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Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

01. Business Administration

01. Accounting

01.01.01 Oil and Gas Accounting and Taxation

Richard, Alltizer , Leah Gary

University of Central Oklahoma

ABSTRACT This paper examines accounting and taxation as they relate to the oil and gas industry. The specific focus will be on entities organized as partnerships. Very often the partnership form of doing business is used in the oil and gas industry since it is a convenient means of bringing a large number of widely scattered investors or owners into one joint business undertaking (Internal Revenue Manual 4.41, 2005). Generally Accepted Accounting Procedures (GAAP) allow for two approaches to oil and gas accounting: successful efforts (SE) and full cost (FC). While both of these are discussed in this paper, successful efforts will be discussed in more detail because the majority of the oil and gas produced in the United States comes from companies employing this particular method of accounting. The primary source for the information contained herein is the Internal Revenue Code (IRC). Part 4.41 of the Interna

01.01.02 Hobby or Business

Richard, Alltizer , Gia Madole

University of Central Oklahoma

ABSTRACT Every taxpayer has a different tax situation. Some situations are simple and easy to interpret, while others are complex and can have different interpretations depending on how the situation is viewed. One issue that frequently comes up in this situation is whether an activity an individual is engaged in is a hobby or a business. When an activity is a hobby, the taxpayer can only deduct expenses up to the income generated by the activity. Whereas, when the activity is a business, the taxpayer can deduct all expenses, regardless of activity income for that year. The Tax Court has developed nine guidelines to decide if a taxpayer activity should be classified as a hobby or a business. Most activities will not pass or fail every guideline, so the court will look at the big picture to see if the activity passes or fails the guidelines overall. Taxpayers can learn what the court is looking for by viewing past cases and analyzing why the court ruled that activity as a hobby or a business.

01.01.03 Image Manipulation in the Media: a One Sided Story

Austin, Kendrix

Cameron University

The media today publishes stories many times with their own viewpoints hidden within the message. Often, one would not notice without further research into the topic. Images can be edited and adjusted to show only one side of the story. Image manipulation is not new, though mass upgrades to technology has greatly increased and enhanced this issue. In a recent survey regarding this topic, the majority of people felt very strongly about image manipulation. Should the media be allowed to edit images to any extent? No, this brings about a distorted reality or false perception. Though some felt it was okay to edit the image as long as the main idea or message was still present. How does image editing affect the nation? It is misleading and can bring about negative social expectations. It damages the credibility of the news and media as well as the government. Others took it more personal and felt it destroyed their trust. If you have had a similar experience with the media how did it make you feel? Many felt fooled and wanted to get the word out of what the story is really about. This generation desires authenticity; they desire a sense of genuineness. I believe that the media editing images to carry their own hidden agendas is immoral and should not be allowed. It is all a ploy to meet sales quotas. Personally, I never take any news without doing my own research first.

01.01.04 Fraud and the American Opportunity Tax Credit

Mary, Sheets , Douglas Yost, Thomas Austin

University of Central Oklahoma

Congress has enacted a multitude of tax incentives for students over the years. Some of the incentives that provide the most benefits to student taxpayers are those that take the form of credits. These include the American Opportunity Tax Credit (AOTC) and the Lifetime Learning Credit. Both are used extensively among students. The AOTC, however, is a refundable credit which makes it more susceptible to fraud than the Lifetime Learning Credit or other incentives such as deductions allowed for qualified education expenses. The AOTC allows students to receive credit for amounts paid for qualifying education expenses. This credit is more expansive in terms of qualifying expenses than any other education credit. It also provides for the greatest tax benefit to students in terms of dollar amount. While the credit was enacted to both stimulate the economy by increasing the size of tax refunds people receive and to motivate students to study and complete their degrees more quickly by providing a refundable credit for a limited number of years, it has been widely manipulated due to a lack of clarity in the rules of the credit and due to the fact that the IRS does not verify the information provided by taxpayers relating to requirements and qualifications for the credit.

01.01.05 The Tax Treatment of Dividends

Mary, Sheets , Fnu Ricky, Lynna Ho

University of Central Oklahoma

Dividends are distributions from a corporation's earnings and profits to its shareholders. Corporations may distribute dividends for many reasons. A corporation may want to reward its owners, increase demand for its stocks, show stability, or simply get rid of excess cash. Distributions can take the form of cash, property, or stocks. Prior to 2003, dividend income was mainly taxed at the individual income tax rate. In 2003, the Bush tax cuts lowered qualified dividends tax rates to 15%, same as capital gains tax rates. Corporate shareholders receive some relief through the dividends received deduction. Corporations are subject to double taxation. Double taxation has both positive and negative effects on the economy. Double taxation may arguably hinder America's competitiveness in a global economy. Most other developed countries have lower integrated tax rates on dividends and capital gains on corporate profits. Corporations often come up with creative ways to avoid double taxation. In these situations, if the IRS determines the transaction to be unreasonable, the IRS may reclassify it so that constructive dividend is recognized. There are many ways to legally avoid double taxation. One way is to choose a different form of conducting business entity, such as sole proprietorship, partnership, LLC, or S Corporation. Of course other factors, both nontax and tax, should be considered when determining which type of business entity to form.

01.01.06 Committing Tax Fraud

Mary, Sheets , Leah Tomlin, Sasha Mathura

University of Central Oklahoma

Taxation has been a point of success and demise in the United States. This country's vitality is based on the revenue created by its citizens. Many law-abiding citizens pay taxes, but some prey on those who lack knowledge and are gullible. These civil crimes often come in the form of tax frauds, and create major headaches for our government and citizens. Offshore banking, identity theft, faking W-2 income, and tax evasion claims are just a few areas of fraudulent tax crimes. Some criminals choose to use offshore accounts to hide income and not report earnings to the IRS. The IRS has taken steps to work with offshore banks and allow voluntary disclosure of past habits of hiding income. Thieves will steal personal information to purchase good or prepare fake returns to take any refunds owed from the IRS. Some criminals create false W-2 statements, and try to obtain large refunds. These refunds can amount up to \$5000 in some cases. Often tax preparers catch those attempting to commit W-2 fraud through the client interview. Lastly, there is tax evasion, a crime committed by people who do not want to report all of their income. The IRS is working with the Obama administration to narrow the widening tax gap. These frauds indicate the lack of trust that taxpayers have in the tax system. Currently, the IRS is working to build trust in our tax system, this would ultimately ease the minds of honest taxpayers, and put fear into future criminals.

01.01.07 Nonresident Aliens vs Citizen Taxpayers

Mary, Sheets , Di Lin, Roger Malin

University of Central Oklahoma

The US has typically been known for being a place of opportunity and prosperity. It leads the world in computer technology, medical technology, finance, higher education and many other fields. The US typically has a better business environment than Europe and other top countries, and has the largest market in the world. People come to the US for the freedoms offered, for the affordable housing, jobs offered and even education. The people who come to the states for business and education and are still citizens of their home countries are considered nonresident aliens. Nonresident students seek the degrees offered by the US over their own countries because most colleges within the US are recognized higher than the colleges within their own countries. Upon gaining a degree from within the US, a graduate may have better opportunities for employment from their home country. Businesses find that the market in the US is rich with opportunities and can decide to open from within hoping to capture some of the vast market while continuing to live in their homeland. Nonresident aliens can obtain many different types of visas which are defined by their purpose of travel. For tax purposes resident aliens are taxed the same as US citizens but nonresident aliens are taxed according to the special withholding rules that apply to nonresidents.

01.01.08 Value Added Tax

Mary, Sheets , Allan Eastham, Rachel Koester, Ryan Thomas

University of Central Oklahoma

Since the economic recession of 2008, U.S. politician and bureaucrats have been searching for a new source of revenue to tackle the rising deficit. One solution would be the implementation of a value added tax. From its inception following World War I to today, countries around the world have successfully adopted some form of a value added tax system to generate revenues. As with any tax system there are pros and cons, as well as political implications with using a value added tax. Countries with a value added tax have found that the pros far out way the cons of the tax. In the United States, political partisanship is a major hindrance to proposing a value added tax. The U.S. would be wise to adopt a form of the value added tax.

01.01.09 Tax Refund Fraud in the United States

Mary, Sheets , Austin Foust, Kathy Tholen

University of Central Oklahoma

Tax fraud is defined by the Internal Revenue Service Manual 25.1.1 as “an intentional wrongdoing on the part of a taxpayer, with the specific purpose of evading a tax known or believed to be owing.”. The manual states that in order to be considered tax fraud two requirements must be met. First, a tax must be due and owed and second the taxpayer must possess fraudulent intent. Identity-theft tax refund fraud, a type of tax fraud, does not meet the first requirement although the perpetrator definitely has fraudulent intent. This type of fraud occurs when a thief files a false claim for a refund using a stolen Social Security number. As shown in Figure 1 (top) the number of refund fraud investigations initiated by the IRS for the fiscal year of 2013 as of January is more than double that for the entire fiscal year of 2010. Accordingly, the number of the criminals sentenced for refund fraud also doubled for fiscal year 2013 from the fiscal year 2010. IRS Acting Commissioner Steven Miller commented on behalf of the IRS stating “we have aggressively stepped up our effort to pursue and prevent refund fraud and identity theft, and we will continue to intensely focus on this area...this is part of a much wider effort underway for the 2013 tax season to stop fraud.”

01.01.10 Researching the Codification

Charles, Gray

University of Central Oklahoma

It may be desirable for accounting educators to incorporate more research exercises into their curriculums. Financial Accounting Statement No 168 established the Codification as the source of authoritative GAAP recognized by the Financial Accounting Standards Board (FASB) to be applied by nongovernmental entities. Rules and interpretive releases issued by the Securities and Exchange Commission (SEC) related to financial reporting requirements of publicly held companies are also included in the Codification. One effective method for accounting instructors is to incorporate case studies which require researching the Codification to determine the proper accounting treatment. A short video presentation describing the methods to research the codification can be found at <http://www.screencast.com/t/K8gruSHTv>.

01.01.11 Does the Use of Program Accounting Affect the Market Capitalization of Companies in the Aerospace Industry?

Edward, Walker , Charles Gray

University of Central Oklahoma

Program accounting is a method of accounting for costs of certain products manufactured for delivery under production-type contracts. Under this method, costs are accumulated and accounted for by programs rather than by individual units or individual contracts. A program consists of the estimated number of units of a product to be produced by an entity in a continuing, long-term production effort for delivery under existing and anticipated contracts. The program is used as the accounting cost center for accumulating costs and allocating costs to cost of goods sold. The Boeing Company uses program accounting which is allowed under U.S. Generally Accepted Accounting Principles, while its major competitor, the European Aeronautic and Space Company EADS N.V follows International Financial Reporting Standards, which does not allow program accounting. This research will investigate, the impact, if any, on the market capitalization of the reporting method used to record the cost of goods sold in the commercial aircraft manufacturing industry.

01.01.12 The Natural Gas Industry

Edward, Walker

University of Central Oklahoma

When the average person thinks about natural gas and the natural gas industry, they do not think of an extremely dynamic marketplace where the commodities produced from natural gas production are traded and sold like stocks. They do not think of multi-billion dollar construction projects to build the infrastructure necessary to support and grow Fortune 500 companies that are at the forefront of this natural gas industry revolution. All of these aforementioned facts however are true. Deregulation efforts, onset by federal and state regulators over the past 20 to 30 years, have caused the delivered cost to residential customers to fall by 32% and for industrial customers by 57%. With these deregulation efforts, the new developments within the computer industry for real-time measurement, and the innovative new ways to gather and process commodities, this industry is rapidly evolving into a leader in the global economy.

01.01.13 Bridging the Gap Between Theory and Practice: How to Make the AIS Course Relevant

Edward, Walker , Katherene Terrell, Robert Terrell

University of Central Oklahoma

There are several viewpoints regarding what content should be included in the AIS curriculum. Because of the complexity of the course topics and time constraints, professors must choose carefully which topics to cover. In addition to the theoretical content common to all AIS courses, some professors include a relational database project, while others incorporate an accounting software package or an analysis of an organization's accounting information system. Ideally, the topics covered should match the needs of prospective employers. In this study we present the pros and cons of each approach; additionally, we present an analysis of AIS curriculum from several universities to determine if there is a relationship between the characteristics of the university's accounting program and the focus of the AIS curriculum

01.01.14 The Migration And Academic Tenure Of Marketing Phds: A Review Of 11 Years Of The “Who Went Where” Report

Trevor, Sutton

East Central University

This research paper examines over 1,000 marketing PhDs in the United States from 2003 to 2013 based on the “Who Went Where” report given by the American Marketing Association. The goal is to discover possible trends in the movement of professors from their doctoral university to their hiring university. One of the focal topics in the research will be the relationship between the university that granted degrees to doctoral students and the university that hired the respective doctoral students. The paper will provide statistical data on the PhD faculty that remained at their degree-granting universities along with data on the PhD faculty that have transferred to other universities or jobs. Other areas that will be covered in this research include promotions, tenures, titles, and salaries of PhD marketing faculty.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

01. Business Administration

02. Business

01.02.01 Maturity, Gender and Their Influence on Ethical Orientations of Future Business Managers

Marty, Ludlum , Justin Teeman, Sergey Moskalionov, Vijay Ramachandran

University of Central Oklahoma

This study examined American business students to see the influence of maturity and gender on ethical views. The survey was conducted in the fall of 2004 (n=800). This study examined ethical views of students who are preparing to be the next generation of business managers. The findings indicated several maturity factors (age, employment, marriage, having children) and gender showed significant results in their understanding and their views on the ethics scandals. The details were discussed. The limitations of the study were noted. Finally, implications for further research in this area were noted.

01.02.02 Job satisfaction and media image for workers in the Texas funeral industry: A preliminary investigation

Laura, Alsobrook , Marty Ludlum

University of Central Oklahoma

The funeral industry is hidden from most Americans and in academic research literature. This was a preliminary investigation into the workers in the Texas funeral industry. We also searched for different viewpoints on media image and job satisfaction issues. The report also highlights areas for future research on this unique industry.

01.02.03 Northeastern State University Undergraduate Student Health Care Perceptions

Teresa, Barnes , Shae Foutch

Northeastern State University

This project explores the relationship of undergraduate degrees and undergraduate perceptions of the American health care system. The possible relationships between undergraduate demographics and undergraduate health care perceptions are also explored. While the objective of this study is to examine any relationship that might exist between degrees and perceptions, the purpose is to identify which characteristics of Northeastern State University undergraduate students affect and possibly predict the students' opinions and perceptions of health care as a right or privilege for American citizens and how health care cost, quality, and access should be treated in regards to income. All undergraduate students at Northeastern State University were invited to participate in the survey via email; 796 students completed the survey. The survey consisted of 10 demographic questions (including degrees), 12 research questions asking about government involvement in health care and if income should affect whether care should be a right or a privilege, and a comment section to allow for qualitative data collection.

01.02.04 Current Status of sustainability Reporting

Julia, Kwok , Elizabeth Rabe, Mai Anh Vu Tran, Mitch Ricketts

Northeastern State University

In developing nations, production workers face long work hours and a lack of protection from workplace hazards (Concha-Barrientos, et al., 2004). According to Hamalainen (2009), recent occupational health improvements in industrialized countries may be due in part to the outsourcing of hazardous production activities to developing nations. Evidence also indicates that the rate of work-related injuries is increasing in developing countries while decreasing in industrialized nations (Hamalainen, et al., 2007). In addition, shifts to offshore operations may have caused the intensified carbon level in developed countries (Mattoo, et al., 2009). The outsourcing of hazardous operations may be a component of decisions to migrate social and environmental damages away from the parent companies thus removing the results of the damages from the sustainability reporting of the parent companies. The continuing damages will persist as a negative health and welfare effect on the global society. Currently, due to the limitation of sustainability reporting, the true global damages are difficult to account for. This literature review examines the extent to which the current databases can be used to analyze the true sustainability impact of internationalization. The study of current reporting practices may lead to more complete data for decisions affecting global policies. Improvement of sustainability reporting may help to promote welfare of the workers, public and the environment.

01.02.05 Compiling a Comprehensive Database of Oklahoma-Based Start-ups

Joshua, King

University of Central Oklahoma

This project is aimed at compiling a comprehensive database of Oklahoma-Based Start-ups. I used a database from the Oklahoma Secretary of State as a starting point to contact Oklahoma businesses in order to administer a survey. With this survey I've begun to compile a database that can be used as a platform for a larger project called the Panel Study of Entrepreneurial Development. There were two stages in compiling the database. The first stage in developing the database was to develop a questionnaire with the help of my faculty sponsor and the guidance of another similar study by the University of Michigan. The second stage was to administer the survey to as many Oklahoma businesses as possible. With the contact information received from the Oklahoma Secretary of State I have begun this process, and will administer the survey through an online platform called SurveyMonkey beginning in March.

