discrete multicellular structure called the "slug". In the migrating slug, the precursors for stalk and spore cells become recognizable and are localized in specific regions. Prestalk cells are located in the anterior 20% of the slug and prespore cells occupy the remainder. *Myxococcus xanthus* is a gram-negative bacterium with a developmental life cycle, social behavior and multicellular morphogenesis that resemble the eukaryotic *Dictyostelium discoideum*. This resemblance between a prokaryotic and a eukaryotic organism can hold key information about the common evolutionary ancestor of these social organisms and probably their relation to other organisms with similar characteristics. In this study, both organisms are being compared in growth and simple physiology to initiate a larger project.

49. **Autophagy Plays an Essential Role In Neuronal Development and Maintenance**. Ashley Powers and Matt Abbott (Dr. Andrea Holgado) Department of Biological Sciences

    For the past decades, scientists noted that many neurodegenerative disorders, such as Alzheimer's, Huntington and Parkinson's Disease are characterized by pathological accumulations of protein aggregates. However, more recently, analyses from brain autopsies and animals models show that the accumulation of toxic protein aggregates come together with a reduced protein recycling machinery. Autophagy, the primary focus of the research summarized herein, involves the removal of cell debris and the recycling of protein aggregates in health and disease. BEC-1, a Caenorhabditis elegans protein conserved from human to yeast, was shown to play an essential in autophagy and recycling of nutrients under starving conditions. Furthermore, recent research suggested that BEC-1 may link recycling of nutrients in nerve cells with growth, differentiation and maintenance of neurons. To test this probable link, we characterized the neuronal structure and function of C. elegans mutants expressing all proteins except BEC-1. Collectively, we found that BEC-1 mutants have developmental and functional defects at the level of motor neurons. Imaging analysis revealed a reduction in the number of motor neuron extensions called commissures. Quantification of motor function demonstrated severely dysfunctional locomotion. Last, results of chemical dose-response assays indicate neuronal synapses have a normal neurotransmission.

50. **Lanthionine Ketimine Is a Neurotrophic Agent that Promotes Axonal Elongation and Autophagy**. Elizabeth Jansing, Ashley Rodriguez, and Lyly Van (Dr. Andrea Holgado) Department of Biological Sciences

    Collapsin response mediator proteins (CRMPs), are cytoskeletal adaptor molecules involved in a variety of normal cellular functions including alteration of cell shape and cell communication. CRMP2s have also been associated with pathological disorders and neurological diseases. For instance, CRMP2 protein collects in cytoskeletal tangles in Alzheimer's disease, which may contribute to neural degeneration in this disorder. In other examples, differences in CRMP2 expression have been documented in some subsets of patients suffering paranoid schizophrenia. Lastly, the anticonvulsive drug lacosamide (VimPat) was found to act by binding to CRMP2, which unmasked the pharmacological importance of CRMP2-binding in epilepsy. Thus, based on these observations, we hypothesize that CRMP2 plays a central role in neuronal connectivity and may represent a critical junction linking neural brain function with neural pathologies. Moreover, we reasoned that if we target CRMP2 therapeutically, we may reverse or slow-down onsets of many neurodegenerative disorders. To this end, we began a study focused on the in vivo effects of lanthionine ketimine (LK), a natural brain metabolite and neurotrophic agent, in C. elegans. Work from our group shows that LK partially rescues CRMP2 hypomorph mutants while activating a recycling mechanism called autophagy. These data provide evidence for in vivo function of LK and reveal new opportunities for therapy development when CRMP2 functionality is compromised.

51. **Determining the Toxic Effects of Silver Nanoparticles Using *C. elegans***. Jake Gregston[1], Abby McKisson[1], and Anthony Sanchez[1] (Dr. Andrea Holgado[1] and Dr. Carey Pope[2]) Department of Biological Sciences at Southwestern Oklahoma State University[1], Oklahoma State University[2]

    Silver nanoparticles are frequently used as an antimicrobial agent in paints, toys, household chemicals and appliances. Even though these particles are the most widely used nanomaterial, controversy surrounds the analysis of their toxicity. To shed some light in this field, we used the model organism C. elegans and study the effects of silver nanoparticles by determining mortality rates. In contrast to some published work, our finding showed that nematodes exposed for 24 h and 48 h to increasing concentrations of silver nanoparticles washed extensively to remove unbound silver did not show increasing mortality when compared to those exposed to citrate (vehicle solution). Moreover, examinations of mortalitiy rates of animals exposed to silver nitrate or to unwashed silver nanoparticles (contaminated with dissolved silver nitrate) suggested that silver ions were the ultimate toxicant. One hundred percent of nematodes died after 48 h exposure to plates inpregnated with 4 ml of silver nitrate

solution or 4 ml of non-washed silver nanoparticles, while little lethality was noted with similar exposures to either citrate or washed nanoparticles. Together, our observations show that C. elegans can be used as an inexpensive in vivo model to test the toxicity of emerging materials. More specifically, these studies of silver nanoparticle point out the importance of avoiding free silver contamination when used in products such as paint, toys, and antimicrobials.

52. **Effects of Sugar Mixtures On Feeding In Fruit Flies**. Maryanne E Dantzler-Kyer and Jessica L Huffman (Dr. Jimena Aracena) Department of Biological Sciences

    Fruit flies, Drosophila melanogaster, show preferences between various types of mono- and disaccharides. Our purpose was to test their ability to discriminate between pairs of sugars while freely foraging on a patch of food. Three different sugars (sucrose, glucose, fructose) were tested in combination pairs. A fructose-glucose mixture was used to determine if the flies preferred sucrose to its monosaccharide components. We also tested the effect of an unacceptable sugar (lactose) on the preference for sucrose. The flies were deprived of food for 20 hours and tested in groups of 50 flies for one hour in a small arena containing one patch of 24 wells of sugar solution. The solutions were dyed red (12 wells) or blue (12 wells), which later were visible through the flies' abdominal walls and allowed for easy scoring of preferences. The flies preferred sucrose to the fructose-glucose mixture. Lactose increased the preference for sucrose. Flies with purple abdomens (having fed on both sugars tested) were more common when both sugar solutions were acceptable, showing that the flies foraged on more than one resource on a patch and that foraging increased in patches consisting of higher quality resources.

53. **The Expression and Purification of the Recombinant Magnetosome Associated Protein Mad2 from *Desulfovibrio magneticus* Strain RS-1 in *Escherichia coli*.** Emily R Kessler and Bradly Burke (Dr. Denis Trubitsyn) Department of Biological Sciences

    A diverse group of prokaryotic organisms known as magnetotactic bacteria produce magnetosomes, crystals of magnetite or greigite surrounded by a lipid membrane. Magnetosomes are organized in chains which allow cells to be oriented by the Earth's magnetic field. Usually, magnetite crystals have either cuboctahedral or elongated (bullet-shaped) morphology. The molecular mechanism responsible for the crystal morphology remains unknown.

    This work is aimed at investigating the role of the Mad2, a protein found to be involved in magnetosome formation in *Desulfovibrio magneticus* strain RS-1. Two expression vectors with 6xHis tags on either C-terminal or N-terminal ends of mad2 gene were synthesized with codon optimization for expression in Escherichia coli BL21. We are working on the transformation of synthesized vectors in host bacterium. Following that, the overexpression, based on the use of a T7 promoter will be performed; results will then be visualized on a gel electrophoresis. Once the optimization of expression is carried out, the Mad2 tagged with histidine residues will be purified using immobilized metal affinity chromatography.