Abstracts from the 2014 Oklahoma Research Day

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01. Business Administration

03. Economics

01.03.02 Merger and Acquisition Activities in the U.S. Oil and Gas Industry

Michael, Wright , Kuang-Chung Hsu, Zhen Zuh

University of Central Oklahoma

Within the last decade, the U.S. oil and gas industry has piqued the interest of both domestic and foreign investors alike, offering a relatively high rate of return. This became especially true as the industry has experienced increasingly more financialization in recent years. In addition to the increased financialization of the oil and gas markets, the increased economic growth in the Asian economies has affected the supply and demand forces, which have been largely responsible for the rising oil and gas prices. However, these global forces have not impacted the oil and gas markets uniformly, as U.S. oil is a commodity of the global market, and U.S. natural gas is almost entirely produced and consumed domestically. In a world of highly integrated financial markets, we would expect some degree of investment to be driven by international financial flows in the U.S. oil and gas industry, however there appears to be more to the trend than just the infusion of foreign capital. In our study, we examine merger and acquisition transactions in the U.S. oil and gas industry between the years 2006-2013 in order to gain some insight as to the other factors that have been driving the trend of M&A activity in general, as well as the trend of foreign direct investment in the U.S. oil and gas industry.

01.03.03 Is the Stock Market Sticker Shocked? A Study of Market Response to Recent CAFE Regulations in the U.S.

Michael, Wright , Mariya Burdina, Zhen Zuh

University of Central Oklahoma

The Corporate Average Fuel Efficiency (CAFE) standards have been used for decades as a means to reduce oil consumption by standardizing a minimum fuel efficiency for new passenger cars and light-duty trucks. The Obama Administration has been a big proponent for the use of CAFE policy to attain these results and to decrease carbon emissions and oil consumption. In 2010, the Obama Administration began to write a third piece of legislation to increase the CAFE standards. In August of 2012, legislation was passed to incrementally increase the CAFE standards to an unprecedented level of 54.5 miles per gallon for vehicles produced between the years 2017 – 2025. If automakers fail to comply with the new standards, they will incur penalties. This increase in the CAFE standards has led to the speculation of rising vehicle prices, the uncertainty of automakers' ability to comply, and the effect that the new standards will have on the automakers' profitability. Using event-study methodology, this study analyzes the market returns of eight domestic and international auto manufacturers as a means to measure the market's reaction to the increase in the CAFE standards and the events leading up to its final legislation. Together these eight automakers comprise nearly ninety percent of the U.S. auto industry. Our results suggest that the market reacted neither negatively nor positively to the announcement of the new CAFE standards. To our knowledge this is the

01.03.04 The Net Effect of Access to Education on Economic Growth

Mihai, Nica , Susanne Rassouli-Currier

University of Central Oklahoma

One of the most important issues facing policy makers is that of stimulating economic growth. This growth can occur both in the form of new business creation as well as growth of existing firms. As such, many researchers have focused on the identification of factors, both macroeconomic and microeconomic, that lead to economic growth. While necessitating short-term sacrifice, economic growth is generally accompanied by job creation and in the long-run, should lead to community development, increased tax revenues, higher living standards and economic stability etc. Ideally, access to education by both owners and employees will lead to an increase in entrepreneurial activity. However, this increase in entrepreneurial activity may lead to intense competition for resources and thus an ambiguous net effect on the economic growth. The maintained hypothesis in this paper is that, while education may improve innovation, create new firms and enhance productivity for existing firms, the possible increase in entrepreneurial activities and intense competition for resources may have a negative effect on the growth rate resulting in a constant rate of growth at best. Assuming a competitive economy, the rate of growth may perhaps be negative in the long run. To investigate this hypothesis, the authors use the data from the World Bank's Enterprise Surveys with an appropriate estimation method to adequately capture the said net effect (<http://www.enterprisesurveys.org/>).

01.03.05 Performance Under Pressure on the PGA Tour

Neil, Metz , Chris Stiles, Michael Yost

University of Central Oklahoma

Worker pay is often based on performance. Employers may design a pay structure which gives out large rewards for the very best performance in an effort to elicit maximum effort from the workers. However, experimental evidence suggests large rewards may create psychological pressure which instead leads to under-performance. Previous studies have tested this 'choking' phenomenon using the world of sports, but such studies often lack a direct link between performance and reward. This study uses PGA TOUR putting and tournament earnings data from 2012 to more directly analyze the effect of pressure on performance. A player's earnings are based on his standing in a tournament, and so putting on the final hole of a tournament is the player's last opportunity to impact his earnings. This situation can create enormous monetary pressure for the player. This study utilizes the potential change in earnings from a made putt on the final hole of a tournament as a measurement for the amount of pressure a player faces. Variation in the potential earnings from a made putt are used to determine if the pressure associated with a large reward leads to under-performance.

01.03.06 Competitive Balance: Championship Future Wagering Market in the NFL and NBA

Steven, McEwen , Neil Metz

University of Central Oklahoma

There are several metrics used by researchers to measure competitive balance in sports. Most commonly, these measures examine variation in wins or championships. This study uses the futures wagering market for a championship to measure competitive balance in the NFL and NBA. The futures market provides an opportunity to measure competitive balance in two new and interesting ways. First, initial futures odds (before the season has started) give a measure of the expected outcome for an entire season. In a perfectly balanced league all teams would have an equal chance of winning the championship (i.e. 32 teams in NFL, with equal chances of 3.125%). Using futures odds, one can measure how far initial expectations are from this competitive ideal. Second, futures odds change throughout a season as they factor in prior outcomes. Tracking the way in which futures odds change over time measures the predictability of a season. Leagues in which each team has little variation in their championship odds over the course of the regular season have predictable seasons. And a more predictable season most likely leads to lower fan interest. The uncertainty of sports outcomes is a large component of fan interest, and up to this point the literature has used betting markets to examine uncertainty for individual games (Bowman et. al. 2012). This study proposes a way to measure uncertainty in the outcome for a team's season, which likely plays an equally important role in fan interest.

01.03.07 State Incentive Programs and Their Effect on Wind Energy Expansion

Christopher, Stiles , Evrard Koffi, Zhen Zuh

University of Central Oklahoma

This research is developed with the intention to outline the various state policies that either promote or restrict the development and generation of wind energy within the parent state. With this basic understanding of policy structure, it is important to understand the effect of these policies on the growth and implementation of wind energy as an even more relevant source of energy production on both a state and national scale. Through the collection and analysis of generation data from each state, we hope to determine the source of wind generation expansion by comparing these statistics with the policies of each state to understand whether expansion in each particular state is primarily due to policy structure or rather more weighted on the efficiency of generation based on the wind climate of the region.

01.03.08 Experimental Evidence on the Performance of Emission Trading Schemes In The Presence of an Active Secondary Market

Chintamani, Jog , Georgia Kosmopoulou

University of Central Oklahoma

As auction based emission trading schemes (ETS) become more common in addressing climate change, it is of interest to study the effects of bargaining power in resale markets on original as well as post-resale allowance allocations in terms of prices and efficiency. This paper provides an experimental study of first price private value asymmetric auctions followed by a $\frac{1}{2}$ - double auction resale market opportunity. We compare the $\frac{1}{2}$ - double auction to other resale regimes with an uneven distribution of market power and contrast initial bids, resale prices and efficiency. Despite the conventional wisdom that full efficiency requires the absence of market power, we find that $\frac{1}{2}$ - double auction resale markets lead to lower efficiency than the monopsony resale regime. The level of efficiency achieved, however, is close to the highest across mechanisms that have differential bargaining power at the resale stage.

01.03.09 A New Approach to College Student Retention: Facts and Opinions

Susanne, Rassouli-Currier , Kristofer Thompson, Suzanne Clinton

University of Central Oklahoma

The low student retention rate has been one of the most talked about issues in post secondary educational institutions. Recent statistics at some universities suggest that the problem persists and in some cases has become worse in recent years. Unfortunately, the literature addressing this issue consists of very few studies. Among these few, most investigate the factors affecting the retention rate by major and course (Microeconomics, Macroeconomics, Science and Engineering etc.) rather than student retention at the aggregate college/university level. The topic is mostly discussed at various university meetings to identify possible factors affecting student retention. Unfortunately, most opinions are merely speculation without any empirical evidence. This study attempts to shed light on the problem, using a Stochastic Frontier Regression model (SFR). The data for the explanatory variables, i.e., factors affecting student retention, such as unemployment rate, availability of financial aid, gender and socioeconomic factors (among others) over a ten year period (2002-2012) for the University of Central Oklahoma will be employed. In addition we will use the survey results administered to various UCO students. The hope here is that the results of this study may help Administrators / Faculty to better understand factors related to student retention and, for example, engage students in activities/projects beyond the classroom in an attempt to affect retention rates.

01.03.10 Student Engagement: The Key to Student Retention

Susanne, Rassouli-Currier , Christofer Graff, Suzanne Clinton

University of Central Oklahoma

Student retention is a very popular topic among colleges and universities, perhaps due in part to the fact that retention rates impact funding provided by state and private entities. In this professional development workshop, presenters focus on methods by which universities can engage students beyond the classroom to enhance retention efforts. Potential topics of discussion include research grants for faculty/student pairs, mentoring programs, study tours, and student activities. Presenters hope to learn from participants' experience with the same at their own institutions.

01.03.11 Instrumental Variable Estimates of the Effect of Management Practice on Korean Firm Performance

Jieun, Chang , Youngho Kang

Southeastern Oklahoma State University

Because of endogeneity concerns in management research, there are only few economic literature that estimates the effect of management practices on firm performance. Prior studies on management practice use primogeniture measures as an instrumental variable or conduct random assignments of Indian firms to find the effect of management practice on firm performance. However, primogeniture is not a firm-level instrumental variable. Random assignment is a very costly method that requires repetitive surveys. This paper aims to suggest firm-level instrumental variable approach which requires lower costs to empirically examine the effect of management practice on firm performance. Empirical findings in this study suggest the positive influence of management practice on firm performance based on firm survey data that includes 353 Korean firms in manufacturing industry in 2011. To correct for endogeneity problem in management practice, three firm-level instrumental variables are used: the motivations for organizational reform, delegation of decision-making authority, and IT investment in organizational reform. Instrumental variables in this study satisfy exogeneity and relevance condition. By using these valid instrumental variables, this study suggests that better management practice leads to higher level of firm performance without any repetitive surveys or random assignments.

01.03.12 The Energy Markets Impact On The Oklahoma Economy

Devin, Usher , Michael Phillips

University of Central Oklahoma

Oklahoma has been a major energy hub in the United States for the last fifty years. We believe the Oklahoma energy industry has an impact on the national energy markets. Oklahoma has been mostly concentrated on oil exploration and production over the last half century. However, we have entered into a new era of diversified energy, incorporating renewable, natural gas, and bio-tech. Our goal is to examine the past booms and busts of the Oklahoma economy, and correlate those with the past booms and busts of the national energy markets, then determine the degree of impact each energy market has on the Oklahoma economy.

01.03.13 Power Consumption and Prices of Coal and Natural Gas

Zachary, Perkins , Dacus Doornbos, Steven McEwen

University of Central Oklahoma

In this study, we will investigate the empirical relationship between gas consumption by the power sector and prices of coal and natural gas. It is argued that fuel switching occurs when gas prices reach a sufficiently low level. Our study will contribute to the understanding of the connection between gas price and electrical power gas consumption in the following aspect: 1. At what level of gas prices will fuel switching likely happen? 2. To what degree the past increase in the share of gas consumption by the power sector is related to the gas prices or the general trend in the economy to utilize cleaner energy? 3. Did the price volatility in natural gas hinder the usage of natural gas in the power sector? In 2011 natural gas contributed 25% of the kWh produced domestically. Coal made up 42% of this total output. The following year in 2012 natural gas emerged to producing 30% of the total output and coal fell to 37%. This demonstrates a change in fuel sources by the electrical generation fleet opting for the more inexpensive fuel. By concentrating on the interrelationship among coal and natural gas fuel markets this study will demonstrate the dynamic relationship of alternate prices levels and at which price point the shift from one fuel to the next occurs.

01.03.14 U.S. Natural Gas Futures And Spot Prices

Brandon, McLean , Ben Soumahoro, Zhen Zuh

University of Central Oklahoma

The present study investigates the relationship between futures and spot prices in the U.S. natural gas market. The economic theory of the futures prices suggesting the futures price and spot prices will converge at maturity due to both price movements. Our data from January 1997 to January 2014 will provide some stylized facts about the convergence of the prices. The study examines the pattern of the two prices in a month before the futures expiration. In addition, empirical evidence will be provided to show whether the pattern depends on seasons, price level or storage level. The study will be based on the theory of storage commodities and the result is expected to shed light on the further understanding of the convenience yield.

01.03.15 How can Blue Cross Blue Shield Maintain a High Market Share?

Cody, Woods , Kuang-Chung Hsu

University of Central Oklahoma

Previous research on the subject has shown Blue Cross Blue Shield to have both monopoly and monopsony power. In spite of focusing only on Micro level data or on a single national scale in the previous empirical literature, our paper focuses on how Blue Cross Blue Shield maintains and sustains a high market share in each state. Our panel data covers six years and fifty states, allowing our analyses to find the determinants of the market power of Blue Cross Blue shield across different states. Our results show that GDP, per capita income, crime rate, and other Macro variables play an important role in Blue Cross Blue Shield market monopoly power

01.03.16 Energy Consumption and State Economics

Kayleigh, James , Diego Rodriguez, Zhen Zhu

University of Central Oklahoma

The subject of whether or not energy consumption is related to state economic growth is one with no end result. To find whether or not the two are correlated and to discover the impact one has on another, the data needs to be identified, collected, and compared. First, a pool of states will be chosen. These states will have different levels of energy consumption according to their main sources of energy, such as oil, gas, electricity, etc. The different levels of economic growth will also be presented accordingly. Second, the states' energy consumption data and economic growth data will be collected. Third, with the necessary data in hand, an analysis will be feasible. With the newly developed information, insight to the relationship between energy consumption and economic growth at a state level will be presented.

01.03.17 An Investigation Into the Frequency of Alcohol References in Popular Genres of American Music

John, Gutierrez , John Maisch, Sofia Price

University of Central Oklahoma

The objective of this analysis is to explore whether or not alcohol references in popular music have increased, decreased, or remained marginally unchanged throughout a timespan of twenty years. Thus, it was hypothesized that the frequency of alcohol references in Country music has significantly increased from 1992 to 2012. Methodology included sampling from Billboard's genres and years of "Hot Country Songs", "Hot R&B/Hip-Hop Songs", "Hot Rock Songs", and "Hot Alternative Songs". From this sample, 742 songs were extracted and collated to concentrate on lyrical content, which examined songs that were designated as to referencing a particular alcoholic beverage type (malt beverage, spirits, or wine). These alcohol references were then classified as either being implicit or explicit. A simple linear regression illustrated a significant increase in the number of alcohol references in Country music with $b = .153$, $t(250) = 2.45$, $p < .05$. R&B/Hip-Hop also exhibited a significant increase in alcohol references with $b = .225$, $t(250) = 3.64$, $p < .05$. Alternative/Rock did not show a significant increase in references with $b = -.029$, $t(242) = -.454$, $p > .05$. Results indicated that Country had the most explicit references while R&B/Hip-Hop had the most implicit references. The findings also showed that Country had the greatest number ($n=37$) of malt beverage references while R&B/Hip-Hop had the greatest number of spirits ($n=60$).

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01. Business Administration

04. Finance

01.04.01 Determinants of Dividend Payout

Zane, Swanson , Sivarama Krishnan

University of Central Oklahoma

This study develops an investor utility approach to the concept that dividend payout is based upon firm conditions and management objectives. The empirical version reports significant elasticity propositions consistent with the life-cycle theory or the residual income model. A comparison of the period before and after the 2008 financial crisis indicates factor stability with minimal impact.

01.04.02 Rent or Sell: An Investment Decision

Sivarama, Krishnan

University of Central Oklahoma

This is a real-life personal finance problem that is presented as an investment decision case with opportunities for analysis using the typical business finance capital budgeting framework. A number of conceptual and practical issues are raised in the case. These include: Estimating incremental cash flows, diversification benefits of real estate in a personal investment portfolio, risk and required rate of return for an investment in a less liquid market, application of the weighted average cost of capital concept for a leveraged real estate investment, and decision criteria for small business investment projects.

01.04.03 How do Bank Charge-offs Affect Bank ROA?

Sudan, Ghimire

East Central University

The research paper is about the performance of Oklahoma banks during pre-recession and post-recession. Moreover, the paper uses a time series multi regression analysis to study the factors affecting banks' performance. Bank charge-offs, a major factor affecting bank is studied by categorizing banks into small, medium, and large banks based on their asset size. The purpose of this study is to examine whether loan charge-offs decrease Return on Asset (ROA) at commercial banks in Oklahoma. Similarly, it also examine whether loan charge-offs and ROA increased or decreased during the recent economic downturn.