    This work will be advanced by experiments on iron binding assay using radioactive isotope Fe55 and investigating of the effects on crystal morphology during biomineralization in vitro.

54. **Nutrients and Nuisances: Environmental Diet and Its Effect on Female Defense Mechanisms**. Shanna M Simmons (Dr. Rickey Cothran) Department of Biological Sciences

    Sexual conflict is a dispute between the sexes over a behavior, usually associated with reproduction, that has opposite fitness effects in each sex. In nature, environmental factors such as predators, food availability, and competitors are expected to shape an organism's traits including those used to resolve sexual conflict. Females have traits that can counteract the male offense traits in sexual conflict, leading to variation in conflict resolution. In this experiment, the effect of diet on female resistance behavior in Hyalella amphipods will be tested. Pairing duration preference varies between the two sexes in this species; females prefer a shorter pairing duration compared to males. When amphipods pair, the male uses posterior gnathopods to carry the female around pre-copulation, which can last up to six days. Therefore, overall female health could affect her ability to resist pairing, leading to longer pairing duration. To test this hypothesis, females will be isolated and placed on different diet treatments; one group with restricted access to food, one group with full access to poor quality food (packed with more fillers and less nutrient-rich material), and one group exposed to an ample amount of high quality food. After a standardized period on one of the three diets, each female will be mixed with males and mating behaviors will be observed and recorded. I expect females that have access to a poor quality diet will exhibit the least effective defense mechanisms against male attempts at early pairing. I expect the females with

limited access to food will experience a drop in defense mechanisms, but will still show more effective resistance compared to females in the poor quality food treatment. Based on the results obtained from the experiment, the conditions of the environment may be used to predict female defense behavior in nature. Hyalella amphipods are not largely studied as a group, so these studies are providing a basis for future research and discoveries.

55. **The Cost of Courtship: Effects of Male-Male Competition On Harm Experienced By Females In Hyallela Amphipods.** Ashna Dhoonmoon (Dr. Rickey Cothran) Department of Biological Sciences

Sexual conflict is common in nature and arises because males and females have clashing interests over whether, when, how often and for how long to mate. These conflicts often prove to be costly to organisms. One factor affecting intensity of conflicts is male-male competition in the environments. I hypothesize that females are more harassed and thus harmed in populations with male-biased sex ratios. To test this hypothesis, I propose to use freshwater amphipods in the genus Hyallela. In amphipods, there is sexual conflicts over the duration of pairing. Males prefer to pair for a longer period than females. I will set up small populations that will be created from an initial large population, in which all other variables (food quality, water quality, etc...) are kept constant. I will manipulate the percentage of the two sexes are varied in the different populations so that the sex ratio is varied. The sex ratio commonly found in nature (40% male) will be used as a control. Other populations will be either female or male biased. I will use initial (before dampening or increasing conflict) and final fecundity (after manipulating conflict) to measure the harm caused by males during conflicts. As male-male competition increases in the environment (i.e., percentage of males increases), more harm will be caused to females and thus their fecundity is predicted to decrease. From this experiment, it can be found that male-male competition has a direct effect on costs to females associated with sexual conflict in the same environment. This can be taken into consideration when establishing environments in laboratories to promote healthier females and increase offspring production.

56. **Evaluation of the Physicochemical Properties of a Novel Antimalarial Drug Lead, Cyclen Bisquinoline**. Mohammad F Hossain, Anjuli Shrestha, and Apoorva Rudraraju (Dr. M. O. Faruk Khan) Department of Pharmaceutical Sciences

The purpose of this study was to evaluate physicochemical properties of a novel antimalarial drug lead, 4,10-bis (7-chloroquinoline)-1,4,7,10-tetraazacyclododecane (free base; FB) and its hydrochloride salt. Differential scanning calorimeter (DSC) was employed to determine and quantify the energy of phase transition and conformational changes. Equilibrium solubility and stability of both FB and its salt were carried out in different mediums, and samples were analyzed using RP-HPLC. pKa values were calculated by both pH-metric and UV-metric methods. The log P value of the compound was determined by RP-HPLC from the best fit calibration curve of log P vs. log k values of the reference standards. The FB is a white polymorphic crystalline powder; the polymorphs melt at 166, 178, 195, and 234ºC, respectively. The salt is off-white powder that showed a broad endotherm in DSC analysis suggesting it to be amorphous. Both forms were stable in a wide range of conditions (acid, base, water, light and heat) except oxidation. Three pKa values, 5.9, 6.6 and 8.7, were obtained for the compound. It has a log P value of 5.14. The application of standard experimental protocol revealed that the compound has at least four different crystalline polymorphs. It is highly hydrophobic; however, salt formation improved its water solubility by approx. 370-fold. All these properties would be useful in implementing the modern quality by design approaches for further development of the drug lead.

57. **UV-Metric, pH-Metric and RP-HPLC Methods to Evaluate the Multiple pKa Values of a Polyprotic Basic Novel Antimalarial Drug Lead, Cyclen Bisquinoline.** Mohammad F Hossain, Anjuli Shrestha, and Cassandra Obi (Dr. M. O. Faruk Khan) Department of Pharmaceutical Sciences

The purpose of this experiment was to evaluate and compare the pKa values of the poorly water soluble, weakly basic, novel antimalarial drug lead, 4,10-bis (7-chloroquinoline)-1,4,7,10-tetraazacyclododecane (CNBQ). Three separate methods, pH-metric, UV-metric, and reverse phase-high performance liquid chromatography (RP-HPLC), were employed to determine the pKa values between 2.0-12.0 pH range. The acetate and phosphate buffers, in addition to methanol and acetonitrile as co-solvents and potassium chloride to maintain the ionic strength, were used as appropriate. In UV-metric method, the drug substance is dissolved in aqueous media eliminating any interference of a co-solvent for measuring the pKa. Consequently, the pKa values obtained by the UV-metric method are considered accurate, as opposed to potentiometric and RP-HPLC methods that require the use of co-solvents. Thus, through the utilization of UV-metric method three pKa values, 5.9, 6.6, and 8.7, were obtained for CNBQ. These

studies would be useful to determine the pKa values of the related drug leads under development.

58. **Towards the Synthesis of N4O2-Type Metal Complexes of Antimalarial Macrocyclic Polyamine Ligands.** Mohammad F Hossain, Apoorva Rudraraju, Prabhjyot Saluja, and Alina Shrestha (Dr. M. O. Faruk Khan) Department of Pharmaceutical Sciences

    The purpose of this study is to synthesize a series of N4O2-type stable metal complexes of antimalarial macrocyclic polyamine drug leads. The synthetic strategy relies upon the well-defined regioselective synthesis of tetracyclic derivatives of cyclen and related polyamines. First step of the method started with the synthesis of cyclen glyoxal followed by the synthesis of 1,7- dibenzyl-cyclen glyoxlal 1,7-bisquarternary ammonium salt. Hydrolyzing the salt leads to the formation of 1,7-dibenzyl-cylen proceeded by the synthesis of 4,10-bismethylacetyl 1,7-dibenzyl cyclen. Hydrogenolysis was performed on this product to yield 1,7-bismethylacetyl cyclen. This product was further treated with 4,7 dicloroquinoline to obtain the 1,7-bismethylacety l-4,10-bis (dicloroquinoline) cyclen. The N4O2-type metal complexes of the ligand will be synthesized by hydrolyzing this ester product to carboxylate, and then reacting with metals.

59. **Development and Validation of the Stability Indicating Test Method to Determine the Content of Salmeterol Xinafoate and its Organic Impurities in Pharmaceutical Inhaler Dosage Form by RP-HPLC.** Mohammad F Hossain[1] (Dr. M.O. Faruk Khan[1] and Dr. A. S. S. Rouf[2]) Department of Pharmaceutical Sciences at Southwestern Oklahoma State University[1], Department of Pharmaceutical Technology at University of Dhaka[2]

    The purpose of this study was to develop and validate a stability indicating reversed phase HPLC test method to determine the content of drug substance and its organic impurities of Salmeterol Xinafoate (SX) in Inhaler dosage form. Chromatographic separation of SX and its known impurities were successfully achieved on a stainless still column packed with octadecylsilyl silica gel (C18, 250 mm × 4.6 mm, 5 µm) in an gradient separation mode with mobile phase consisting of phosphate buffer (0.15 M KH2PO4 at pH 6.8 ± 0.05) and methanol. Flow rate was maintained at 1.0 mLmin-1 and the effluent was monitored at 278 nm. As per ICH guideline, the method was validated with respect to suitability, specificity, linearity, precision, accuracy, and robustness. Specificity of the method in presence of impurities and degradation products was evaluated by peak purity testing using photodiode array detector (PDA). In order to check the peak purity, samples were kept under different stressed conditions (acidic, basic, oxidative, thermal and light) and were spiked with known impurities. The method was found to be linear (R2<0.99) over the concentration ranges of LOQ to 120% of specification level. The method was also found to be precise and accurate with percentage recovery values between 90.0% to 110.0%, and percentage RSD values less than 10.0% for SX and its all impurities. Test sample solution is found to be stable up to 24 hours at room temperature. Hence, this method can be used to quantify the amount of SX and its impurities in the drug product during product development and routine analysis.

60. **Synthesis, Structural Studies, and Oxidation Catalysis of the Late-First-Row Transition Metal Complexes of a 2-Pyridylmethyl Pendant-Armed Ethylene Cross-Bridged Cyclam**. Donald G Jones and Anthony D Shircliff (Dr. Tim Hubin) Department of Chemistry and Physics

    The first 2-pyridylmethyl pendant armed ethylene cross-bridged cyclam ligand has been synthesized and successfully complexed to Mn2+, Fe2+, Co2+, Ni2+, Cu2+, and Zn2+ cations. X-ray crystal structures were obtained for all six complexes and demonstrate pentadentate binding of the ligand with the requisite cis-V configuration of the cross-bridged cyclam ring in all cases, leaving a potential labile binding site cis to the pyridine donor for interaction of the complex with oxidants and/or substrates. The electronic properties of the complexes were evaluated using solid state magnetic moment determination and acetonitrile solution electronic spectroscopy, which both agree with the crystal structure determination of high spin divalent metal complexes in all cases. Cyclic voltammetry in acetonitrile revealed reversible redox processes in all but the Ni2+ complex, suggesting catalytic reactivity involving electron transfer processes are possible for complexes of this ligand. Kinetic studies of the dissociation of the ligand from the copper(II) complex under strongly acidic conditions and elevated temperatures revealed that the pyridine pendant arm actually destabilizes the complex compared to the parent cross-bridged cyclam complex. Screening for oxidation catalysis using hydrogen peroxide as the terminal oxidant for the most biologically relevant Mn2+, Fe2+, and Cu2+ complexes identified the Mn2+ complex as a potential mild oxidation catalyst worthy of continued development.

61. **New Ethylene Cross-Bridged and Side-Bridged Tetraazamacrocycles Featuring Acid and Amide**

Pendant Arms and Their Transition Metal Complexes for Oxidation Catalysis. Michael J Gorbet, Michael B Allen, and Anthony D Shircliff (Dr. Tim Hubin) Department of Chemistry and Physics

Ethylene cross-bridged cyclam complexes of manganese and iron are mild oxidation catalysts that can react through a diverse range of oxidation mechanisms. We have embarked on a program of modifying the parent ligand by: (1) changing ring size, (2) adding pendant arms, and (3) exploring side-bridged derivatives. In this work, we introduce a series of cross- and side-bridged derivatives with acid and amide pendant arms. Smaller cyclen-based catalysts have shown similar reactivity to the original cyclam catalysts. The pendant arms are intended to modify the electronic properties of the metal complexes, perhaps leading to new and/or different oxidation reactivity. In this case, acid and amide pendant arms can also interact through hydrogen bonds with substrate and/or oxidant molecules, perhaps stabilizing reactive intermediates. Side-bridged derivatives are likely less kinetically stable than the original cross-bridged catalysts, but appear to have modified coordination geometries that may lead to new reactivities and may be stabilized by the additional pendant arm donors. All new ligands have been complexed to manganese, iron, cobalt, nickel, copper, and zinc. The synthesis and characterization of the ligands and the synthesis, electrochemistry, and other characterization of their complexes will be presented.

62. **Transition Metal Complex Dual CXCR4/CCR5 Antagonists**. Dustin J Davilla (Dr. Tim Hubin) Department of Chemistry and Physics

Chemokine receptors, together with their specific natural ligands, play a role in a number of disease states. We propose to systematically synthesize and evaluate potential CXCR4/CCR5 dual antagonists based on our published potent transition metal complex CXCR4 antagonists and the only known dual CXCR4/CCR5 antagonist (whose potency is not desirably high against either receptor). Upon synthesis and chemical characterization, and with the help of collaborators, we will evaluate the antagonism of both CXCR4 and CCR5 in cell lines previously developed for such studies—with the results of these screens feeding back into the iterative redesign of additional dual antagonist complexes. Synthetic routes were developed extending side- and cross-bridged ligand syntheses to include dichloropyridine moieties to impart CCR5 activity on tetraazamacrocycles. Cu, Ni, Co, and Zn, complexes were synthesized. Electrospray mass spectra, UV-Visible spectra, cyclic voltammograms, and proton and carbon NMR spectra were collected to characterize the complexes. The ligand synthesis of the dichloropyridine containing ligands is more synthetically challenging than our typical ethyl cross-bridged ligands. However, single-macrocycle and bis-macrocycle ligands have been made. Complexation with the desired metal ions proceeded as expected. Characterization of the metal complexes is ongoing. While CXCR4/CCR5 dual antagonist tetraazamacrocycles are challenging to produce, once synthesized, metal ion complexation proceeds smoothly following known procedures. The resulting complexes will inform our understanding of the requirements for producing efficient CXCR4/CCR5 dual receptor antagonists.