01.04.04 The Reaction of Blockholders to the Changes in Market Conditions

Halil, Kaya , Nancy Lumpkin

Northeastern State University

In this study, we examine the impact of business conditions as well as stock market conditions on blockholders' ownership in U.S. firms. We expect that in periods when the general interest in the stock market goes up (i.e. the S&P 500 Index goes up); the blockholders' interest in the market also goes up (i.e. there are more blockholders per firm and the share of blockholders in each firm is higher). We use the Aruoba-Diebold-Scotti (i.e. ADS) Business Conditions Index and the S&P 500 Index as proxies for business conditions and stock market conditions, respectively. We find that blockholders' investments more closely track stock market conditions compared to business conditions. Using nonparametric tests, we show that there are more blockholders per firm when stock market conditions are better. We also show that the total blockholder-ownership during these periods go up.

01.04.05 Debt Financing Activities in Hot Equity Markets

Halil, Kaya

Northeastern State University

"Hot markets" are generally defined as the months when the equity market is very active. This study examines the debt market activity, the debt maturity choice, and the leverage levels of the borrowers during these "Hot markets". I examine three debt markets: the public debt (i.e. corporate bond) market, the private placement market, and the syndicated bank loan market. Since financing conditions in general are better during these periods, I expect to see more activity in the public debt and the syndicated loan markets. Private placements are generally done by firms with low credit ratings and they are seen as an alternative to other types of financing instruments; therefore I expect the private placement market to become less active during these good times. Similarly, I expect public debt firms and syndicated loan firms to take advantage of these good times by offering longer maturities while private placements should become shorter. My robust regressions confirm these hypotheses. Finally, I run binary logistic regressions to see if "Hot markets" affect firms choice between equity and each of the three types of debt. My results show that there is a "pecking order" in financing: in good times, syndicated bank loans are preferred first, equity and public debt comes after that, and private placements are used only as a last resort.

01.04.06 Does the Culture Matter for Community Banks' Risk Taking?

Zhimin, Wang , Sudan Ghimire

East Central University

There are many community banks in U.S. Different regions have different cultures. In our paper, we aim to see if culture difference can explain community bank characteristics, for example, risk taking. We first partition U.S. into several regions based on the culture characteristics and then study if there is obvious difference across regions in community banks' risk taking. The data we use in our study is for more than 7,000 community banks from Federal Deposit Insurance Corporation (FDIC). We conduct our study with dummy variable approach.

01.04.07 Personal Finance Distance Education Curriculum Development and Course Design

Allen, Arnold

University of Central Oklahoma

This proposal seeks to fill a crucial need in the discipline of teaching, in general, and for the purposes of this study, effectively teaching personal finance via distance education by establishing an innovative curriculum redesigned to actively engage the distance learner in a shared process of knowledge acquisition and assessment via creatively constructed learning strategies of "peer-led" learning and "re-presentation" of course objectives and assessments through creative and scholarly processes. Integral to the scope of curriculum redesign are the "Central Six" tenets of Transformative Learning: discipline knowledge; leadership; research, scholarly, and creative activities; service learning and civic engagement; global and cultural competencies; and health and wellness. The Personal Finance distance education curriculum development will utilize customized delivery via D2L and Personal Finance textbook publisher, McGraw-Hill's proprietary software program: Connect. Content delivery and learning assessments will be available through the Personal Finance distance education. These curriculum enhancements will increase distance learners' satisfaction with course content and modes of delivery and promote student self-efficacy while engaging e-learners in the UCO virtual learning community.

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01. Business Administration

05. Information Operations Management

01.05.01 Supply Chain Learning, Integration, and Flexibility Performance: An Empirical Study in India

Geoff, Willis

University of Central Oklahoma

Supply chain flexibility has been acknowledged as a necessity in the context of constantly changing operational and service requirements in the global marketplace. However, limited research has focused on analyzing and empirically testing the dynamics of achieving enhanced flexibility performance. The current study attempts to address this research gap by introducing supply chain learning as a key driver in the process.

01.05.02 Disaster Planning and Recovery for Small and Medium Sized Businesses: A Guide to Success

Michelle, Hepner , Sajana Shrestha

University of Central Oklahoma

Preparing for a disaster is important for any business, including small to medium sized businesses. However, most small businesses lack the knowledge and resources to ensure quick recovery after a disaster. Much of the literature available to help guide businesses through the IT recovery planning steps or business continuity planning is geared towards large businesses or government organizations. Frequently, small businesses find that constructing a plan is overwhelming and labor intensive. Contracting a vendor to perform these services can also be expensive and time consuming since the business's employees are the ones with the knowledge needed to prioritize and direct recovery planning. The lack of disaster planning is putting many small and medium sized businesses at risk for failure. The main object of this research was to find an easier and more affordable method for small businesses to identify and protect their technology assets in the event of a disaster, accidental data corruption, or a cyber-attack. The five-step plan includes: identify critical software and data then estimate its value to the business, define a backup plan, prioritizing based on system or data value, test the system and data backups, test recovery procedures (at a service data center if it is not possible to test with current business IT resources), and evaluate service level agreements with contractors.

01.05.03 A Government-Industry-University (GUI) eCareer Model for Building 21st Century Skills

Joselina, Cheng , Keia Atkinson

University of Central Oklahoma

This paper presents a GUI model which was implemented by collaborating with partnering institutions and incorporating emerging simulation technologies to create job-shadowing modules (referred to as eCareer Builder hereafter). Authentic learning environments help build the high school to college pipeline for difficult to recruit for disciplines in STEM. Partnering institutions include MIPT, OSBI, and Edmond Police. The target population included high school students in grades 9-12 attending any of 250 high schools across the state of Oklahoma. The sample included 33 students who were randomly selected to attend a summer career academy. The research design was a triangulation study with a mixed method. A career survey consisted of demographics, closed-ended, and open-ended questions. The career survey was administered to participants as a pre- and post-test. Quantitative data were derived from closed-ended questions to gain insights on how eCareer Builder affected participants' satisfaction with learning, working in a team, and solving a problem. The qualitative data was derived from open-ended questions to triangulate the overall findings. Pre- and post-academy survey results indicated significantly improved attitudes towards S&T, career awareness of S&T, and career interest in S&T. Significant effects were observed for gender in several domains, with females receiving a greater benefit from the eCareer Builder modules and the camp overall than males. Additional ex

01.05.04 Risks Associated with External Storage Devices

Uchechi, Amaeze , David Noel

University of Central Oklahoma

Data loss has always been a serious issue. Many small companies do not survive from even small data losses. A common method used to steal data is by using a thumb drive. Although external storage devices have been of great use to companies and businesses, it has also been the major source of data theft. Its use has been abused by hackers, employee's looking to make extra money on the side, and competitors. The purpose of this paper is to help small business owners better understand the problem by survey the literature concerning digital data loss with the intent of widening the understanding of this problem to the small business owner, and learn how to estimate the magnitude of data theft within their own company. The paper also demonstrate how easily an applied statistical technique can be used as an effective tool for providing valuable insight into the digital theft problem, and demonstrate how the unmatched count technique can be used to provide the small business owner with information concerning how large the data theft/loss problem within their own company may actually be. In the part of prevention, the paper is more focused on major prevention technics. Banning the use of thumb drives was considered an alternative solution or adopting stringent policies in an attempt to control their use. additionally, small business owners may learn how to define policies and use applications to avoid the problem altogether.

01.05.05 Event-Driven Object Modeling for Information Requirements Analysis

I-Lin, Huang , Judy Hsu

Langston University

Object modeling is a major part of conceptual modeling process. During object modeling, systems analysts often analyze users' requirements represented in textual descriptions. Then the systems analysts transform their understanding of the users' requirements into object models. Object modeling introduces the system analysts to a language game that transforms the representation of a given set of information system requirements by natural language into that by the object modeling language. The differences between the two languages have made object modeling a difficult task, especially for student systems analysts. As a result, object modeling is well-known as an error-prone process. Empirical studies show that more than half the errors which occur during systems development are requirements errors. In human cognition research, event models have been found to be a natural way to construct a cognitive situation. When comprehend a story, readers often construct an event model to represent the micro world of what is conveyed in the story. On the basis of the theories on human cognition, this article proposes event modeling as an intermediate model for object modeling. Systems analysts can not only model users' requirements in event models more easily, but also transform the event models into object models with fewer errors.

01.05.06 Business and the Spring Framework

Colton, Nohelty

East Central University

The Spring Framework is a lightweight, open-source solution that is designed to promote better java programming practices. It is designed to simplify application development by removing code redundancies when possible through additional infrastructure and non-intrusive functionality allowing objects to not depend on Spring classes. Spring is also an inversion of control container that controls the object life cycle and manages object dependencies. By promoting the use of aspect-oriented programming, Spring manages to separate system level services from business logic (Czarnecki). This module isolation provided by dependency injection allows the developers to test the atomic elements of the code before the rest of the elements are completed. Dependency injection in Spring works with anything that can be considered a "Plain Old Java Object" (POJO) and more. These features provide a core framework that makes re-inventing the wheel in Information Technology a thing of the past for the development team. From a business management perspective, a proper implementation of the Spring Framework provides the team with many more options. Maintenance becomes easier when modules can be isolated and tested using Spring, which means lower maintenance costs. It varies from business to business, but, generally, maintenance costs a significant amount more than the initial product development. Businesses that keep this in mind when making design decisions enhance their ability to o

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01. Business Administration

06. Management

01.06.01 The Sandwich Feedback Method: Not Very Tasty

Clarence, Von Bergen , Kitty Campbell, Martin Bressler, Sarah Roberts

Southeastern Oklahoma State University

When correcting employee behavior and providing negative performance comments, managers are often encouraged to begin with something positive and are frequently instructed to use the “sandwich method” in which one inserts (or sandwiches) criticism between two positive remarks. Although offered by many well-intentioned management trainers and organizations as an effective and humane way for bosses to communicate how badly an employee is doing something, this commonly used method may be undermining both the supervisor’s feedback and the relationship with their workers. After reviewing this method of corrective guidance, the authors discuss why leaders use the sandwich approach, the problems presented by this technique, and then offer an effective alternative procedure managers can use to address problematic workplace conduct.

01.06.02 MGMT 4813: Course Redesign To Provide Students With a Transformative Learning Experience

Lalit, Manral

University of Central Oklahoma

The objective for redesigning the capstone course, MGMT 4813, Strategic Management, is to provide the students with a transformative learning experience through both curricular and extra-curricular activities. To achieve the above objective MGMT 4813 will have to be converted into an innovative, interdisciplinary, case- and project-based capstone course. The redesign efforts are motivated by my [subconscious] theory of instruction developed over the last several years. The redesigned course will provide students with two types of hands-on experience with theories. First, the proposed inductive course architecture will involve students in the process of theory building. Second, the proposed deductive course architecture will involve the students in the process of theory improvement. The redesigned course proposes a new capstone experience that provides three-stage transformative learning. First, the redesigned capstone will provide a transformative learning experience to students who take the course for academic credit. Second, the redesigned capstone will lay the foundation for a voluntary transformative learning opportunity whereby students who have already taken the capstone can participate in an academic internship program. Third, the redesigned capstone will provide the basis for various transformative learning experiences through extra-curricular activities.

01.06.03 Preparing Our Students for Their Futures: Sustainability in the University and Colleges of Business

Cuong, Doan , John Camey, Kimberly Merritt, Suzanne Clinton

University of Central Oklahoma

As sustainable practices are becoming an expectation for educational institutions, Business Schools might have questions concerning incorporation of sustainability and preparation for graduates to meet the sustainability challenge. Conducted by a panel of experienced professors and students in business and management, this poster aims to emphasize the importance of sustainability in education and to provide recommendations for campuses to implement sustainability. By studying numerous articles and reports, this project provides important concepts related to sustainability such as exhaustible resources, intergenerational equity, and sustainable development. The project also explores the need for sustainable development and the challenges faced in obtaining it. As an example of a higher education institution that is establishing a sustainable learning environment and preparing students for the future, the University of Central Oklahoma has taken actions such as recycling, using clean energy, 100 percent usage of wind power, using biodiesel for campus vehicles, promoting green rides, and preservation of resources to incorporate sustainability into its daily operations. Information on these actions and its results are also provided in this project.

01.06.04 Supplementing Student Learning with BOOKS

Kim, Pham , Abbie Lambert, Lee Tyner, Robert EpsteinSuzanne Clinton

University of Central Oklahoma

As America's universities advance the use of technologies, including learning management systems, videos, PowerPoint, "clickers," and virtual classrooms, students may become over sensitized and yearn for a missing component: The focused study of reading a book. This research includes four professors who have incorporated (auto) biographies, practitioner books, and novels to support the growth and development of students' study of human resource management topics, leadership, small business, and entrepreneurship. The findings include publication opportunities, integrating the books to various courses, and successes and failures of this return to classic education. In short, the utilization of (auto) biographies, practitioner books, and novels inside the classrooms fosters students to think critically. While autobiographies help reveal a great deal of information about the students to not only the teachers and other students, but also to themselves, literature provides a means for students to develop their personal judgment, characteristics, and relationships. In other words, the stated materials assist students in their involvement both inside and outside classrooms because it is no secret that students who take an active role in the classroom retain more of the information for longer periods of time.

01.06.05 Relationship Between Gender And Work Related Attitudes: A Study Of Temporary Employees

Jeffrey, Slattery

Northeastern State University

In the context of temporary employment, an important area for research is in the realm of the relationships between demographic factors and employee attitudes. Although organizational researchers have conducted research investigating the relationship between gender and employee attitudes, few investigations have been performed that examine the relationship when it pertains to temporary employees. Our research objective is to address this gap in the research by examining the relationship between gender and employee attitudes in the context of temporary employees. It is important to examine temporary work from a gender perspective because temporary work arrangement seems to have the highest concentration of women. In addition, the issue of gender role may become salient in relation to work related attitudes associated with the nature of temporary employment. The results of this study indicate that, in relation to the client organization, there were significant main effects of gender on job satisfaction, organizational commitment, and turnover intention. Female temporary employees were more satisfied with their jobs, more committed to their client organizations, and had lower intention to quit at their client organizations. These results are consistent with gender role theory that suggests that men and women may have different responses to working conditions at their workplace.

01.06.06 Does Gender Matter? Follower's Gender Effects on Authentic Leadership.

Lan, Pham , Victoria McKee

University of Central Oklahoma

This research studies the effect of gender on authentic leadership. This project would further investigate gender differences, which research indicates have an effect on the perception of authentic leaders. The proposed hypothesis will be tested using Qualtrics as a delivery tool surveying students in leadership-related classes. The participants' demographic information will vary among ages, genders, classifications in the university, and work experience. The use of scenarios throughout the survey allows for an investigation of the participants' perception of the leader and if the participants' gender affects their answer. If there is a difference, then the goal is to identify where and how both genders affect authentic leadership. This investigation would help the field of research clarify the relationship between followers' gender and authentic leadership because gender is normally assumed to not affect followers' outcomes.

01.06.07 Evaluation of the Feasibility of Establishing a Student Consulting Organization at the University of Central Oklahoma

Duong, Dang

University of Central Oklahoma

The project's goal is to provide UCO students the opportunities to have valuable real-world experience while adding value to local firms as the clients through consulting agreements. The scope of the project is narrowed to companies located in the OKC metro area. Among the first steps are to gather data about those companies and to evaluate their needs for consulting services as potential future clients. Mergent and Reference USA online databases were used to collect data of all companies in the OKC metro area. The companies are filtered at having annual revenues of more than \$1 million, and the search result yielded more than 9,000 records. The collected data consist of the company name, its executive's name, company address, SIC and NAICS codes, website, and sales volumes. After the data is collected, a database would be created to store it and conveniently query for meaningful information. To date, the database of all companies in the OKC metro area that have more than \$1 million in annual sales have been collected. Several SQL queries in the database are also included for other users to look up information more easily. More company data from other databases, such as the Oklahoma Employment Security Commission, would need to be gathered. Later on, the databases would expand to include all the potential companies in other major cities, to make a more complete future customer base for the project.

01.06.08 Safety Training Videos

Michael, Turner , Bowen Mark, Butler Bridgette, Carter AdamKaty Ellis, Perrin Kelsey

Northeastern State University

The Northeastern State University student chapter of the American Society of Safety Engineers (ASSE) works closely with the Safety Services department of the university. The Safety Services department used to have safety training videos that it used to train all new hires for Physical Plant and for recurring training. These videos became outdated and were no longer compatible with current software used by the university. Our student chapter has volunteered to produce several new safety training videos covering such topics as Lock Out/Tag Out, the proper use of Personal Protective Equipment and others. This applied research will benefit the university and its employees and will provide the students an opportunity to practice what they have learned in the classroom in a practical, real world environment.

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01. Business Administration

07. Marketing

01.07.01 Exploring the Persuasive Impact of Message Medium in Stealth Marketing Campaigns

Jeanetta, Sims , Atoya Sims, Jalea Shuff, LeeAnn FloydSarah Neese

University of Central Oklahoma

Stealth marketing campaigns involve front groups or third party messages sent on behalf of companies in order to benefit the company or the company's products. Using a 4 x 4 factorial design with 360 participants, this research will examine the effectiveness of stealth marketing campaigns and various message media on consumer perceptions and purchase intentions. Understanding the persuasive impact of stealth campaigns on consumers extends marketing and persuasion literatures and improves the implementation of marketing strategy.