63. **1,7-Dimethyl-1,4,7,10-tetraazacyclododecane Complexes of Mn, Fe, Co, Ni, Cu, and Zn: Synthesis and Characterization.** Megan A Ayala and Ashlie N Walker (Dr. Tim Hubin) Department of Chemistry and Physics

Tetraazamacrocycles have continued to accelerate in their importance as transition metal ligands for applications as diverse as catalysis, medical imaging, and environmental remediation in part due to their ability to make stable complexes with these metal ions. One important class of tetraazamacrocycles developed over the past two decades has been the ethylene cross-bridged tetraazamacrocycles, which form particularly stable transition metal complexes because of the rigidification of the bicyclic structure produced when bound to the metal ion. Once formed, loss of the ligand from the complex requires some flexibility for a nitrogen donor to dissociate from the metal ion, which is more difficult once the macrocycle is rigidified by the short ethylene crossbridge. However, recent publications have hinted that simple alkylation of two nonadjacent nitrogens of a tetraazamacrocycle may yield similar results in terms of geometric control and kinetic stability as cross-bridging. In order to test this idea, and to provide "control" ligands for direct comparison between cross-bridged tetraazamacrocycles and their unbridged analogues, we have prepared the known unbridged ligand 1,7-dimethy-l1,4,7,10-tetraazacyclododecane and its Mn, Fe, Co, Ni, Cu, and Zn complexes for comparison to previously published ethylene cross-bridged analogue 4,10-dimethyl-1,4,7,10-tetraazabicyclo[5.5.2]tetradecane complexes with the same metal ions. The synthesis and characterization of these complexes and comparisons to their cross-bridged analogues will be presented.

64. **Copper Ligands as a DNA Cleavage Component for use in Artificial Nucleases**. Sequojah O'Neal-Johnson (Dr. Tim Hubin and Dr. Lori Gwyn) Department of Chemistry and Physics

Antibiotic resistant bacteria such as Methicillin (MRSA) and Vancomycin (VRSA) resistant Staph. aureus have proven to be lethal to humans. A possible alternative to developing new antibiotics is to synthesize artificial nucleases to attack the genes of antibiotic resistant bacteria. Nucleases are enzymes that hydrolyze (cleave) phosphodiester bonds in the backbone of nucleic acids. Binding specificity of naturally occurring nucleases ranges from non-specific to very specific. For this project, an engineering approach was used to make modular artificial nucleases with differing DNA specificities and DNA cleavage rates. In general, nucleases have a DNA cleaving and DNA binding domain. Metal-chelates are compounds that have been shown to exhibit some nonspecific DNA cleavage activity. In this study, the DNA cleavage activity of copper containing metal complexes was explored: [Cu(C12H26N4)(H2O)(C2H3O2)](PF6); [Cu(C24H36N4)](PF6)2; [Cu(C22H32N4)](PF6)2; and Cu(C12H28N4)Cl2*H2O. DNA cleavage was measured under varying conditions (incubation time, the aforementioned copper complexes with differing concentrations, and pUC19 DNA concentration). Fe-EDTA, known for its DNA cleavage activity, was used as a control to compare to the four copper complexes. Cleavage with Cu-Bicyclen is inconsistent and at this time would not be considered a good candidate for use in artificial nucleases. The other three metal complexes have shown varying degrees of nuclease activity with Cu-Bn2Cyclen showing the strongest and most consistent nuclease activity. For the Bn2Cyclen complex, cleavage has also been tested in the absence of hydrogen peroxide to explore the mechanism of hydrolysis. Future work will include testing the hydrolysis activity of other metal complexes and designing a specific DNA binding domain (including the use of TAL effectors) aimed at the nuc gene of Staph. aureus (a gene that codes for an infectious protein agent).

65. **Cobalt Chelates as Potential DNA Cleavage Agents for Artificial Nucleases**. Megan Oertel (Dr. Tim Hubin and Dr. Lori Gwyn) Department of Chemistry and Physics

    Methicillin resistant Staphylococcus areus, commonly known as MRSA, is a strain of bacteria that is resistant to most antibiotics. This can pose a problem in the medical community when the antibiotics used to treat often fatal bacterial infections no longer work. One idea to incapacitate this infection is to specifically target sequences in the MRSA genome. To do this, it is possible to design enzymes known as nucleases to specifically target the bonds of the bacteria's DNA backbone. Our approach in engineering this nuclease is to find a molecule that has the ability to hydrolyze the phosphodiester bonds of nucleic acids. Previous research has shown that small molecule metal chelates such as Fe-EDTA catalyze this type of hydrolysis reaction. Metal chelates using Cobalt have been tested as potential nuclease candidates by incubating the metal chelates with pUC19 plasmid DNA at room temperature in a solution of 100μM HEPES with a pH of 7, 100μM ascorbate, and varying concentrations of 3% hydrogen peroxide. Preliminary results indicate that some Cobalt chelates show nuclease activity under these conditions. Further assays will be conducted by varying other conditions to determine a mechanism for the reaction. Future goals include using TAL effectors to target the nuclease to specific DNA sites.

66. **Semi-Quantitative Analysis of Soluble Dyes in Hard Candies**. Louise Esjornson and J. Nyema Elliott (Dr. David Esjornson) Department of Chemistry and Physics

    Dyes and colorants in foods are a popular source for analysis in high school chemistry laboratories. Unfortunately, the extraction of dyes from food is often time-consuming and involves complex procedures beyond the scope of most high school courses. As a result, Quantitative and Semi-quantitative determinations of dyes have been restricted to cases where the dye has not yet been incorporated into the food (e.g. powdered drink mixes), where the dye can be analyzed in situ (e.g. colored sport drinks), or where the high school has access to sophisticated equipment and procedures (e.g. High Pressure Liquid Chromatography). A fast bench top method has been developed for the extraction of water soluble FD&C Dyes from hard shell candies. The method takes less than 40 minutes and uses sodium chloride, water and methanol to solubilize the dyes. Visible Spectroscopy and the Beer-Lambert Law are used to analyze and quantify the dissolved dyes.

67. **Reactions of Metal Dimers with 1,4,8,11-Tetraazacyclotetradecane**. Garet Crispin (Dr. David Esjornson) Department of Chemistry and Physics

    A series of reactions between 1,4,8,11-Tetraazacyclotetradecane (Cyclam) and Metal –Metal bonded dimers were screened in order to determine the optimal conditions for the addition of Cyclam without cleavage of the dimetal unit. Dimetal complexes used included Dimolybdenum tetraacetate, Potassium octachlorodimolybdate(IV,IV) and tetra-n-butyl ammonium octahalodirhenate(III,III). Cyclam did not show sufficient reactivity to overcome low solubility of the dimolybdenum compounds. The more soluble

octahalodirhenate anions tend to react with Cyclam to make products of limited solubility. Characterization of the products with Nuclear Magnetic Resonance and electrospray Mass Spectroscopy, Cyclic Voltametry, and UV-visible spectroscopy indicate some Cylam dirhenium species, and some cyclam-free metal halide salts. The reactions were carried out in a variety of solvents, at a variety of temperatures, and in the presence or absence of Potassium and Thallium(I) hexafluorophosphate.