01.07.02 Thwarting the Influence of Stealth Marketing Campaigns through Arousing Suspicion

Jeanetta, Sims , Angelia Barrera-Medina, Atoya Sims, Hung-Lin LaiSarah Neese

University of Central Oklahoma

Stealth marketing campaigns involve deceptive front groups or third party messages sent on behalf of companies in order to benefit the company or its products. Using a 4 x 2 factorial design with 320 participants, this research will examine the effectiveness of stealth marketing campaigns and explores whether arousing suspicion can protect consumers from their influence. Research results will extend marketing and persuasion literatures, and understanding suspicion's role can assist marketers in creating competitive advantage.

01.07.03 Understanding the Dialectical Tensions Negotiated by African American Entrepreneurs

Jeanetta, Sims , Peggy Anderson

University of Central Oklahoma

Dialectics are the simultaneous tensions (e.g., love/hate, joy/anger) experienced in relationships or circumstance. Through 40 personal interviews with African American female and male entrepreneurs, this project explores dialectics from a racio-ethnic and gendered perspective, which is an approach not yet taken in entrepreneurship literature related to minorities. Identification of the double-sided tensions present in minority experiences extends relational dialectics theory and can assist other minorities who desire to become entrepreneurs.

01.07.04 Notions in Their Heads: Exploring the Discrepant Selves of African American Entrepreneurs

Jeanetta, Sims , Atoya Sims, Peggy Anderson, Sarah Neese

University of Central Oklahoma

This research explores internal motivations of entrepreneurship through identifying self-characteristics and probing self-discrepancies. Using a content analysis process to examine interviews with 20 African American female entrepreneurs, 259 self-characteristics from participants' own standpoint and 94 self-characteristics from the standpoint of others were identified. Coding results reveal entrepreneurs describe themselves with self-characteristics that are more positive in tone and not associated with their being African American or female. However, nearly the opposite was true when entrepreneurs mentioned self-characteristics from the standpoint of others, which were more negative, had greater mentions of ethnicity, and had greater references to gender. Results suggest self-discrepancies exist both in the content of self-characteristics and in the perceived negativity that entrepreneurs associate with how they are perceived.

01.07.05 Toward a Research Agenda for Communicating Diversity: The Most Prevalent Diversity Initiatives with Message Design Implications

Jeanetta, Sims , Angelia Barrera-Medina, Hung-Lin Lai

University of Central Oklahoma

This investigation advances a future diversity research agenda that is focused on assisting organizations in their internal efforts to communicate or to promote diversity. Using DiversityInc's list of Top 50 Companies for Diversity, the most prevalent diversity initiatives are identified and weighted for creation of message design implications that can inform future research. Coding results revealed resource groups and cross-cultural mentoring programs to be the two most prevalent initiatives with a weighted average use of 87% and 75%, respectively. Additional prevalent initiatives include diversity training, compensation and the use of metrics. For each of the prevalent initiatives, suggestions for future research involving message design implications are offered.

01.07.06 Not All The Carrots Are Equal: Comparing The Profitability Of Reward/Loyalty Programs

Thanh, Tran , Kanghyun Yoon

University of Central Oklahoma

Reward/loyalty programs are used extensively in many industries, ranging from airlines, hotels, car rental, financial services to supermarkets and other retailers. These programs are designed to provide consumers with various incentives (e.g., cash back) to increase purchase/usage level, and most importantly, to become loyal. Despite the popularity, many reward programs are not so successful, especially those offering economic incentives that are easily copied by competitors. The mixed result, regarding the effectiveness and profitability of reward programs, is evident both in the business world and in the findings of academic research on loyalty programs. It remains unclear how different types of reward programs may affect the profitability of companies and how they should optimally account for the benefits and costs of these programs in making other competitive decisions, such as prices. To address this gap, we first investigate the firms' trade-off between the benefits and costs of offering different reward programs by comparing the profitability of economic reward to that of emotional reward programs. We develop three analytical models and solving for the optimal prices, rewards and profits. In the second study, we develop two empirical models based on the closed-form specification of the market share and optimal prices and test them on an available data set. The estimation procedure can be used as a guideline by practitioners to design effective reward/loyalty programs.

01.07.07 Designing Effective Coupons: The Moderating Effect of Product Type (Goods versus Services) on Coupon Framing

Huong, Nguyen

University of Central Oklahoma

This project explores how coupon framing (i.e., discount offered in percentage or dollar terms) affects the attractiveness of coupons. Specifically, I develop and test two hypotheses about: (1) the moderating effect of product type (goods versus services) on the attractiveness of coupon framing, and (2) the moderating effect of price (high versus low) on the attractiveness of coupon framing for a service. The findings provide important implications for companies in designing effective promotional strategies using coupons.

01.07.08 Current and Potential Customer Preferences Regarding Group Exercise Services

Maryfer, Abreu Roman , Raquel Rojas

Oklahoma Christian University

The objective of this study is to investigate current and potential customer preferences regarding group exercise services offered by Co-Motion in Edmond, Oklahoma. The study measured current customer preferences regarding services offered, potential changes, and current customer motivation. Potential customer preferences were also investigated. The study used intercept survey research interviews to gather data from current customers, and snowball sampling research to gather data from potential customers. Results from the study show that word of mouth marketing has been very effective for the client, and current customers are satisfied with current class offerings. Current customers prefer an increase in childcare services, and an increase in offerings of Zumba and Yo-flo classes as well. Results also indicate that the client should expand early morning and late evening class offerings to increase customer satisfaction and cater to potential customers who work during the day. Finally, the results show that the client should increase promotion of the free trial classes offered to potential customers.

01.07.09 Emotion-driven Outsourcing: Lessons From the Equine Industry

Debra, McClure , Jennifer Blunt, Stacia Wert-Gray, Stefan Genchev

University of Central Oklahoma

The current research conceptualizes the equine industry supply chain, identifies its main participants, and some of the relationships involved. More specifically, the research investigates the factors affecting the decision to outsource transportation in the equine industry. The results show that together with a detailed cognitive assessment of the transporter capabilities, the outsourcing decision involves a considerable emotional component. The findings reveal the need for a more holistic perspective on transportation service offerings that go beyond economic and technological readiness to include an understanding of customers' behavioral motives as well. Although focused on one specific facet within the equine supply chain, the current research provides the much needed, by practitioners and academics alike, start of "a conversation" related to the complexities and challenges involved in successfully managing the industry's dynamics. Since the state of Oklahoma has a substantial involvement in that industry, the results will be applicable to our own community as well.

01.07.10 Potential Customer Perceptions and Preferences for a Novel Exercise Experience

Emily, Lundblad , Molly Gettle, Paige Criswell

Oklahoma Christian University

The objective of this research is to determine potential customer interest and preferences in exercise services at Barre3 studio in Edmond, Oklahoma. Objectives include investigating potential customer interest, loyalty factors, characteristics that encourage trial, and benefits sought. The research team used an online survey to collect data from Oklahoma Christian University students and faculty. The survey was approximately 5 minutes and contained a series of questions to help attain the information needed for our research objectives. Based on research results, Barre3 Edmond might be able to pull in new members by offering one-on-one sessions to its members. Forty four percent of respondents prefer a one-on-one session, which Barre3 currently does not offer. Since the majority of respondents were college students, the majority of our respondents answered that they were currently not members at a gym and that their annual household income was below \$10,000. Barre3 could gain a lot of business and also get their name out by offering a student special, or offering some discounted classes on special occasions. Lastly, it would benefit Barre3 to extend their hours of operation. The gym currently closes at about 6:30 pm. Survey results concluded that the most people (44%) prefer to work out from 5PM-8PM, and then there was still a significant amount of respondents (23%) that prefer to work out between 9PM-11PM.

01.07.11 Should Salespeople Flatter their Customers? – The Impact of Flattery on Sales Performance.

Manoshi, Samaraweera

University of Central Oklahoma

In this study I examine whether flattering customers would help or hurt salespeople. Past literature on whether customer flattery help improve the sales performance of salespeople yield opposing arguments, with some suggesting a positive effect and others suggesting a negative one. So does flattery - especially in the salesforce context - really work? This study empirically examines this question while also investigating the role of salesperson characteristics such as age, experience, and physical attractiveness in extracting favorable/non-favorable responses from customer flattery. The study offers insights as to whether salespeople should use flattery when interacting with customers, and if so, whether it should be a blanket persuasion method used by all salespeople, or a technique that should be reserved to a selected few who possess certain characteristics. The study will be done in collaboration with an employment/staffing company based in OKC that has a large number of salespeople working at different franchise locations. I will use multi-level modeling to analyze the data. Acknowledgements: Funding for this project was provided through a grant from the Office of Research and Grants at the University of Central Oklahoma.

01.07.12 A Quantative Analysis Of Ethical Positions of Business Majors Versus Non-Business Majors

Grant, Aguirre , Darrell Goudge, Kathryn Holliday

University of Central Oklahoma

Ethical issues have been a concern of business scholars since the 1960s at which time a body of literature concerning business ethical philosophies began to emerge. In the 1970s, scholars began to focus on business ethics pedagogy and the development of curriculum for colleges and schools of business emerged. As part of the development of business ethics curriculum scholars began to analyze the ethical positions of business majors. This analysis has led to a split in the current literature concerning the ethical positions of business majors versus non-business majors. Some of the research in the field has indicated that business majors tend to be more ethically relativistic compared to non-business majors. Other research has shown that there is little or no statistical difference between business and non-business majors. This divergence in the literature is important in forming the types of curriculum necessary for effective pedagogy in the field. This project contributes to the literature by testing the ethical positions of business and non-business majors with the Ethical Position Questionnaire (EPQ). Although this scale has been widely used in a number of studies, it has not been widely used to test the divergence in this area. The EPQ is a useful measure compared to other scales because it more fully covers all the major ethical positions and due to its relative parsimony, response rates have been high. The results of the analysis are presented in this research.

01.07.13 Reconceptualizing the Role of Product in the Value Creation Process from the Total Solution Perspective

Yura, Kang , Kanghyun Yoon

University of Central Oklahoma

Every day, customers are purchasing different forms of products from traditional tangible goods to intangible service, information, and experience products. However, a closer look indicates that they are actually buying a combination of various benefits together in a product form—e.g., driven by product, service, information, and experiential features—from the total solution perspective. Another look indicates that in a transition from goods-dominant logic to service-dominant logic for marketing concept (Vargo and Lusch 2004), marketers have been interested in encouraging customer engagement into the value creation process (Gronroos 2011). Considering two emerging trends, the goal of this project is to reconceptualize the prevailing roles of a product—called product concept—in the value creation process from the total solution perspective. This project provides a review of literatures in marketing concept, product concept, value creation, and customer engagement and proposes our conceptual framework for new product concept and its roles in the value creation process. We find that there are four types of underlying dimensions—represented by product functional, service supporting, information knowledge, and experiential benefits—in our new product concept, regardless of any types of product forms. This project expects that our findings make it possible to reconsider the entire design process of new products to promote customer engagement.

01.07.14 Linking the Effectiveness of Loyalty Programs to Firm's Performance

Minh, Ha , Kanghyun Yoon

University of Central Oklahoma

From the loyalty marketing perspective, various kinds of loyalty or reward programs have been used in an attempt to promote loyalty-enhancing behaviors of existing retained customers and as the result, maximize firm performance. However, it has been found that current loyalty programs do not work as it is expected and show their weak relationships to the firm performance. To cultivate customer loyalty and firm performance in a united way, the goals of this study are 1) to re-evaluate the roles of loyalty programs in the domain of relationship marketing, 2) to propose our theoretical framework for relationship marketing, which consists of a series of marketing strategies for building and managing customer loyalty depending on the customer life cycle—intended to account for consumer heterogeneity, and 3) to show how the implementations of a series of marketing strategies are linked to an overall performance of the firm. It is found that relationship marketing consists of various types of marketing strategies for prospecting, initiating, maintaining, growing, and if possible, weakening new and retained customer relationships over time. This study provides marketers with new insights into how to design and implement various types of marketing programs for managing customer relationships, while maximizing the firm performance. Keywords: Loyalty Programs, Reward Programs, Loyalty Marketing, Relationship Marketing, Customer Relationship Management.

01.07.15 If you Book it, They Should Come: A Market Study for the Hallie Brown Ford Fine Arts Center

Matthew, Roland

East Central University

The purpose of this research is to discover the most effective methods of event promotion. First, by analyzing the official questionnaires of several programs hosted at the Hallie Brown Ford Fine Arts Center at East Central University using an SPSS database, I will attempt to better understand the demographics of a typical audience as well as their likes and dislikes. I will also conduct my own research on student preference in regards to music genre, venue, price range, and other factors. Using information gathered from my survey as well as the SPSS database, I will be able to make meaningful suggestions to my schools Fine Arts Center on what students want to see and how to increase attendance at events.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

02. Education and Professional Studies

01. Education

02.01.01 Prospective Memory and Task Complexity: Is Familiarity Important?

Thomas, Hancock

University of Central Oklahoma

A novel prospective memory paradigm was used to further test the ecological validity of the standard event based word list. During the study participants had to collect a list of groceries while either viewing a list of words or watching a video of grocery store aisles. Interspersed throughout the items were four prospective targets. It was found that the cover task performance was significantly better for the text condition however they did not differ by prospective performance.

02.01.02 Blended Education: A Case Study at the University of Central Oklahoma (UCO)

Len, Bogner , Bucky Dodd

University of Central Oklahoma

Blended Education is a systems-based design process created at UCO as a way to combine multiple delivery formats and strategies in ways that enhance learners' flexibility and "humanness" in the learning process. Humanness describes the authenticity that exists between people within distributed learning environments. BE is designed to promote this authenticity by providing the types of communication and interactions that are supportive of dialogue in learning processes. At the core of BE is the Blended Education Framework. This framework identifies the components and connections that are frequently present in the higher education learning environments at UCO and outlines ways they may be connected together to add flexibility and personalization for learners and faculty. Research on student satisfaction with the BE format was conducted over the 2012-13 academic year. The research invited students who were enrolled in BE courses (7 in total) to complete an online questionnaire at the end of their course. Note: the BE courses were ran in 8 week block format. The questionnaire addressed demographic information and perceptions about the students' experience with Blended Education. Students' reported a high satisfaction and appreciation for the flexibility and dialogue produced through the Blended Education format.

02.01.03 Combat to College: University-level Student Veterans' Perceptions of Traumatic Brain Injury and Their own Cognitions

Chas, Riden, M.Ed. , Malinda Green, Ph.D.

University of Central Oklahoma

Imagine that on the road to Baghdad, suddenly and without warning, your vehicle gets hit by a roadside bomb. The earth explodes! Will you be killed or survive? How will the blast-wave affect your brain? Combat to college is an important adaptive period in military veterans' lives. Four years ago, the DOD recognized that, while traumatic brain injury (TBI) resulted in physical impairment, the more problematic consequences involved an individual's cognition, emotional function, and behavior (Jaffee et al., 2009, p.663). Jaffe and Meyer (2009) stated that fighting the Middle East wars had made us much more aware of the acute and chronic effects of TBI (p.1291). In blunt force trauma to the skull, similar intracranial forces, that move and contort the brain in a helmet-to-helmet collision between two football players, resembles blast-impact brain movement felt by soldiers and marines on the battlefield when exposed to rocket propelled grenades, improvised explosive devices, and fragmentation ordinance. During an explosion, blast waves penetrate the Kevlar helmet into the skull causing injurious biomechanical activity in the brain leading to an immediate and abrupt change in physiological function. Transitory movement in the brain may cause permanent neurological damage. Once referred to as "shell-shock," TBI is investigated in student veterans attending a four-year college, through their perceptions of their own learning, cognition, and behavior.

02.01.04 Effectiveness of the Urban Teacher Preparation Academy

Mike, Nelson

University of Central Oklahoma

The purpose of this project was to describe the instructional practices used by 1st year teachers and student teachers of the Urban Teacher Preparation Academy (UTPA) at the University of Central Oklahoma. First year teachers and student teachers were observed during the fall of 2013. During instruction, observers recorded instances of behaviors that matched criteria in an observation form. Observations were conducted in three domains: Instruction, Classroom Management, and Affective Environment. Student Teachers and 1st Year Teachers were organized, had created a positive classroom environment, and were using instruction techniques to actively engage students in learning. Student Teachers were weak when it came to monitoring if students were on-task, to telling students the goal of the lesson, to wrapping up the lesson, and in demonstrating that they knew their students. First Year Teachers were better at monitoring if students were on-task, at telling students the goal of the lesson, and in demonstrating that they knew their students.