68. **Role of H57 in Synchronizing Ammonia Transfer within *E. coli* CTP Synthetase**. Matt R Abbott (Dr. Jason L Johnson) Department of Chemistry and Physics

    CTP synthetase (CTPS) hydrolyzes glutamine and shuttles the resultant ammonia through an intermolecular tunnel to the point of incorporation with substrate UTP. The conserved residue H57 is proposed to act as a "swinging gate", coordinating the passage of nascent ammonia with the availability of acceptor-substrate UTP (Biochem. 2004, 43, 6447-63). To assess the potential role of this residue, we used site-directed mutagenesis to engineer H57A, H57N, H57L, and H57F and characterized the kinetics of each protein variant. Glutaminase activities remained largely unaffected by the mutations, whereas kcat/Km values for glutamine-dependent CTP synthesis reactions were decreased by nearly 100-fold. Thus, ammonia tunneling efficiencies were reduced to under 3%, compared to the ability of wild-type enzyme to incorporate 100% of nascent ammonia into the synthesis of CTP. Ammonia tunneling efficiences were unaffected by the V-type allosteric activator GTP. These results suggest that substitutions of the imidazole ring result in nascent ammonia being unproductively released into solvent, consistent with the role of H57 in directing ammonia to the synthetase domain. The synchronizing movement of H57 is hypothesized to result from its H-bonding interaction with substrate UTP; such a mechanism would suggest contributions by H57 to the binding affinity of UTP. However, UTP saturation profiles for all of the variants reveal Km values that are similar to that of wild-type CTPS.

69. **Functionalization of Carbon Fibers for Use in Composites**. Phuong D Bui (Dr. David Martyn) Department of Chemistry and Physics

    Carbon fibers were functionalized with carbonyl and hydroxyl groups using strongly oxidizing reaction conditions. A number of different reaction methods and procedures were explored to determine which would be the most efficient and reproducible. Analysis of the reaction products revealed significant functionalization and the presence of the desired functional groups. The products of these reactions will be incorporated into polymer composites in future studies.

70. **A Scientific Analysis of Release and Regulation of Toxic Chemicals and Their Effects on the Health of People and Nature.** Ashlie N Walker and Maryanne E Dantzler-Kyer (Dr. Sylvia Esjornson) Department of Chemistry and Physics

    According to Sandra Steingraber, an ecologist and the author of Living Downstream: An Ecologist's Personal Investigation of Cancer and the Environment, the health of the environment and the well-being of people are intimately linked. Clean air, water, and healthy soil are all important factors contributing to the condition of our Earth. As part of our Environmental Chemistry course, we have investigated chemicals affecting our water (trichloroethylene), air (chlorofluorocarbons), soil (atrazine), and food (dioxins) by examining scientific evidence provided to support how these four chemicals are linked the pollution of the Earth and cancer. We also investigated how chemical regulation has changed since the use of chemicals like DDT (dichlorodiphenyltrichloroethane), a common pesticide used in the 20th century. Lastly, we consider the possibilities of green chemistry as an alternative to traditional chemical production.

71. **Scientific Analysis of the Harmful Effects of BPA, Where It Is Found, and How Its Effects Can Be Avoided**. Lon D Ford II and Winston L Brown (Dr. Sylvia Esjornson) Department of Chemistry and Physics

    Bisphenol A (BPA) is a chemical that has been used to harden plastics for more than 40 years. The toxicity of BPA was beginning to be analyzed in the late 1980s. In 1988, the Environmental Protection Agency (EPA) set a safety standard, or safe dosage, on the level of BPA exposure to humans. This paper analyzes the history of the evidence beginning in the late 1990s, of several studies that have shown BPA to be an endocrine disruptor that interferes with the production, secretion, transport, action, function and elimination of natural hormones. BPA mimics estrogen in the endocrine system, and can cause harmful effects such as: reproductive disorders, male impotence, heart disease, type 2 diabetes, brain dysfunction, autism, and breast cancer. Researchers have made claims linking BPA exposure in mothers to the fertility of their offspring. It has been found that over 90 percent of people in the United States have

been found to be carrying BPA residues in their bodies. BPA is present in many products including medical devices, compact discs, dental sealants, water bottles, canned food linings, reusable plastic water bottles, and baby bottles. BPA has also been found to interfere with nitrogen fixation at the roots of plants when exposed to soil. Chemicals used to replace BPA, such as bisphenol S (BPS), are suspected to be harmful since they have very similar chemical structures. A few steps for reducing BPA exposure are avoiding use of plastic water bottles/ food containers, avoiding microwave meals, and not eating canned foods. This paper reviews and analyzes claims made by scientists and researchers toward a better understanding of the effects of BPA and the harms it causes to the health of one's self and generations to come and the history of the regulation of the compound.

72. **A Study of the History of Arsenic Standards in Drinking Water in the United States and the Effects of Arsenic on Human Health.** Zeb D Foster and Tony Maxville (Dr. Sylvia Esjornson) Department of Chemistry and Physics

    Does arsenic in drinking water cause health problems? Where does arsenic come from? Why has the water standard on arsenic been lowered and being revised to this day? This paper will analyze the evidence identifying health issues and a history of the standards regulating the arsenic intake from drinking water. Studies have linked long-term exposure to arsenic in drinking water to cancer of the bladder, lungs, kidney, nasal passage, liver, and prostate. Non-cancer effects of ingesting arsenic include cardiovascular, pulmonary, immunological, neurological, and endocrine effects. Arsenic occurs naturally in rocks and soil, water, air, plants and animals. It can be further released into the environment through natural activities such as volcanic action, erosion of rocks, and forest fires, or through human actions. Arsenic is also used in wood preservatives, paints, dyes soaps, and semi-conductors. Agricultural applications, mining and smelting also contribute to arsenic releases in the environment. Higher levels of arsenic tend to be found more in ground water sources than in surface water sources of drinking water such as rivers and lakes. The Environmental Protection Agency (EPA) finalized the current drinking water standard from 50 parts per billion (ppb) in 1975 then to 10 ppb in 2001 to protect Americans against cancer and other health problems. The EPA is now proposing to change the arsenic standard of drinking water to 5 ppb to more adequately protect public health. Why not lower? The main problem with having a standard lower than 5 ppb is the cost of the equipment which will raise water costs for the surrounding communities. The smaller the community, the higher the cost will be per household.

73. **Analysis of The Potentially Toxic Ingredient In Sunscreens, Oxybenzone, and Studies of Its Effects On Humans.** Nicol J Jellison and Walter Esjornson (Dr. Sylvia Esjornson) Department of Chemistry and Physics

    With the expanding knowledge regarding the threat of cancer from UV rays, many voices, such as the US Surgeon General, Centers for Disease Control and Prevention, and even Dr. Oz insist sunscreen helps protect skin from damage by harmful rays and reduces aging lines. They say every day application is best, but could it be poison? Are sunscreen users the only ones at risk? Oxybenzone appears in almost 1,000 other products used every day such as lip balms, lipsticks and facial moisturizers. Oxybenzone, the active ingredient appears on the Toxic Substances Control Act Inventory list. Companies often disguise the chemical through the use of trade names. Over 100 trade names were found. Through information gathered, it was discovered the problem with oxybenzone that makes it so dangerous is that it is absorbed through the skin into the bloodstream. Tests done by agencies such as the CDC, the Environmental Working Group, the European Union, and the National Center for Biotechnology Information that have shown the negative effects of absorption of this compound through skin. Some results from these tests included an increased risk of malignant melanoma, action as estrogen in the body, association with endometriosis, and low birth weight in babies. The National Health and Nutrition Examination Survey found that 97% of Americans they tested had traces of oxybenzone in their urine. The use of sunscreen has been proven to help protect our skin from the suns' harmful rays, but as consumers it is imperative to be conscious of the ingredients and the poisons entering our bodies. This paper analyzes the scientific history of the use and regulation of oxybenzone.

74. **Scientific Analysis of the History of Evidence Relating to the Use and Regulation of Phthalate, a Common Plasticizer, and Analysis of the Risk to Humans from Exposure to Phthalates.** Will R Davis, Cassidy J Baker, and Brandon Wrobbel (Dr. Sylvia Esjornson) Department of Chemistry and Physics

    Phthalates, also known as phthalate esters, are formed from the esterification of phthalic acid and are used as plasticizers. Phthalates were first introduced in the 1920's to replace the volatile substance

camphor. Toxicity of phthalate esters at the time were unknown until 1976 when a pesticide chemical factory exploded and released phthalate chemicals into the atmosphere. Effects on exposed individuals included burn-like lesions on the skin, development of chloracne, and children later born with low sperm counts. Ever since this occurrence, multiple studies of phthalate toxicity in rats have been conducted to further determine whether phthalates indeed pose a significant risk, especially to humans. Center for Drug Evaluation and Research (CDER) have tested certain products to determine whether phthalates are present. The CDER determined that humans are exposed daily to phthalates. Phthalates have been detected in plastic toys for children, plastic coatings for drug products, perfume solvents, nail polish, lubricants, and insect repellants. Epidemiological studies conducted by The Center for Disease Control (CDC), along with the FDA, have confirmed the presence of certain phthalate esters in amniotic fluid, breast milk, urine, and serum. It wasn't until 2005 that scientists made a link between chemicals and changes in humans. It wasn't until 2008 that Congress passed the Consumer Product Safety Improvement Act that banned six types of phthalates with concentrations greater than 0.1%, which is a value commonly found in plastic toys, certain inks, paints, and child care articles. Although phthalates have been detected in humans, it has not yet been determined what length of exposure or what concentration poses a significant risk to our health.

75. **The Effect of Hand Washing Solutions on Bacteria**. Rebecca D Gonzales (Ms. Emily Campbell) Western Technology Center

    Personal hygiene is on everyone's mind now that flu season is here. People take extra precautions like coughing into their arms, keeping their hands to their self, and washing their hands. With that in mind, what people wash their hands with is very important. In this experiment, a simulation was made using Staph. Epidermis, which is typically found on the skin, and grown on mannitol salt agar. Once the bacteria were sufficiently grown, a colony count was conducted, and different types of solution were added to the bacteria to simulate the washing of hands. The different solutions were distilled water, distilled water and soap, surgical scrub and distilled water, and germ-x. The solutions were sprayed over the surface of the bacterial plates, and then the plates were left to sit for a day. Next, the bacterial colonies were counted. The bacteria growth was recorded to see which type of hand washing is the best for killing the bacteria.

76. **The Effects of Toothpaste and Mouthwash on Bacterial Plaque**. Hadleigh M Summers (Ms. Emily Campbell) Western Technology Center

    In this experiment, toothpaste and mouthwash were used to determine which method is more effective in killing bacterial plaque. Twenty subjects were tested in this experiment; ten of the subjects were asked to use only Crest Scope toothpaste and the other ten were asked to use Crest Scope toothpaste plus Scope mouthwash. The upper gum line of each subject was swabbed every day for four days. These samples were collected, streaked on Tryptic Soy Agar, and incubated at 37°C for two days. The colonies were then counted and recorded.

77. **Caffeine and Its Effect on Reaction Time.** Pamela J Cole (Ms. Emily Campbell) Western Technology Center

    In this experiment, the effect of caffeine on reaction time was tested. The experiment had fifteen participants to be tested. Every day for three days, the participants would take a reaction time test before drinking 6 grams of Coca Cola, and a reaction time test 45 minutes after consuming the Coca Cola. After the second reaction test was taken, another 6 grams of Coca Cola was consumed, and a third reaction test was taken after another 45 minutes. Participants took a total of three reaction time tests. All results were analyzed to determine whether or not caffeine had an effect on reaction time.

78. **The Effect of Surface Temperature on Fingerprints**. Alesa J Tovar (Ms. Emily Campbell) Western Technology Center

    This research project was performed to determine how surface temperature affects the quality of fingerprints. In this experiment fingerprints were extracted from aluminum cans at different temperatures. Once removed from the can, it is then analyzed under a magnifying glass to look for any characteristics of clarity.

79. **Scar Reduction: Prescription, Over-the-Counter, or Home Remedies**. Madison B Moore (Ms. Emily Campbell) Western Technology Center

Progress of an individual with three facial scars is tracked for 56 days, or 8 weeks. The goal of this study is to determine which product is most effective at scar reduction in appearance: size, shape, and color. In this study a prescription ointment, an over-the-counter ointment, and a home remedy were used. By determining the method that is most efficient, scar reduction may be improved.

80. **Movie Clips Affect upon Heart Rate**. Colton H Sims (Ms. Emily Campbell) Western Technology Center

    In this experiment, the resting heart rate of participants was examined. The participants were then tested to determine how watching a movie clip would affect the heart rate of each individual. The subjects viewed a romance clip, and then were allowed a 15 minute rest period to return to normal heart rate. Next participants watched a horror clip followed by another 15 minute break. After this, the subjects watched a comedy clip and repeated the 15 minute rest before watching the final movie clip: action. When all tests were complete each participant was given a survey about the types of clips viewed. This was used to identify any additional factors that may have affected the outcome of the experiment.

81. **Auditory Attention in Children**. Katelynn R Adams (Ms. Emily Campbell) Western Technology Center

    This experiment was designed to test the abilities of children to focus on sound. For this, a sound generator program set to an amplitude of 800 and was used to play three different pure tones set at frequencies of 250 Hz, 1000 Hz, and 8000 Hz. One child was tested at a time in a quiet room. Earbuds were used with one ear being tested at a time. The 250 Hz was played first, increasing a decibel at a time until the child could hear it. The same was repeated with the 1000 Hz and 8000 Hz. After the initial test, a playground noise was played while the child repeated the previous tests. The playground noise simulated normal background noise. The averages of both ears were calculated for each trial. The results of the first test served as a control, and the second test found the overall auditory attention. This was done for 66 children ranging from ages 6 to 12.

82. **Range of Motion in Age & Gender**. Sarah L Miller (Ms. Emily Campbell) Western Technology Center

    In this experiment, 100 subjects were studied in order to measure range of motion in the knee joint. There were 5 different age groups—9 to 13, 14 to 16, 17 to 20, 21 to 45, and 46 to 79. In each age group there were 10 males and 10 females. This study was conducted to determine if there is a difference in range of motion based upon age and gender.

83. **How Age and Gender Affect New Year's Resolutions**. Harley K Heard (Ms. Emily Campbell) Western Technology Center

    In this study, 50 individuals were tested to see if age and gender affects the success rate and motivation of New Year's resolution. Several surveys were given, and results were recorded. It was hypothesized that there would be a significant difference in motivation levels and rate of success.