02.01.05 Bringing Service Learning Into the Graduate Classroom

Ed, Cunliff , Rachel Winters, Shannon Dennis

University of Central Oklahoma

Purpose: The purpose of this study was 1. to develop a model that would facilitate service learning for busy graduate students, and 2. to study the long term impact of training for community developers. This poster addresses only the model development. Methods: Non-profit organizations often are unable to conduct program evaluations due to a lack of staff or resources. Graduate students frequently are employed, with families and are unable to do school related activities, such as service learning, outside of regularly scheduled classes. In an effort to bridge the gap for both groups a negotiation process began between Dr. Cunliff and Ms. Winters from UCO's Adult and Higher Education program; and Ms. Dennis from Possibilities Inc. During a one year period a six step model emerged and actively involved UCO faculty and students in a focus group process for gathering input from graduates of the Possibilities program, and involved graduate students in a data analysis process that was presented to Ms. Dennis as Executive Director of Possibilities. The model is simple and highly replicable for a metropolitan university wanting to increase its connection to the community while benefiting students through real time application of learning. Discussion: The test of this model will be through its success or failure as others attempt to replicate it. It is being used a second semester with the same organization and instructor, but with a different set of issues.

02.01.06 Academic Entitlement and Self-Esteem Among University Students

Karin, Hickenbotham , Karen Barnes

University of Central Oklahoma

Society today displays a high sense of entitlement which evolved from the self-esteem movement to boost one's self-confidence and self-worth. Students entering into higher education have an inaccurate view of their individual role versus the role the institution plays in their education. The objective of this research was to examine the relationships between self-esteem and academic entitlement and self-esteem and psychological entitlement. Educational achievement was the focus of Morrow's (1994) claim that the value of education is threatened by the practices of professors and students. Morrow's argument serves as the conceptual framework for this study by examining the breakdown in the culture of learning. The Academic Entitlement Scale, the Psychological Entitlement Scale, and the Self-Esteem Scale were used to survey 190 students on their attitudes and beliefs toward their education. A low negative relationship was found between self-esteem and academic entitlement ($r = -.16$, $p < .05$) and a significant relationship between academic entitlement and psychological entitlement ($r = .60$, $p < .01$). Evaluating students' self-esteem and academic entitlement, 61% believed they should be bumped to the next letter grade if within one percentage point without any effort on their part. The presence of entitlement among students in higher education is prevalent in the current study. Academic entitlement is linked to privileged attitudes among students who feel the

02.01.07 Cognitive Rehearsal and Payment Mechanism: Cash has a Rehearsal Role in Spending Less

Yaser, Dorri , Fatemeh Sabeghi, Heather Martin, Janelle Grellner

University of Central Oklahoma

The number of credit card users in America is growing everyday due to its advantages. Ease of use, availability of credit (for spending), extended warranty on purchases made by credit card, liability insurance for renting a car are among the major advantages of credit cards. Despite various advantages of credit card use, there is a major disadvantage: credit card debt. The purpose of this research is to investigate whether cash use has a rehearsal role in spending less. Here, we hypothesize that total spending is significantly affected by the method of payment and those who use cash as their payment method, will spend significantly less. In this study, 9 students (4 males and 5 females) were recruited from university participant pool data. All participants were asked to use their credit/debit card for three weeks. Then they were asked to use cash as their payment method for another three weeks. Repeated measure design was used to compare the total spending for different payment mechanisms. Mauchly's test indicated that the assumption of Sphericity had been met. The preliminary result of this study indicated that the total spending was significantly affected by the type of payment mechanism and students who used cash, spent significantly less money than those who used credit/debit card, $F(1,8) = 15.41$, $p = 0.004$; $M_{\text{credit/debit}} = \424 and $M_{\text{cash}} = \$133$. This could be due to the small sample size. This study is on-going and a larger sample is being studied.

02.01.08 The Effects of Undergraduate Students Viewing Their Teacher as a Creator of Music

James, Lindroth

Northeastern State University

The purpose of this study was to examine attitudinal changes in undergraduate students towards their marching band director after experiencing the band teacher beyond the instructional role by rehearsing and performing music created by the teacher. The primary data collection technique was semi-structured interview. These interviews were conducted at various stages before, during and after music was arranged for performance. Participants' responses were transcribed and examined for patterns, trends and themes. From these data, certain codes emerged and were sorted and categorized into four themes: 1) Quality of musical arrangement, 2) Teaching process in rehearsals, 3) Teacher/Student relationships, and 4) Pre-service teacher training. Findings support the literature regarding musician identity and the transmission of identity.

02.01.09 Student Perceptions of Service-Learning & Plans for Continued Service

Rachel, Winters , Karen Barnes

University of Central Oklahoma

Institutions are constantly seeking out the most effective pedagogical techniques to integrate into the classroom with the ultimate goal of graduating educated, engaged citizens. Research suggests that students that participate in service-learning not only experience more depth of learning but they are more likely to be engage in service again in the community (Fenzel & Peyrot, 2005; Moely, McFarland, Miron, Mercer, & Ilustre, 2002; Stokamer, 2005). The purpose of this study was to determine the relationship between service-learning experiences and the likelihood of a student to serve again during college or post-graduation. Six classes, three first-year experience and three upper level major courses with 116 college students enrolled at the University of Central Oklahoma were selected by convenience sampling. This descriptive study was collected through a survey questionnaire, Student Perceptions of Service-Learning modified from Campus Compact Community Based Learning-Student Survey and the American Association of Community Colleges Student Post-Service Survey (2004; 2001) to measure the student's perceptions and motivations to serve in the future. While 53% of students suggested that they would volunteer more or continue volunteering after their course ended there was no correlation between the number of hours served and their plans for continued service.

02.01.10 Student Development Theory to Practice

Rachel, Winters , Ed Cunliff

University of Central Oklahoma

Student Affairs practice is founded on a body of theories related to college student development. Which student development and leadership theories are used most often in student affairs practice? In this study, the researcher aimed to discover of the determined prominent theories, which of them are most commonly used in the field. Ten student affairs professionals from different sized institutions, ranging in professional level and competency area were surveyed online. The instrument has 23 questions and was divided up into three categories: (1) Student Development, (2) Leadership Development and (3) General Student Affairs Theories in Practice. Each section had one block of questions rated on a Likert scale and two qualitative short essay questions. The study found 86% of participants highly valued theory when hiring new professionals and for use in their daily practice. While this study cannot be generalized to all of student affairs, it identifies a few theories that are used most frequently and could be used as a pilot study. Considerations for further research are discussed.

02.01.11 Decreasing self-injurious behavior through Differential Reinforcement of Other Behaviors (DRO) with Response Blocking

Shanna, Riley

University of Central Oklahoma

Abstract Self-injurious behavior is one of the most devastating behaviors exhibited by people with intellectual disabilities. The purpose of this study is to decrease self-injurious behaviors in the form of hand biting in a young child with the diagnosis of Autism. It's purposed that with a functional analysis we can determine the function this behavior serves for the individual. Once the functional analysis (FA) is complete, a multiple baseline design across environments with a DRO procedure and response blocking will be implemented. No baseline is to be collected due to the risk involved with this behavior; the FA will serve that purpose. Implementation of these procedures along with data collection the student will learn a functional replacement behavior for the hand biting in doing so this will affect his life in a socially significant ways.

02.01.12 Anxious Individuals Show Greater Physiological Response to Humorous Stimuli

Deon, Hall , Caleb Lack, Sean McMillan

University of Central Oklahoma

The study examined how physiological responses while watching three distinct types of humor varied in relation to the amount of anxiety the viewer had. The study consisted of a 4 between x 4 within design. The researchers had the participants complete the Penn State Worry Questionnaire (PSWQ), Leibowitz Social Anxiety Scale (LSAS), and the Obsessive-Compulsive Inventory-Revised (OCI-R) in order to determine each participants related anxiety level. The types of humor that were represented in the research were uncomfortable or awkward, gross-out, and slapstick. The results suggested that there was a reliable difference between the heart rate means of the anxious and non-anxious groups.

02.01.13 Increasing Mands for Information

Derrick, Meyers

University of Central Oklahoma

Requesting information is typically a problem for children on the autistic spectrum. Problems making simple requests, leads to what parents and teachers call "melt downs" due to the frustration the absence of this simple skill creates within the child. This single-subject research project used a simple AB design to test the hypothesis that requesting, as a behavior, could be taught. Using 80% mastery as a goal and Discrete Trial Training (DTT) including verbal prompts as the intervention, frequency data collection procedures provided evidence that the intervention was efficacious. While generalization to other children is limited, the project was successful and holds implications for replication with children on the autistic spectrum.

02.01.14 TRIPS: Teaching Reading Intervention Proficiency Skills

DiAnn, McDown , Emmanuella Smith, Keith Higa, Laura Branch

University of Central Oklahoma

The purpose of this study is to determine teacher candidates' (TCs) proficiency, self-efficacy and ability to transfer knowledge in reading instruction and assessment. The research team, after collecting adequate video footage of research assistants and researchers conducting reading assessments on K-8 participants, will create training modules for use as course supplements. Using pre-post data collected before and after the implementation of the modules, the team will measure effectiveness of the intervention. This study is a multi-method quasi-experimental design set within a phenomenological framework. Our goals are to enter the world of our TCs and get a clear vision of their field experiences in this course, design video training modules to support our TCs' literacy skills acquisition, and to measure the effectiveness of the modules in regard to TCs' proficiency, self-efficacy, and ability to transfer knowledge and skills to authentic classroom settings. Teacher candidate surveys, course feedback and reflections will all be analyzed for this study. Analysis of the qualitative data will be conducted through heuristic inquiry methodology (Moustakas, 1994). We believe this course redesign has the potential to transform field experiences into more meaningful, authentic collaborations with lasting impact for teacher candidates. Researchers will share the progress on this project, and discuss challenges they have encountered.

02.01.15 Production of Academic Journals and Conferences Administrative Issues Journal: Education, Practice, and Research

Patsy, Parker , Carey Smith, Frederic Murray

Southwestern Oklahoma State University

The production and development of a new academic journal and attendant conferences to support and highlight the mission of the journal, is a visionary undertaking. It requires the establishment of an editorial board, the creation of editorial policy, the support of an advisory board; a large team of reviewers, and consistent paper/presentation submissions. Academic journals and conferences provide promotion, tenure, and networking opportunities for higher education faculty. With a mission to provide collaboration across disciplines, the editors of the Administrative Issues Journal (AIJ) strive to connect authors, educators, and practitioners to give an outlet to academic work and research. Production of an academic journal and conference at a small regional institution presents challenges because of limited resources, but the AIJ has progressed from an idea in 2009, to its first publication in 2011, to an established biannual publication schedule and an annual conference each year since its inception. The editorial team of AIJ from Southwestern Oklahoma State University and Idaho State University are looking forward to connecting the academic population for many years in the future.

02.01.16 Increasing Contact With At-Risk Students Through a Referral Guide

Andrea, Velsor , Olaf Standley

Northeastern State University

In an effort to increase outreach to at-risk students, the Student Academic Success Center developed a Referral Guide as a resource to more effectively reach out to and follow-up with at-risk students. As a result, campus wide communication with at-risk students has increased along with overall retention rates for the institution. The Referral Guide is designed to align with the MAP-Works student success and retention platform; however, it can be adapted to coordinate with any type of early intervention and alert system. This presentation will provide an overview of the referral guide, present the benefits of the guide, and discuss the corresponding tracking and follow-up system developed by the Student Academic Success Center. Through analysis of data from MAP-Works as well as data gathered through the Student Academic Success Center's intake form, we have been able to detect students most at-risk for leaving the institution as well as identify the offices we work with most closely in order to develop continuing partnerships for student success. With the Referral Guide and concentrated outreach efforts, the Student Academic Success Center has been able to partner with other offices and individuals on campus to better serve our students.

02.01.17 Sex Differences in the Electromyography of Microexpressions

Kiersten, Durning

University of Central Oklahoma

This research is directed toward a better understanding of emotions being shown through Micro-Expressions, comparing an individual's ability to "hide" their emotions comparing male and female participants. Measuring the participants' facial movements in reaction to the picture both when inhibiting emotion and not. Micro-expressions may be socially determined with an individual mimicking another's emotional facial expression. This study will test if pictures displaying facial expressions would be causation for more muscle movement, measured with electromyography.

02.01.18 Parent Education, Socio-Economic Status and Student Achievement in English and Mathematics in Nigeria.

Yetunde, Quadri

University of Central Oklahoma

This qualitative study was to examine the relationship between parent education, socio-economic status, and student achievement in English and Mathematics in Nigeria. The study was carried out in a private secondary school in Ibadan; a city in South West Nigeria. Six students ranging from low to high achievers were subjects of this study. Their parents had different educational backgrounds varying from high school diploma to doctorate, and were lower to middle class status. The students were interviewed face to face over a period of two weeks, and the findings did not report that parent education or socio-economic status had any direct relationship with their achievement. Other factors not considered in this study may be contributory to students' achievement. Parents expectation, involvement, and praise; students motivation, limited number of subjects, and the type of school—private rather than public—may have contributed to the result obtained.

02.01.19 Back to School and S.H.E. Studies:

Shannon, Altom-Deckard

Northeastern State University

One of the largest growing population of college students today is adult women. How does this group of students find the support and resources to turn their ambition into a solution? This research project focuses on the adult woman's needs in higher education and offers an alternative for getting this group of students' needs met on the college campus. Women returning to college face a new set of challenges such as experiencing strain due to fulfilling several different role identities in their daily life. Role strain is felt when an individual is continually transitioning between roles such as: a professional, a parent, a spouse, or a student. Supportive programs and organizations could offer the adult learner options for coping and managing the obligations associated with these roles. This project will use a qualitative approach through interviews and focus groups. The purpose of the research is to determine what the needs are, how to meet the needs of this group of students, and to offer a solution with the proposal of one organization focused on multiple goals. S.H.E. Studies: Support for Higher Education Studies is the development of a network that exists to support this growing population of students in an effort to sustain and encourage the success of the adult female student.

02.01.20 The Effects of Training Head Start Parents in Dialogic Reading Practices and its Impact on Language Acquisition

Jennifer, Coscia , Sophia Sweeney

Northeastern State University

The purpose of this study is to determine how a program intended to educate parents on dialogic reading impacts language development in Head Start students. Dialogic reading is a nontraditional shared book reading where the adult empowers the child to become the storyteller by utilizing strategic questioning, expanding child responses, and prompting conversations about the story. This action research utilized observations and video recordings as data sources. This study took place in an urban Head Start classroom. The first author modeled dialogic reading strategies to each parent/child dyad. The researchers documented the frequency and types of questions used by parents throughout the 15 week study; including yes/no, attribute/function, recall, and open-ended questions. Open-ended questions are essential in dialogic reading, as they aid the child in becoming the storyteller through critical thinking and allow for expansive responses. Parents asked nine questions during the first video analyzed, 20 questions in the second video, 23 questions in the third, and 21 questions in the fourth video. Initially, parents asked yes/no and recall questions. Over time, parents increasingly asked series of questions, many of them open-ended, while repeating and expanding their child's answers. The parent training program developed the parents' questioning strategies and ability to facilitate the children's storytelling, thereby positively impacting the students' language acquisition.

02.01.21 Increasing Task Performance: Interdependent Group Contingency in the Workplace

Sam, Smith , Leila Keihani

University of Central Oklahoma

The purpose of this study was to increase task performance through differential reinforcement of incompatible behavior using interdependent group contingencies. There were eight staff members (six females, two males) chosen from a school for children with disabilities divided into three teams (two teams of two and one team of four). Individual participants received a break coupon based on the percentage of graphing data completed by the team as a whole. A five-minute break coupon was given for 80% completion of graphing duties, a ten-minute break coupon was given for 90% completion of graphing duties, and a fifteen-minute and five-minute break coupon was given for 100% completion of graphing duties. Results indicate an increased rate of graphed data by all teams. During baseline the school's director implemented an unforeseen checklist that affected the measurements taken on percentage of data graphed. Despite this limitation, data still shows that the intervention maintained the behavior at a higher rate more consistently than with the checklist alone.

02.01.22 Intrusive and Holistic Advising in Practice

Kristal, Soderstrom , Erik Wilkinson, Kaydee Dyer

Northeastern State University

In 2011, Northeastern State University (NSU) established the Student Academic Success Center (SASC), with the assistance of a Title III grant, with the goal of improving student retention. The SASC utilizes an intrusive-holistic advising model that encourages faculty, student, and SASC coordinator participation in the success of students. Faculty are able to refer students who demonstrate extra need, fail to attend class, or radically change behavior to coordinators for interventions. Coordinators, through either special interventions or traditional appointments, discuss a student's challenges, interests, goals, and well-being both in and out of the classroom. Coordinators also refer and walk students to campus resources for additional assistance. Students are encouraged to reflect on their strengths, weaknesses, and motivations for their actions. This intrusive-holistic model allows the coordinators to be proactive in addressing student needs before the student is forced to withdraw or fail courses. This approach has also been adopted by different departments within the university and has led to a new advising model at NSU. This presentation will highlight goals, intervention strategies, and results based off of the first two years of the SASC's program.