84. **The Effect of Radiation On Plant Cell Growth**. Regan N Loyd (Ms. Emily Campbell) Western Technology Center

    In previous studies, it has been proven that the radiation emitted from cellular devices affects cell growth or cell metabolism in the brain. In this experiment, the radiation emitted from Wi-Fi routers will be tested to determine if it affects cell growth in plants. Over a six week period, four sets of plants were tested under grow lights where they received the same amount of water and lighting. The first group of plants were placed in a dark room with no Wi-Fi routers and the second group of plants were placed in a dark room with three Wi-Fi routers. For each trial, the plants were observed for three weeks. It is hypothesized that the first group of plants in the dark room with no Wi-Fi routers will have more growth than the second group of plants in the room with three Wi-Fi routers.

85. **Overpopulation in Guppies, Rosy Reds, and Goldfish**. Kara K Stout (Ms. Emily Campbell) Western Technology Center

    Overpopulation has a negative effect on fish populations. Lack of necessary resources such as: nutrients, food, and oxygen can limit the size and health of the fish population. In this experiment, guppies, rosy reds, and goldfish were studied in order to determine how overpopulation affects the fish and their environment. For each trial, the fish were separated into three tanks. The first tank contained two fish, the second tank five fish, and the third tank fifteen fish. The results of the experiment showed that

overpopulation has a negative impact on fish population.

86. **How Do Video Games Affect Your Heart?** Tad A Deffenbaugh (Ms. Emily Campbell) Western Technology Center

    Research has shown that video games can have negative effect on behavior, but is it also bad for the heart? This experiment was conducted to determine how different genres of video games affect heart rate. Three genres were tested: horror (The Last of Us), action (Call of Duty: Advanced Warfare), and non-violent (The Sims 3). It was hypothesized that video games involving horror would cause an increase in heart rate and non-violent video games would have no effect on heart rate.

87. **Hearing in Headphone Users vs. Non-headphone Users**. Ariana E Duarte (Ms. Emily Campbell) Western Technology Center

    As technology in listening devices advances, hearing in teens worsens more and more every day. Research has shown that hearing loss in teens could be caused by listening to music on music players at loud volumes for long periods of time. In this experiment, hearing in twenty-five teens that use headphones and twenty-five teens that do not use headphones was tested. The teenagers will take an online hearing test found on audioclilnic.com. After the test is completed, the subjects will listen to music for a minute. “Uptown Funk” by Bruno Mars was used in this experiment. After listening to music, the test was done for both headphone users and non-headphone users. It was hypothesized that non-headphone users would have better hearing than headphone users.

88. **Neuropsychology: The Perception of the Length of Time Amongst Different Age and Gender Groups**. Ryan Yang (Ms. Emily Campbell) Western Technology Center

    In this study, tests were carried out that would determine whether there were variances in time telling accuracy between different age groups and genders. In this experiment, volunteers raised their hands when they thought an interval of time had passed. In the second test, volunteers were asked to guess the duration of time that a song was played. After initial data was recorded, it was analyzed to obtain results.

89. **The Effect of Nitrogen on the Growth Rate of Wheat.** Bradley J Hall (Ms. Emily Campbell) Western Technology Center

    This experiment was designed to determine the effect of nitrogen on the growth rate of wheat. In this experiment there are nine varying samples of soil containing different nitrogen concentrations. There are seven wheat plants planted in each of the nine soil samples. The expected result is that the growth rate of the wheat will increase with each increase in nitrogen concentration. If the data represents the hypothesis, then each increase of the nitrogen level should result in an increase in the growth rate of the wheat.

90. **Retaining Mold: Home Remedies, Household Cleaning Products, & Antibacterial Spray**. Mariah R Courtney (Ms. Emily Campbell) Western Technology Center

    This experiment was conducted in order to determine what best kills mold growth. Research has shown that there are several remedies to deter mold growth. In this experiment, three categories were tested. These categories included: household cleaning products, home remedies, and antibacterial spray. Mold was grown on cornmeal, and then separated into groups. These groups were sprayed daily by the corresponding solutions.

91. **An Introduction to the Cultures of Taiwan.** Shu-Ching Wang (Ms. Tee Kesnan) Department of Language and Literature

    In this digital story-telling, the author will focus on introducing audience members to interesting cultural elements of Taiwan such as Chinese New Year, the lantern festival, and the popular night markets. In addition, the author will also introduce a famous landmark in Taipei.

92. **An Introduction to a Very Special Person.** Maryam Askar Alkhaibari (Ms. Tee Kesnan) Department of Language and Literature

    In this digital story-telling, the author will focus on introducing a very special person in her life to her audience members.

93. **International Students' Struggles: A SWOSU International Student's Narrative.** Madubueze Izuchukwu Chibueze (Ms. Tee Kesnan) Department of Language and Literature

    Using digital story-telling, the author examines the struggles international students face while in the United States and highlights some solutions. It's titled 'International Students Struggles' and talks about problems every international student can relate to.

94. **An Introduction to Mexico.** Ana Laura Gomez (Ms. Tee Kesnan) Department of Language and Literature

    Using infographics, the author will focus on introducing her country, Mexico, to her audience members. The author hopes to answer questions and dispel myths about her culture while giving people an inside look at this country.

95. **A Research Observation/Compare-and Contrast Study on Farmers' Markets in the United States and in Malawi.** Salome Sanga (Ms. Tee Kesnan) Department of Language and Literature

    Using posters, the author will focus on her primary research/observation at a Farmers' Market in Weatherford, OK. The author will also make a compare-and-contrast of the farmer's markets in America and in Malawi.

96. **An Introduction to Sweden.** Stefan Eric Bo Idstam (Ms. Tee Kesnan) Department of Language and Literature

    Using infographics, the author will introduce his country, Sweden, to his audience. He hopes to answer questions and give his audience an inside look at various aspects of this country.

97. **Class Magazine by COMP 11 ESL International Students (Section 1936) Fall, 2014.** Yousuf Haji Alghazali and Ali Ibrahim Alkuabiy (Ms. Tee Kesnan) Department of Language and Literature

    This class magazine, which initially started off as a mini Project-Based Learning (PBL), unexpectedly turned into an interesting compilation of must-read ideas, tips, and "Did you know…?" articles. Headed by a pro-active class leader, twenty-nine COMP 11 international students and a peer tutor from the Writing Center collaborated as a team to work on this SWOSU's very first COMP 11 ESL Class Magazine.

Podium Presentations

Please Note: The following oral presentations will begin at 12:30 PM in the Bonny Boardroom within the Student Union.

98. **Late Effects of Multiple Concussions.** Darolyn L Nyhan, Jessica Rauschenberg, and Michael Aldoferin (Ms. Anne Pate) School of Nursing and Allied Health 12:30 PM

Multiple concussive events can have a cumulative cognitive effect beyond the post-concussion phase. Head trauma, traumatic brain trauma, or concussion, no matter what term we choose to use, evidence is clear that an individuals' cognitive ability can be compromised. Clinical trials and evidence based practices have also shown these effects can go beyond the average 25 month post- concussion phase. We know the frontal lobe is the part of the brain that regulates decision making, problem solving, and control of purposeful behaviors, consciousness, and emotions. The damage to the frontal lobe after a TBI can lead to impairments in cognitive functions, such as executive function, prioritizing task, and switching focus. An individual suffering this late effect may display inappropriate social behavior, difficulty functioning independently, as well as inventiveness in school or work. The NFLs' recent inquiry into the long term effects of multiple concussive events has established a link between multiple concussions and chronic traumatic encephalopathy. Patients diagnosed with CTE were noted to have early onset Alzheimer's disease, frontotemporal dementia, as well as findings in multiple altered mental states. Since CTE can only be diagnosed with an autopsy therefore these patients were unaware of the causes for their degenerative changes in brain function.
In this study, we hope to derive as to whether there is correlation of long-term neurodegenerative consequences and multiple concussions in a younger age population. In doing so it may be possible to aid young adults to seek help with attention deficits, poor memory, and any other neurological impairment caused by TBIs. By finding coping mechanisms and reducing stressors caused by these symptoms, there is a probable chance of decreasing poor outcome this generation faces of acquiring CTE. Individuals displaying signs and symptoms of post-concussion late effect the can improve their cognitive functions with medication, diet and exercise, or alternative non-drug therapies utilizing techniques in neuro plasticity training. In addition, professional testing will be provided by Southwestern Oklahoma State University Health Services faculty, Laura Smith R.N. and Kim Liebscher L.P.C.