02.01.23 Effective Application of ABA With a Non-Verbal Child With Autism

Donna, Kearns

University of Central Oklahoma

Students with autism often need help to prepare them to acquire skills in order to interact effectively in a school setting. The objective of this research was to utilize results of pretesting along with techniques used in Applied Behavior Analysis to increase five skill areas needed for success in school. The hypothesis was that utilizing discrete trial teaching along with natural environment teaching based on identified skills and skill deficits of a non-verbal child with autism, we can increase skills needed for school success. Methods used in this study included an assessment of skills in five key areas including Motor and Visual Performance, Academics, Language, Self-Help, and Social according to results from the Assessment of Basic Language and Learning Skills –Revised (ABLLS-R) by Partington (2010). Then using those results, an academic and behavioral intervention plan was designed and implemented on a daily basis in his special education classroom where he attended half-days five days a week. He received one-on-one intervention three hours daily to improve his skills in each of the five areas. Results indicated that the subject made significant gains in all areas, especially in Language and Motor and Visual Performance. Though the use of discrete trial teaching and natural environment teaching appeared to help him acquire new skills, it also became obvious that when new skills were added, he struggled to maintain previously acquired skills in some area

02.01.24 Academic Writing Apprehension in a Blended Learning Environment

Dohwon, Kim , Karen Barnes

University of Central Oklahoma

This descriptive study was conducted to determine the relationships between online and face-to-face academic writing apprehension and academic and computer skills among university students in a blended learning environment. A total sample of 53 undergraduate and graduate students from a mid-western university completed the surveys. The Writing Apprehension Test (Daly & Miller, 1975) and the Test of Online Learning Success (Blaine, Lowe, Meixner, Nouri & Pearce, 2001) were used to assess the purposive and convenience sample of the students' academic writing apprehension in a traditional classroom and online writing environments as well as their computer and academic skills. Pearson's correlation coefficient and t-test were used to analyze the data. Results indicated that there were substantial, positive correlations between classroom academic writing apprehension and computer skills ($r(51) = .690, p=000$), classroom academic writing apprehension and academic skills ($r(51) = .770, p=000$), online academic writing apprehension and computer skills ($r(51) = .770, p=000$), and online academic writing apprehension and academic skills ($r(51) = .749, p=000$). This study rejected the null hypotheses and was statistically significant. Findings showed that students who have a high level of academic writing apprehension have lower computer and academic skills. Key words: academic writing apprehension, blended learning environment, computer and academic skills

02.01.25 Understanding the Differences in State Reported Recidivism Rates: The Highs and the Lows.

Kelly, Cowan

University of Central Oklahoma

This project analyzes correctional systems in Oklahoma and Colorado; specifically looking at programs offered during incarceration due to varying recidivism rates. Reported rates for Oklahoma are significantly lower than those of Colorado: 14% and 49% respectively. This research also explores the different political ideologies regarding sentencing, and any other variables that may play a role in contributing to the rate of recidivism in those regions. This project began with an exhaustive search of programs utilized by each state. Initially the researcher planned on utilizing a questionnaire for program heads regarding program eligibility and access, as well as perceived effectiveness. Upon further analysis the researcher found that sentencing structure seemed to be vastly different between states, and may be a major factor behind rate differences. Due to this, the researcher switched gears and continued on a path of discovery regarding sentencing structure differences, rather than an analysis of available programs and their effectiveness. Results show that Oklahoma utilizes a rule that requires offenders serve at least 85% of their sentence before being able to earn "good time," whereas Colorado uses no such rule. This enables the offender to serve less time, but allows less time to gain benefits from programs, trainings, and treatments available during incarceration. Further research will incorporate treatment effectiveness within each states correctional system

02.01.26 Increasing Attention Using Single-Subject Design In a Child With Traumatic Brain Injury And Autism.

Gabriela, Escobar

University of Central Oklahoma

Children with autism often struggle to maintain attention across multiple settings. A decreased tendency to attend can make it difficult for children to acquire new tasks, making it hard for them to achieve success in academic and social settings. Through the use of a single-subject design, this research project aims to increase the attention to task of a 4-year old male with a diagnosis of a Traumatic Brain Injury and Autism by using Applied Behavior Analysis techniques in task choice. By providing the student with task choice, an increase in the student's tendency to attend to stimuli is expected to occur.

02.01.27 Predictors of Sprint Performance

Terry, Taylor

University of Central Oklahoma

The purpose of this research was to determine what variables are good predictors of sprint performance. The proposed methods will include testing college age recreationally trained adults. Their level of training will be assessed by a questionnaire. Each subject will be tested on knee and hip extension and flexion peak torque at 500 degrees/second. These peak torques will serve as predictor variables for sprint performance. Peak torque will be assessed via a Humac Norm Isokinetic Dynamometer, Model 770 (Stoughton, MA.). Furthermore, a one repetition maximum (1RM) leg press will be conducted and used as a predictor variable as well. During the 1RM testing if the subject does not accomplish the lift they will be allowed two additional attempts, if they cannot accomplish the lift the previous weight lifted will be the 1RM. A multiple regression with a step wise progression will be the statistical tool used to analyze the data. To reduce the chance of making a type II error the alpha level will be set at .05 The researcher's hypothesis is that all peak torques and the 1RM will be significant predictors of sprint time.

02.01.28 The Vietnam War: the Great Divide that Brought us Together

Anthony, Reynolds

Southeastern Oklahoma State University

The Vietnam War was a devastating war for Americans financially, morally, and the number of casualties sustained. This war is still considered one of the worst wars that the United States of America has had, because of how divided Americans felt about the Vietnam War. Many were for the war, many were against the war. The battlefield was different from other wars as well; our troops had more problems with disease and landmines than any other war. The Viet Cong were constantly using guerrilla warfare on our ground troops. Ambushes were constant and a big nuisance for our soldiers. Morally, this war had caused many civilian deaths, not in America so much as in Vietnam. Estimates of two million people had been killed by in the Vietnam War by attacks from the U. S. soldiers or Vietnamese soldiers (www.digitalhistory.uh.edu). In this presentation I will be viewing photography to get a feel of depth and feelings people were having and going through during this war, civilian and soldier alike. Poetry will read as reference so that the war can be understood better, much of the poetry was written by civilians who were very anti-war. The film Born on the Fourth of July will be referred to as well. It has a historically accurate involvement with the returning veterans from the war.

02.01.29 Default-Mode Network Interference as a Predictor of Behavioral Inhibition Deficits in Adults with ADHD

William Scott, Sims

University of Central Oklahoma

The default-mode network (DMN) has been linked to attentional and working memory deficits, as well as the overall variability in task performance that is characteristic of ADHD. The current study will investigate how abnormal transition from task-negative to task-positive states in adults with attention deficit/hyperactivity disorder influences the behavioral inhibition deficits observed in this population. If the DMN is not being fully suppressed in individuals with ADHD, then these individuals should display a more prominent theta band frequency when attempting to complete a task after a period of rest compared to non-ADHD individuals. Additionally, if the lack of suppression of the DMN affects behavioral inhibition in ADHD individuals, then a more prominent theta band frequency should be observed when an individual with ADHD attempts to inhibit a saccade during the eye-tracking tasks after a period of rest. The current study will utilize EEG readings of very low frequency oscillations to examine the functioning of the DMN, as well as eye-tracking tasks to examine the differences in behavioral inhibition between populations. The eye-tracking tasks will require participants to actively inhibit responses to visual stimuli while having their brain activity measured via EEG. Worse inhibitory control is expected in the ADHD population corresponding with evidence of incomplete DMN suppression during the task.

02.01.30 Modifying Curriculum to a General Education Personal Health Course by Means of University Student Responses

Tia, Bennett , Mark Giese

Northeastern State University

Many colleges and universities offer Personal Health as an option within General Education. In an effort to promote continuous improvement in this course, it was our research plan to ask students five questions that would aid in knowing which concepts they know most about, least about and several questions regarding the quality of instruction. After proper IRB approval, five hundred twenty nine students (N=529) participated in taking a survey intended to answer these questions. The students could choose one of 10 categories in each of the five questions, each category being a component of wellness. These components are commonly covered in most Personal Health books used today. Chi Square was used to determine if a significant difference existed in any of the 10 choices in each of the five questions, and if males answered differently than females. The results showed that students felt that stress, STD's, and nutrition were most effectively taught and they knew least about stress, nutrition, STD's, and contraception. Their interests at the beginning of the course were fitness, nutrition and relationships. There was no clear interest pattern at the conclusion of the course. The participating students felt that knowledge of alcohol was the most important concept for college students to know, followed by information on STD's and stress. As a result of this study, the faculty teaching the Personal Health course will focus their efforts on the information supplied

02.01.31 Indigenizing The Curriculum: Content And Ways Of Learning In Water Issues

Jennifer, McCann , Christine Hallman

Northeastern State University

As part of the NASNTI program at NSU, we mindfully incorporated content and pedagogy with an “Indigenous” perspective. We expected that students would, at the conclusion of the course, feel an increased level enrichment in their educational experience and also become more proficient in and aware of Water Issues from a Native American Perspective. A pre-survey and a post-survey were developed and administered to determine whether there was a significant difference in students’ impression of NSU’s integration of Native American perspectives and beliefs into class curriculum. Consistent with the ISDC Survey Task Force recommendations, this survey contains five categories based on existing components of the 2012 National Survey of Student Engagement’s The Student Experience in Brief. Categories include: Level of Academic Challenge, Active and Collaborative Learning, Student and Faculty Collaboration, Enriching Educational Experiences, and Supportive Campus Environment. The number of questions in each category varies from 1-9. There were 12 pre-survey responses and 11 post-survey responses. Preliminary results suggest a change with an overall increase in student familiarity with and understanding of American Indian perspectives within the context of Water Issues. Students’ sense of cultural comfort increased within the classroom, however there was a note qualifying the increased comfort level to within the classroom vs. the larger campus community.

02.01.32 Charting New Ground: Assessing overall American Indian satisfaction with the NSU Experience

Jennifer, McCann , Phyllis Fife, Rachel Green, Tom Jackson

Northeastern State University

Northeastern State University’s Indigenous Scholars Development Center (ISDC) is a \$1.6 million dollar, Title III NASNTI grant designed to identify and facilitate the success of at-risk American Indian students. In order to provide the necessary services the ISDC had to assess American Indian students’ overall levels of satisfaction and familiarity with NSU and its indigenous services and programs. The study assessed NSU American Indian students’ satisfaction with NSU services and programs. Familiarity with support and programs were also assessed. Due to political and ethnicity-related processes, a number of previous surveys had been compromised through multiple completions by single individuals, possibly coerced perceptions provided and a lack of targeted subjects. The survey, consisting of five demographic questions, 19 satisfaction program familiarity questions. The Checkbox software used allowed for only self-identified American Indian students to receive the survey link as well as limiting their completion of the survey to one iteration. 2,485 American Indian students were sampled. Results indicated positive satisfaction overall and some of the services provided as well as a degree of familiarity with NSU indigenous services and programs which, while acceptable, needs further promotion. Discussion will include the survey results as well as steps to be taken to heighten awareness, familiarity and satisfaction with all of NSU’s indigenous programs.

02.01.33 Learning Management Systems, Frustration and Learning Success

Renee, Jones , Karen Barnes

University of Central Oklahoma

Most college students must use a learning management system (LMS) to successfully complete coursework, even those who intentionally avoid online classes, as LMS use has become a required element of many on-campus courses. Does the usability of a LMS relate to college student frustration and learning success in academic courses? The purpose of this study is to measure the usability of Desire2Learn (D2L) and the relationship it has with student frustration and learning success. Ellis' Rational Emotive Behavior Therapy provided the theoretical framework for this study. A sample consisting of 124 graduate and undergraduate students rated D2L's usability using a modified version of the Computer Systems Usability Questionnaire (Lewis, 1993) as well as their frustration with using D2L. Using Pearson's correlation coefficient, the results indicated a strong negative relationship between student frustration and D2L usability, $r(74) = .640$, $p = .000$. More than 77% of students indicated they would take another DL2 course; however, participant comments cited "finding course content" as a prevalent source of frustration using DL2. Findings from this study may be used by university faculty to identify standards for when and how to use D2L to reduce student frustration and enhance learning.

02.01.34 Perceived Willingness to Intervene in Sexual Assault Scenarios

Adrienne, Martinez , Robert Mather, Wayne Lord

University of Central Oklahoma

The current study aims to investigate the perceived willingness to intervene as a bystander in a sexual assault. Participants will be presented two vignettes that describe a sexual assault, one that is obvious and one that is ambiguous. The vignettes will vary between participants on whether or not intervention can be anonymous and whether or not the participant is familiar with the offender. The authors predict that participants will perceive themselves as more willing to intervene in an obvious rather than an ambiguous sexual assault scenario, when anonymous rather than known, and when not related to the offender rather than related. The authors also predict that participants who have intervened in the past are more willing to perceive themselves as likely to intervene in both scenarios. An ANOVA will be used to measure the effects of ambiguity (within), sex (between), anonymity (between) and relationship with offender (between) on perceived willingness to intervene. The findings will have implications for sexual assault bystander intervention education, an issue particularly relevant to institutions of higher education where ambiguous sexual assaults occur.

02.01.35 Effects of Rest Period Length on Exercise Volume In Older Adults B. Hamill University of Central Oklahoma, Edmond, OK

Brandon, Hamill

University of Central Oklahoma

One of the main concerns of a proper resistance-training regimen is the rest period taken between sets of exercise. A rest period is time taken to recuperate between sets and exercises, which are known to affect the outcome of resistance training among younger adults. The amount of rest taken between sets of resistance training affects many physiological functions as well as training adaptations. However very little evidence is available regarding recommendations for rest periods among older adults. **PURPOSE:** The purpose of this study is to determine if 1-, 3-, or 5-minute rest periods in between sets of the leg press exercise will increase volume (number of repetitions) among older adults 60-90 years of age. **METHODS:** Twenty-eight men and women with a minimum of eight-weeks of resistance training were recruited to participate in this five-week study. Weeks one and two consisted of one-repetition maximum (1RM) testing. Weeks 3-5 consisted of three sets using 80% of the 1RM with a 1-, 3-, or 5-minute rest period (in random order) between two sets of 8 repetitions with the third set being conducted to failure. **EXPECTED RESULTS:** The researcher has hypothesized that the volume of exercise completed following a 5-minute rest period will be greater than the volume of exercise completed following the 3- and 1-minute rest periods. It is also expected that the 3-minute rest period will result in a greater volume of exercise than the 1-minute rest period.

02.01.36 Service Learning: University Students' Attitudes, Skills, and Experiences

Tracey, Romano

University of Central Oklahoma

Abstract A sample of Undergraduate students at a Midwestern public university was asked to answer questions concerning service learning experiences. Surveys were collected from one class at each education level: freshman, sophomore, junior and senior in four separate course subjects. Hours of time spent in service learning experiences were compared to students' scores on a questionnaire involving attitudes and skills toward civic and social issues as related to service learning in the expectation of proving a relationship. The questionnaire covered six areas: Civic action, interpersonal and problem-solving skills, political awareness, leadership skills, social justice attitudes, and diversity attitudes. Open-ended questions were included to provide detail and additional resource information. This descriptive study was important in its support of determining the value of course offerings with a service learning component. In addition to previous research, student answers to the survey questionnaire provided additional information to aid in future course offerings and provide enhancements to current programs. **Keywords:** service learning, higher education, civic attitudes

02.01.37 Passive Speakers in the Absentee Shawnee Community: Understanding Their Silence

Donna, Longhorn

University of Central Oklahoma

This poster will discuss adult members of indigence communities who understand their heritage languages fluently but rarely, if ever, speak them. These individuals are referred to as 'passive speakers' and very little is understood about this phenomena and techniques that could successfully assist these individuals in overcoming their barriers to speaking. The Absentee Shawnee community at Little Axe will be used to provide a case study of this phenomena. Standard second language acquisition theory posits that 'affective filters' are the emotional variables associated with the success or failure of acquiring a second language (Krashen, 1975). These filters are used to determine what makes a good language learner such as attitudes and motivation. These filters will be contrasted with traditional Shawnee socialization and corrective behavior, such as teasing and shaming. These behaviors transfer to adult language situations which will be argued helps create passive speakers. Furthermore, I will contrast what second language acquisition constitutes as a 'good language learner' against how teasing and shaming may be inhibiting fluency among passive speakers due to the inverted success of this type of socialization and corrective behavior.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

02. Education and Professional Studies

02. Family Science

02.02.01 Surrogacy: A Lived Experience

Cori-Jo, Black

University of Central Oklahoma

Surrogacy: A Lived Experience examines what surrogacy is, the difference between the two different definitions of surrogacy, how surrogacy is viewed in Oklahoma and California, and includes a personal account from a proven surrogate of her journey to and through surrogacy. The project also examines the process of becoming a surrogate, the pros and cons of the occupation, and includes insight to how families are changed during the journey.

02.02.02 Communication Styles of Coping with Life Threatening Illness

Jeanetta, Sims , Jalea Shuff

University of Central Oklahoma

This study examines prevailing experiences related to participants' perceptions on how communication has unfolded since they or their relational partner has been diagnosed with a severe, life-threatening illness (LTI). Using Q methodology, 60 participants will perform Q sorts, which will be analyzed using PQ Method. Interviews will be conducted with 20 participants to clarify, and better understand Q sort results. This study will offer coping strategies for couples who experience severe LTI or palliative care.

02.02.03 Intergenerational Studies: Developing College Bound Students Raised by Grandparents

Glee, Bertram , Jenifer Fuller, Katelyn Green, Kaye Sears

University of Central Oklahoma

Our Midwestern University hosted an intergenerational program to provide training for grandparents and their adolescent grandchildren in Oklahoma Promise, scholarship applications, university application, and college/career advisement information. Grandparents are many times out of touch with the process of helping adolescents prepare for college. This program is a first step in giving adolescents living with grandparents the resources to be college bound: thereby increasing their chances of being successful adults. Grandparents and grandchildren attended a day long workshop to explore the topics at the University of Central Oklahoma campus. Grandchildren and grandparents were given tours of college housing to motivate them about attending college. Students who are attending college on Oklahoma's Promise discussed their positive experience. Grandparents and grandchildren were given a pretest-posttest to assess changes in perceptions about college participation. Focus groups were conducted with grandparents after the event to receive more in-depth feedback. This data was collected over Fall semester, 2013, and data collection continues in Spring semester, 2014. Early findings indicate that the grandparents have raised awareness about how to apply for college, career opportunities for grandchildren, and know financial aid. Grandchildren increased their awareness of career opportunities. Implications for future college prep training for this population will be discussed.

02.02.04 Teaching Relationship Education in the College Classroom

Katelyn, Green , Brandon Burr, Glee Bertram, Tiffany Stepp

University of Central Oklahoma

Relationship instability is an ongoing challenge for many families. Relationships education services are designed to provide information to help both couples and individuals build healthy relationships. Up to this point, relationship education has primarily been implemented with established couples who are engaged or married. However, relationship researchers are suggesting that intervening earlier with emerging adult (primarily ages 18-25) populations, before many enter committed relationships, can have a large impact on overall future relationship quality and family well-being. The goals and objectives of this project seek to fill this gap by implementing a research-based relationship education curriculum into a university Marriage class, and assessing student knowledge on several important relationship areas in the pre-post-test method. Comparisons were made between students who received the revised Marriage course curriculum, and students who did not. Data was collected over the Fall semester of 2013, and data collection continues over the Spring semester of 2014. At this preliminary stage, results show gains in several areas of relationship knowledge and awareness for both groups, and some differences between groups. Specifically, the group who received the revised Marriage curriculum showed improved communication skills over the group who did not. Implications for those who study and/or work with couple relationships and relationship education will be discussed.

02.02.05 Constructing a Grounded Theory Of Father Involvement In The Treatment Of Children With Type-1 Diabetes

Shaun, Calix

Cameron University

The goal of this grounded theory study was to generate a model of the influences on paternal involvement in the treatment and care of children with type-1 diabetes. The research questions addressed were, "In what ways are fathers involved in the treatment and care of children with type-1 diabetes?", and "What influences paternal involvement in the treatment and care of children with type-1 diabetes?" Fifteen fathers of children with type-1 diabetes were interviewed. Fathers described several family processes (e.g., navigating the emotional waters, balancing work and family demands, building trust and teamwork within the parental treatment team, and encouraging child responsibility for treatment) that influenced how they shared the responsibility for the care and treatment of the children with mothers. Fathers engaged in several involvement roles (e.g., as primary breadwinner, helper, equal partner, treatment monitor, primary caregiver).

02.02.06 Family Typology and Health Care Providers

Margaret, Eagler , Steven Byers

Northeastern State University

The life-changing event of learning a child has a serious or permanent disability has a devastating effect on those involved. The outcome for the child can be improved by improving the relationship between the healthcare provider and the family. Understanding how the family feels about the health care industry as a whole can improve the relationship between the provider and family, and thus provides the child with a better outcome in life. By addressing factors such as stressors, coping mechanisms available resources and basic trust, the provider can better provide the family with the additional necessary resources needed. This project will examine those factors by examining the importance of the family dynamic. Whether the family trusts or does not trust the provider to give the necessary support can influence the ability to cooperate and follow through with recommended and necessary treatment plans. By addressing the typology of the family system, a provider can have insight into their combined interaction.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

02. Education and Professional Studies

03. Health Studies

02.03.01 Exercise and Media Influences on Women's Body Image

TaNiqua, Ward

Oklahoma State University

Introduction: Body image includes many components of an individual; some of the components associated with body image are physical appearance, physical ability, and biological integrity (3). Media exposure gives individual's unrealistic body images to attain. Purpose: The purpose of this study is to create a literature review that further analyzes exercise and media influences on women's body image and ways to encourage a healthy and positive body image. Methods: A literature review was conducted pertaining to exercise and media influences on women's body image. Results: The results indicated a significant difference ($p=0.001$) in the participant's state self-objectification scores for the participants that watched the appearance focused DVD compared to the participants that watched the non-appearance focused DVD. Women in the group that did not exercise felt less physically attractive ($p=0.008$) and less satisfied with their bodies ($p=0.001$) compared to the women that were in the exercise group when viewing the two different DVDs. Conclusion: The information found from this literature review can be distributed to help educate health professionals on the issue of women's body image.

02.03.02 Neuropsychological Effects of Sport-related Concussions in Student Athletes

Kathleen, Olson

Oklahoma State University

Sport-related concussions (SRC) have become more of a public concern due to catastrophic outcomes in youth sports. The psychological effects of SRC are often overlooked despite their implications for academic performance and overall well-being. Purpose: The purpose of this study is to provide a review of current literature to identify the neuropsychological effects of SRC and determine the role of the neuropsychologist in the assessment and treatment of student-athletes. Methods: A comprehensive review of the literature. Results: SRC present with a variety of somatic, cognitive, and psychological symptoms that generally resolve within 7-10 days of the initial injury. These symptoms not only affect an athlete's ability to participate in their sport, but their ability to succeed in school. The current neurocognitive assessments used by sports medicine professionals are valid and reliable measures, however they should not serve as a substitute for a full neuropsychological examination. Conclusions: SRC evaluation and management requires a multi-faceted approach. Neuropsychologists should be made an integral part of the SRC evaluation and management team alongside physicians and athletic trainers. They are uniquely qualified to assess cognitive and psychological functioning, monitor athletes returning to school, and treat emotional problems associated with SRC.

02.03.03 Newly Diagnosed vs. Current Dialysis Patients Perceptions About Nutrition

Shaina, George , Huey Chan, Tawni Holmes

University of Central Oklahoma

The purpose of this study was to compare newly diagnosed dialysis patients (n=8), and current (> 6 months)(n=8) dialysis patients on their perceptions about nutrition. Self-perceptions about nutrition were compared to lab data. Each newly diagnosed patient was interviewed about their attitudes regarding their long-term health status compared to current patients whose views on nutrition may have changed since they have been on dialysis. The newly diagnosed patients knowledge about which foods contained phosphorus, sodium, and potassium, which are essential for every dialysis patient, was lower. When comparing their knowledge of each of the key nutrients to their lab values for those nutrients, half of the newly diagnosed patients lab values were higher than normal compared to current patients whose lab values were normal. This research will be used to develop better methods of reaching the newly diagnosed patient with important dietary information.

02.03.04 The Stability of Low-Top versus High-Top Basketball Shoes

Ruth, Gillespie , Paul House

University of Central Oklahoma

Background: Ankle sprains are one of the most common athletic injuries that occur in sports participation (Trevino, Davis, & Hecht, 1994). There has been numerous prevention strategies designed to decrease the occurrence of ankle sprains (Hume & Gerrard, 1998). Objective: To evaluate the stability of collegiate level basketball players wearing low-top and high-top basketball shoes. The researcher's hypothesis is that the high-tops will provide significantly greater stability than the low-tops. Methods: Multiple male and female intercollegiate basketball players from the University of Central Oklahoma will serve as subjects. To qualify as a participant, the subjects have to be free of lower leg injuries for the previous 3 months. Measurement: Average left-right excursion will be recorded, using the F-Scan Foot Pressure Mapping System (Tekscan, Boston, MA). The left-right excursion will be evaluated as subjects perform layups in high-top and low-top basketball shoes. The data will be inputted into PAWS version 18 for data analysis. A dependent t-test will be the statistical test used to determine if there are significant differences between shoe type and stability. To minimize committing a type II error, an alpha level of $p=0.05$ will be set as the criteria for differences between groups. Results: In progress.

02.03.05 Creating Resources for Navigating and Utilizing the University of Central Oklahoma Campus Labyrinth

Shelby, Graves , Diane Rudebock

University of Central Oklahoma

This presentation will feature highlights from the 2013-2014 RCSA grant, "Creating Resources for Navigating and Utilizing the University of Central Oklahoma Campus Labyrinth." This student RCSA grant was approved in order for the student researcher to update the Labyrinth Society's online research database and bring labyrinth related resources to the University of Central Oklahoma's (UCO) campus. The highlights of this presentation include the description, goals, and guidelines of the student grant. The creation of resources, updating of the Labyrinth Society's online research database, the purchase of UCO labyrinth related materials, and survey collection at the Labyrinth Society's Annual Gathering will also be discussed at this presentation.

02.03.06 Evaluating the Impact of Healthy Vending Machines at the University of Central Oklahoma (UCO)

Kuan Yen, Siew , Tawni Holmes

University of Central Oklahoma

The initiative by the Healthy Campus Leadership Team to implement healthy vending machines on campus aims to provide healthy snack options to both college students and faculty, to support healthy eating habits, and to promote healthy eating environments at UCO. The purpose of this research project is to evaluate the usage of healthy vending machines by UCO students and faculty, and to determine their satisfaction with the new healthy vending options. Both electronic (n=320) and paper surveys (n=23) were used to collect data. Comment boxes were installed on each vending machine to collect additional comments from the public. The first healthy vending machine was installed August of 2013, and has already received a large volume of positive responses from the UCO community, enough that a second machine was added in November of 2013, and a third is planned for Spring 2014. A total of 6 machines are expected. Based on surveys, the majority (>50%) are willing to pay a higher price for healthier and higher quality snacks options. Female students aged 18-24 has been the largest demographic to respond to the survey, and they are highly motivated (63%) to get healthy snacks on campus. This has been an incentive for us to hear that having healthy vending options on campus is very important to more than half of our participants, and has revealed the health and wellness concerns of the student population.

02.03.07 Undergraduate Students' Attitudes Toward Older Adults After Intergenerational Learning Projects

Laura, Gregory , Diane Rudebock, Melissa Powers

University of Central Oklahoma

The purpose of this study was to assess approximately 40 students enrolled in a college level health and aging course to identify the difference of community/public health undergraduate college students' attitudes toward older adults after an intergenerational learning project with older adults. The hypothesis was students' perceptions of older adults would become more positive after the intergenerational activity. Students were involved in classroom discussions, assignments, and four-week intergenerational activity with older adults. Students were in the classroom for the first four weeks, broke into two groups the next eight weeks, and finished the semester in class. Each group participated in the intergenerational activity one day a week and attended class the other day. The first group participated in the intergenerational activity during weeks five through eight and the second group participated weeks nine through 13. Demographics, experiences with older adults, and career interests working with older adults were collected. Perceptions were measured using the Aging Semantic Differential and Student Assisted Independent Living Questionnaire. Students tested during week four, before the intergenerational activity, week eight, after the first group completed the activity and before the second group began, and week 13, after all students had completed activities with older adults. The study began January 2014 and preliminary results will be available May

02.03.08 Determination of Log P values of New Cyclen Based Antimalarial Drug Leads Using RP-HPLC

Apoorva, Rudraraju , Faruk Khan, Mohammad Hossain, Prince Amoyaw

Southwestern Oklahoma State University

The main purpose of this study is to determine the log P values of drug leads using high performance liquid chromatography. The main objective is to provide a standard calibration curve between parameters of the lipophilicity that is logarithm of retention coefficient (log k) and partition coefficient (log P) values using a series of reference standards which helps to determine the partition coefficient of the new drug leads. The reference standards with varying polarity ranges were dissolved in methanol and analyzed by RP-HPLC. The HPLC analyses were performed using C18 column and the mobile phase consisted of a mixture of water, acetonitrile and methanol in a gradient elution mode. A calibration curve is plotted between the experimental log P values and obtained log K values of the test compounds to get a best fit line. The log K values of the new drug leads determined in the same solvent system were used to calculate the respective log P values by using the best fit equation in Excel™. From the calibration curve, we obtained a coefficient of determination (R²) as 0.9768 and the adjusted R² as 0.9541. The P values of the intercept and slope were found to be 0.000258 and 3.83E-06 respectively at 0.05 level of significance and 95% confidence interval. Log P values of the new drug leads A, B, C, D, and E were 7.546, 5.574, 5.546, 3.494, 5.506, respectively. The estimated log P values of the drug leads by HPLC were closely related to the clog P values using ChemDraw Ultra 12.

02.03.09 Metabolic Stability Study of New Cyclen Based Antimalarial Drug Leads Using RP-HPLC

Apoorva, Rudraraju , Anjuli Shrestha, Faruk Khan, Prince Amoyaw

Southwestern Oklahoma State University

Metabolic stability of newly discovered drug leads in our laboratory using RP-HPLC as well as LC-MS. Metabolic stability of the drug leads is determined using specific cytochrome P450 enzymes taking chloroquine as the reference standard. All the assays were conducted in 0.2M phosphate buffer at pH 7.4. The total assay mixture contained 25pmoles/ml of CYP2C8, 0.5mM of sample. Sample and buffer was taken into a reaction flask and was preincubated for 2 mins and then enzyme was added. The reaction was initiated by adding 1mM NADPH. Incubations were done with increasing time (t= 0hr, 1hr, 2hrs) at 37°C. After incubation, the reactions were terminated by adding acetonitrile in the equal amounts of the assay mixture taken. Then the samples were centrifuged for 15mins at 10,000x g at 4°C. An aliquot of the supernatant fraction was subjected to analysis using the above HPLC conditions. The mass of the drug and the metabolite were determined by using LC-MS. The drug lead A,B,C,D, and E were metabolically stable as shown by both HPLC and LC-MS at the experimental conditions utilized. Molecular ion peak of the drugs A, B, C, D, E, and chloroquine are 523m/z, 495m/z, 561m/z, 885m/z, 619m/z, and 515m/z, respectively. HLM and CYP2C8 contributed to the chloroquine (320 m/z) N-deethylation to desethylchloroquine (292 m/z) up to 5.12% and 10.33%, respectively, after 1 hour of incubation and 6.416% and 12.26% after 2 hours of incubation, respectively.

02.03.10 Formulation, Characterization And Antimicrobial Efficacy Of Cinnamon Oil Emulsion Against Staphylococcus Aureus

Kanika, Bhargava , Ashley Park, Hari Kotturi, Lilian ChoobackPritika Khadka, Sarvenaz Vandyousefi, Yvonne Daugherty

University of Central Oklahoma

S. aureus is responsible for a wide variety of human ailments including skin, soft tissue, bone infections, pneumonia, and bacteremia etc. Phytochemicals, plant derived compounds such as cinnamon oil is well-recognized for their therapeutic properties, however, their application is limited due to their lipophilic behavior and insolubility in water. One of the strategies in dealing with such hydrophobic compounds is by dispersing them in emulsion droplets. Emulsion of cinnamon oil was formulated by ultrasonication utilizing tween 80 as an emulsifier. Emulsions were characterized using Olympus 1X71 Inverted Microscope for droplet size. Antimicrobial efficacy of cinnamon oil emulsion and standard antimicrobials (ampicillin, erythromycin, penicillin, streptomycin, tetracycline and triple sulfa) against *S.aureus* ATCC 25923 were evaluated using disc diffusion method. Broth micro-dilution method was performed to determine Minimum Inhibitory Concentration of cinnamon oil emulsions. Average diameter of the antimicrobial emulsions was 3 micro meter. Zone of Inhibition (mm) for cinnamon oil emulsion, ampicillin, tetracycline, ampicillin, erythromycin, penicillin, streptomycin, tetracycline and triple sulfa were 27 mm, 35 mm, 31 mm, 40 mm, 18 mm, 32 mm, and 26 mm respectively. Minimum inhibitory and minimum bactericidal concentration of cinnamon oil emulsion was 0.078%v/v and 0.156%v/v respectively. Cinnamon oil emulsions offer potential to be used as antimicrobial against *S. aureus*.