Castile, L., Collins, C. L., McIlvain, N. M., & Comstock, R. D. (2012). The epidemiology of new versus recurrent sports concussions among high school athletes, 2005-2010. British Journal Of Sports Medicine, 46(8), 603-610.

Covassin, T., Crutcher, B., Bleecker, A., Heiden, E. O., Dailey, A., & Yang, J. (2014). Postinjury Anxiety and Social Support Among Collegiate Athletes: A Comparison Between Orthopaedic Injuries and Concussions. Journal Of Athletic Training (Allen Press), 49(4), 462-468.

De Beaumont, L., Tremblay, S., Poirier, J., Lassonde, M., & Théoret, H. (2012). Altered bidirectional plasticity and reduced implicit motor learning in concussed athletes. Cerebral Cortex (New York, N.Y.: 1991), 22(1), 112-121. doi:10.1093/cercor/bhr096

McCrory, P., Meeuwisse, W. H., Kutcher, J. S., Jordan, B. D., & Gardner, A. (2013). What is the evidence for chronic concussion-related changes in retired athletes: behavioural, pathological and clinical outcomes?. British Journal Of Sports Medicine, 47(5), 1-5.

New Study Shows Long-Teim Dangers of Severe Concussions. (2009). O&P Business News, 18(7), 48.

99. **Hawkeye: The Embodiment of the Frontier Thesis**. Kaila D Lancaster (Dr. Kevin Collins) Department of Language and Literature 12:50 PM

The general American population seems to latch onto the idea that we are unique in our ways and our inventive and positive mindset. We proudly proclaim that we are a country of clashing cultures and beautiful frontiers, those cultures and frontiers cultivating a unique breed of human: the American. This idea of a unique American breed began its formation long before the United States of America was even a country. This was exhibited in the earliest American literature, but it was formally enunciated only in the 1890s by historian Fredrick Jackson Turner in what has come to be known as the Frontier Thesis.
In James Fenimore Cooper's novel, The Last of the Mohicans, Hawkeye, the novel's protagonist, embodies the notion of the Frontier Thesis: that is, Americans have evolved into a different breed from the rest of humankind due to the presence of the harsh and unforgiving frontier. Hawkeye becomes a symbol

of what American identity is about, i.e., a little bit of the old world mixed in with a dash of the new. Because of this frontier, Hawkeye becomes a hybrid of these two worlds and a literary symbol of American identity.
My analysis indicates that American identity is deeply rooted in the idea of the Frontier Thesis, an idea that proceeded Turner's formal pronouncement by decades and contributes to the uniqueness that we still claim to posses today.

100. **Virtuous Women in Uncle Tom's Cabin**. Taylor R Brophy (Dr. Kevin Collins) Department of Language and Literature 1:10 PM

In Uncle Tom's Cabin, Harriet Beecher Stowe creates an accurate illustration of the gap between whites and blacks in the Pre-Civil War era. However, Stowe's depiction of the equality of men and women is skewed more in favor of the white female characters, who possess the virtues and grace that are favored as Christian values. While Stowe achieves her goal of depicting a society in which one's worth is based mostly on skin color rather than skills of talent, she fails by creating a world in which one gender is more inclined to have stronger moral values than another, thus discrediting her point regarding equality. Stowe, like many others, questions the value of the legend of our diversity and seeks to address issues relating to these differences in her novel; However in her attempt to illustrate the need for equality between whites and blacks, she creates another inequality: The female characters of Uncle Tom's Cabin are depicted as morally superior to their male counter parts.
My analysis of Stowe's depiction of women in Uncle Tom's Cabin illustrates a flaw in human nature and questions the authority of narratives created with purpose of correcting wrongs in society. My paper serves to point out flaws in human nature rather than to prompt change.

101. **Career Preparation: Participating in Faculty Research Projects Helps to Build Undergraduate Students' Résumés**. Khanh B Nguyen (Dr. E. K. Jeong) Department of Art, Communication, and Theatre 1:30 PM

Many college students struggle to find jobs after graduation because they lack the work experience that many companies expect from candidates. Getting even an entry-level professional job requires experience, yet getting experience requires having a job. Because of this, students have no choice but to start building their résumés during their four years of college. One of the most promising ways to gain this work experience as a student involves participating in faculty research projects. During my three years as an art major at Southwestern Oklahoma State University, I have been involved in several research projects undertaken by SWOSU art faculty and in workshops presented by the Art department and the SWOSU Visiting Artist Program. My earliest experiences amounted to little more than observation of the faculty member, but each new experience has permitted me, gradually, to take on greater and greater responsibilities. As a result, not only have I learned about the scholarly discipline of professional artists and improved my skills, but I have also acquired experiences that can make my résumé more appealing to potential employers and/or graduate schools.
I will summarize my experiences and share with other students the potential that participation in faculty research projects has to enhance the résumés of undergraduate students.

102. **Secrets**. Lori R Webb (Dr. Victoria Gaydosik) Department of Language and Literature 1:50 PM

Everyone has secrets. Some children are taught secrets by the people in their life at a young age to protect them. But do secrets protect people, or do they create vulnerability? The short story "Secrets" is an excerpt from a larger work that is centered on the stories of two kids, Jack and Alexa, and their journey of self-discovery, loss, and discovering that nothing is what it seems. At a young age Jack and Alexa's parents decide to marry and force them into a family unit that neither one of them want, but in the end which will prove to be what they needed in order to discover the truth.

103. **SWOSU Art Educators in New Orleans: Form, Function, and the Future.** Nicole Laitran, Cheyanne Floyd, Candice Baker, and Kori Cameron. (Dr. Joana S Hyatt) Department of Art, Communication and Theatre 2:10 PM

SWOSU art education students were granted funds to attend the National Art Education Association Conference in New Orleans. The theme of the conference was The Art of Design: Form, Function, and the Future of Visual Arts Education. The preservice art educators attended interactive workshops and tours that introduced them to the way design informs us about multiple histories and cultures. The SWOSU

students' toured museums, viewed French and Spanish influenced antebellum architecture, and learned about the local burial customs within the culturally and religiously diverse populations of New Orleans. The students also had an opportunity to attend a workshop with designer Tim Gunn from the popular show, Project Runway. The conference informed students about the importance of curriculum design and instructional strategies that integrate art and design with other subject areas. The SWOSU art education students' will share their stories, reflective notes, artwork, and photographs of their time in New Orleans.

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