02.03.11 Effects of Resistance Training on Cognitive Function Among Older Adults

Simon, Smith , Brandon Hamill, Cody Sodowsky, Melissa PowersMichelle Gray

University of Central Oklahoma

The purpose of this one-year study was to assess the impact of resistance training protocols on cognitive function among older adults. Participants over the age of 75 years were randomly assigned to a low velocity (LV) or high velocity (HV) resistance training group. Both groups trained two days per week and completed eight exercises following American College of Sports Medicine recommendations. The LV group completed the concentric contraction over 2-3 seconds; whereas the HV group completed the concentric contraction as quickly as possible. Cognitive function was assessed by the Trail Making Test (TMT) and the Executive Function (EF) subscale of the Cognitive Linguistic Quick Test. ANOVA with repeated measures were used for analyses and effect sizes were calculated. Results indicated no significant group-by-time interactions for the TMT Part A, TMT Part B, TMT Differences between Part A and Part B, and EF. The strongest effect size for improvement was seen in the HV group for EF ($d = -0.997$). The HV group also displayed a small effect for the improvement on the TMT differences ($d = 0.149$). High velocity training is capable of improving cognitive function in older adults. Higher levels of cognitive function can result in optimal aging. Future studies should further examine the relationship between cognitive function and resistance training among older adults.

02.03.12 Formulation, Physical and Chemical Characterization of Lentil Based Yogurt and its Comparison with Traditional Dairy Yogurt

Carissa, Jetto , Kanika Bhargava

University of Central Oklahoma

Lentils contain nutrients (carbohydrates, proteins, vitamins and minerals) which are essential requirements in the human diet. Also, they could serve as growth nutrients for probiotic and yogurt starter cultures. This study was conducted to formulate, characterize and compare red lentil based yogurt inoculated with live active yogurt cultures against traditional dairy yogurt. Lentil yogurt was developed and pH, moisture content, total solids and total soluble solids were determined. Yogurt culture was formulated using dairy milk (2% fat). Danisco culture (Danisco YO-MIX 495 LYO 250 DCU; *Streptococcus thermophilus* and *Lactobacillus delbrueckii* subsp. *bulgaricus*) was used to inoculate milk. The pH before inoculation and after fermentation (8 hours) was 7 and 4 respectively. For red lentil milk preparation, red lentils were soaked in water followed by blending. The mixture was then pasteurized and cooled to 110 degree F. The pH of the lentil milk before inoculation and after fermentation (8 hours) was 6 and 5 respectively. Moisture content of lentil yogurt was less (79.7%) in comparison to dairy yogurt (88.8%). Total solids were more in lentil yogurt than dairy yogurt (LY: 20.3%, DY: 11.2%). Total soluble solids in lentil yogurt were 4 degree brix when compared to dairy yogurt (8 degree brix). The results indicated the potential for a new, fermentable lentil based product which is rich in phytonutrients and offer many health benefits.

02.03.13 Predictors of Vertical Jump Performance in Women Ages 35-50

Simon, Smith , Paul House

University of Central Oklahoma

Muscular power is important to sustain throughout a lifetime because it is a strong predictor of prevalence of falling in later life. Vertical jumping ability has been linked to lower body power (Genuario & Dolgener, 1980; Thomas et al., 1996). Therefore; the purpose of this study is to find the best predictor of vertical jump performance in women between the ages of 35-50 years. The ability to find the best predictor of vertical jump performance in women ages 35-50 can determine the mode of training that should be emphasized to improve lower body muscular power. Not many studies have been conducted on predictors of vertical jump performance in women ages 35-50 years with the combination of variables being proposed in this study. Participants will be tested on three different occasions over a one week period of time. Variables to be examined in this study will be isokinetic knee extension peak torque at two different speeds (500°/s & 300°/s), lower body lean tissue mass (LTM), and a one-repetition maximum (1RM) leg press. Vertical jump height will be assessed using a VerTec device. The researcher's hypothesis is that isokinetic knee extension peak torque at both speeds, 1RM leg press, and lower body LTM will have a strong, significant relationship with vertical jump height. No data has been collected at the time of abstract submission. The study is pending Institutional Review Board (IRB) approval.

02.03.14 Student Stress, an Outdoor Labyrinth and Managing Wellness

Jenine, Kern , Diane Rudebock

University of Central Oklahoma

The main objective of this research project was to contribute to labyrinth and greenspace related literature as they pertain to student stress and other psychological, emotional and spiritual components of health and wellness. The null hypothesis for this research project was that neither walking an outdoor labyrinth nor walking an outdoor space (non-labyrinth) caused any changes over time for participants' perceived stress. All 46 participating students (from Fall 2013 Success Central Classes) took the 10 question Perceived Stress Scale both as a pre-test and as a post-test. Group I also completed the Labyrinth Walk Questionnaire. Data from the Perceived Stress Scales were analyzed using one 2x2 ANOVA with repeated measures. The time x group ($F(1) = .310, p > .05$) was not significantly present. No significant main effect measures were found. Despite these findings, there were positive trends in the results; 96% of the labyrinth walkers reported that the outdoor sounds, temperature and overall outdoor environment to have a positive affect on their labyrinth experience. Similarly, the majority of participants (73%) reported feeling less to much less stress. Because perceived stress was lowered in labyrinth walking participants and reports of the outdoor experience being so positive, the University of Central Oklahoma's new outdoor labyrinth seems to provide to be an effective stress-reducing activity for students.

02.03.15 Quality of Care in the Rural Health Care Setting

Mary Grace, Schurter , Karlea Pearson, Kelsey Gingrich

Northwestern State University

The purpose of this study was to evaluate the quality of care at rural health care facilities. The study depicted that care was used as a preventative measure and is effective if the staff is well educated and has the appropriate technology. The main focus of the rural nurse should be to teach the rural dwellers appropriate and adequate education towards their specific disease process with the aim of decreasing emergent situations.

02.03.16 A Comparison of Publication Metrics Among Regional Universities in Oklahoma

Krista, Brooks , Dennis Thompson

Southwestern Oklahoma State University

Introduction: Teaching, research, and service are traditionally acknowledged as the goal of higher education institutions. Scholarship, as measured by journal publications, is a common method of quantifying this aspect of academics. The purpose of our project was to collect and compare bibliometric publication data from the six regional universities in Oklahoma. Methods: The advanced search feature in Web of Science (WoS) was used to collect bibliometric data from each school by typing in the standardized University name used by WoS into the address field tag (ad = Southwestern Oklahoma State Univ). All languages as well as all document types were searched. Citation reports were created for each university. Collected data included the universities most prominent research areas, authors, number of publications, and most cited publications Where possible, data were normalized by FTE faculty to better compare universities with varying faculty sizes. Results: Mean h-index for the six universities was 20.8 + 9.9. Mean publications per university for all years was 344 + 257. On average, 12% of the faculty accounted for 80% of the total publications for the university. Individual university data will also be presented. Conclusions: Journal publications are one measure of scholarship that universities may use to track outcomes. Our data suggest that there is great variability in the six Oklahoma regional universities in publication metrics.

02.03.17 Antimalarial Activity of Metal Complexes of Cross-bridged Tetraazamacrocyclic Ligands

Prince, Amoyaw

Southwestern Oklahoma State University

02.03.18 Physical Activity, Weight Status, and Feeling Overwhelmed among College Students

Antonio, Ross

University of Central Oklahoma

The purpose of this study was to observe the relationship between meeting the physical activity guidelines (P.A.G), desired weight, and feeling overwhelmed among college students. The hypothesis of the study is, students that felt overwhelmed for the past 12 months and desired to lose weight did not meet the P.A.G. ACHS-NCHA II survey was used, the survey questions consisted of several different questions related to feeling overwhelmed, desired weight, and meeting the P.A.G. All data was ran through SPSS data base and cross tabulations analysis was utilized. Results showed. More than 50% of subjects wanted to lose weight, and 59.1% of the entire sample had not met the P.A.G. Data also showed those that meet the P.A.G, did not report feeling overwhelmed as often. The finding of this study showed that the majority of college students have felt overwhelmed within the one year had a desire to lose weight, but did not meet the P.A.G.

02.03.19 Determining How Individual Experiences Describe Societal Obstacles And Identify Health Disparities For The Homeless And Impoverished In Oklahoma City Through PhotoVoice.

Haleigh, Larkin , Dr. Sunshine Cowan

University of Central Oklahoma

PhotoVoice is an interactive medium used within communities for the promotion of communal expression and individual empowerment through photography. The objective of utilizing PhotoVoice within the homeless and impoverished community in Oklahoma City is to strive for societal change through the advancement of identifying population specific health disparities and societal obstacles. The purpose of this research is to address the effects of inaccessibility to resources and lack of proper health care for the homeless in Oklahoma City. Participants will capture their conjectures of health inequalities and societal injustices regarding health care and health resources. At the conclusion of the study, researchers will interview the participants in congruence with their photographs for clarification of perceived hindrances and inequalities. The projected results, through the impact of the photographs, will provide insight into what problems are present within the homeless community as well as render potential and attainable solutions to advance health equity. For individuals who are chronically homeless, have intermittent bouts of unstable residency, and live in poverty, the photographic perceptions illustrating the continuing issues will provide a foundation for additional investigative procedures by local advocacy groups for the furtherance of support and activism.

02.03.20 Evaluation of a Fitness-based Intergenerational Transformative Learning Experience

Terry, Taylor

University of Central Oklahoma

The purpose of this study was to examine students' attitudes toward older adults and community service before and after a senior fitness class assignment. The participants were students enrolled in an undergraduate exercise programming class. For a class assignment, students conducted fitness testing at a local retirement community, after which the students developed exercise recommendations based on the testing results. The students were examined through surveys designed to assess attitudes before and after the senior fitness testing to monitor any changes in attitudes/beliefs toward older adults, community service, working with the older adults and in the ability and confidence in working with this population. The results from the dependent t-tests show that the Aging Semantic Differential Scale (PASD) Mean (M) pre = 76.78 ± 17.31 , M post = 60.26 ± 20.54 ($t(22) = 4.603$, $p = .000$) and Attitudes Toward the Elderly (ATE/Scale 1), M pre = 22.39 ± 2.92 , 24.48 ± 3.31 , ($t(22) = -5.391$, $p = .000$, but no change in attitudes in working with the senior population or community service was noted.. The research indicates that through the interactive learning programs that the negative attitudes toward the older adult population can be changed.

02.03.21 The Affordable Care Act and The Practice of Optometry in Oklahoma

Casey, Wright , Amanda Herrera

Northeastern State University

Purpose. To analyze how the new Affordable Care will affect optometrists in the state of Oklahoma. Investigate optometrists' views toward the law, and how they anticipate it will affect their practices. Methods. A 16-question, 10-minutes web-based survey was created to address important aspects of the Affordable Care Act that pertain to Optometry. Working with the Oklahoma Association of Optometric Physicians (OAOP), anonymous survey data from members of the organization will be collected via email and analyzed. Results. We found that most optometrists in the state of Oklahoma, who responded to the survey, felt very negatively towards the Affordable Care Act even though most of them reported having little understanding of the changes implemented in the Affordable Care Act. They feel that it will have a negative impact on the profession of Optometry. Conclusion. Overall Optometrists in Oklahoma have a somewhat negative view towards the law and are concerned about its impact on their practices.

02.03.22 Impact of Cooperative Learning Elements in Group Work on Students' Academic Achievement and Satisfaction

Michelle, Miller , Christine Cobb, Jacilyn Olson, Jeff King

University of Central Oklahoma

INTRO: Cooperative learning (CL) elements are imperative in a group work setting for the development of students' leadership, decision-making, communication and conflict management skills. The 5 CL elements are positive interdependence, individual accountability, face-to-face promotive interaction, small group skill and group processing. PURPOSE: This project sought to analyze students' perceptions of the emphasis on CL elements in group work at UCO and the relationship of these elements on students' academic achievement and satisfaction. METHODS: Pearson's correlations and qualitative analysis were utilized. RESULTS: The survey yielded 1280 student responses from 70 randomly selected fall 2013, in-class sections from all six colleges. There was a significant positive relationship between students' perceptions of (a) group work participation effectiveness and workplace engagement, and (b) overall GPA attainment and group participation and effectiveness and workplace engagement with all 5 CL elements. Better productivity ranked highest among students' positive qualitative comments that group work would increase their academic achievement and satisfaction level. CONCLUSION: This research supports existing literature findings and reinforces the importance of incorporating CL elements in group work as part of UCO's transformative learning initiative to increase students' learning and maximization of their academic success.

02.03.23 Physico-Chemical Characteristics of Yogurt Supplemented With Roasted Chick Pea Flour

Xi, Chen , Kanika Bhargava

University of Central Oklahoma

Yogurt is well known for its health promoting properties. Lentils flour has been suggested to increase the growth of probiotic bacteria during yogurt production, however, studies on effect of dry beans flours on physico-chemical characteristics of yogurt are limited. We aimed to evaluate effect of roasted chick pea flour on overall quality of yogurt and anticipate inventing new protein rich yogurt product. Skim milk was supplemented with 0.1–1.5% (w/v) roasted chick pea flour, inoculated with a yogurt culture (Danisco YO-MIX 495 LYO 250 DCU), fermented (8 hours) and stored at 4 degree C. Physico-chemical properties (Moisture content, total solids, total soluble solids and pH) were studied. Results demonstrated that chick pea flour slightly enhanced the total solids from 10.68% to 10.98%. On the contrary, the moisture content was decreased from 89.32% to 89.02%. Total soluble solids were increased from 8.0 to 9.0 degree Brix. Furthermore, the overall average pH decreased and reached the lowest point at 0.9% (4.06). However, 1%-1.5% chick pea flour resulted in increase in pH. This indicated that the percentage of chick pea flour should be kept below 1% or else it might reduce the probiotic growth. The results indicated that milk supplementation with roasted chick pea flour offer an alternative as a new product and provide better quality yogurt product.

02.03.24 Differences in the Judged Direction of Gaze Imaged in 3-D vs. 2-D

Charles, Gallegos , John Johnson, Roger West

Northeastern State University

ABSTRACT Purpose. The purpose of this study was to compare the perceived direction of gaze from an LCD imaged head viewed in 3-D vs. 2-D. **Methods.** We photographed a model in both 2-D and 3-D as he gazed at points along a horizontally oriented meter stick from a distance of 80 cm while his head was either straight or turned 20° to the side and, in each head orientation, with his gaze directed 0°, 10°, or 20° from the center of the meter stick. The images were then presented to 32 optometry students on a computer monitor in both 2-D and 3-D. They viewed the images from 80 cm while centered directly behind the meter stick and pointed to where along the meter stick the model appeared to be gazing. The data was analyzed to compare accuracy and reliability of the judgments in 2-D vs. 3-D for all combinations of straight vs. turned head, straight vs. averted gaze, and the eyes individually open vs. both open. **Results.** The judged directions of head point with the model's eyes closed were virtually identical for both the 2-D and the 3-D images. Whether the head was straight or turned 20°, perception of the direction of gaze from the right, left, and both eyes together showed virtually no differences between the 2-D vs. 3-D images. **Conclusions.** No additional accuracy is gained by using 3-D rather than 2-D images. Previous studies that have used 2-D images may be applied to real world 3-D gaze perception.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

02. Education and Professional Studies

04. Nursing

02.04.01 SANE Nursing in Oklahoma

Drew, Hunter , Kelly Nech

Other

The purpose of this research project was to determine the overall effectiveness of the sexual assault nurse examiner program on a sexual assault victim that presents themselves to the emergency department for treatment and evidence collection. The case studies observed were scrutinized for comparison between an emergency department equipped with the capabilities to provide victims of a sexual assault crime with a certified SANE nurse as opposed to a facility that does not offer these services. Northwestern Oklahoma State University- Nursing Drew Hunter: dnhunter07@rangers.nwosu.edu Kelly Nech: kdnech47@rangers.nwosu.edu

02.04.02 Topiramate vs. Complimentary Therapies in Prevention of Chronic Migraines

Alisha, Shrum , Courtney Beck

Other

The purpose of this study is to show the importance of antiepileptic medications in helping prevent migraine attacks in patients with chronic migraines. Our study showed that Topiramate is very effective in preventing migraines, reducing the use of acute medications, and reducing the duration of a migraine in chronic migraine sufferers. We did find that medication adherence does decline with the complexity of the dose regiment. The most effective way to treat chronic migraine patients is to give them a once-daily dose rather than multiple doses a day. There are always risks in medication and with this medication some side effects are weight loss, decrease sweating, impaired memory, and numbness. However, in most cases the benefits outweigh the risks. We also looked at complimentary therapies and found that it was effective in 39.5% of the patient population. However, there were only 3.5% of patients that reported a worsening in frequency and severity. Leaving us to believe that trying complimentary therapies could be beneficial for chronic migraine sufferer.

02.04.03 Elective Induction vs. Spontaneous Labor

Molly, Brooks , Brooke Dewald, Carley Thompson

Northwestern State University

The purpose of the study conducted was to determine the risk versus benefit relationship between spontaneous or naturally occurring labor and induced labor. The case study included a twenty year old prima gravida woman who experienced chemically induced vaginal delivery at thirty-six weeks gestation. Natural or spontaneous labor can be described as occurring with no surgical or medical interventions with the infant in the vertex position at a gestational age between thirty-seven and forty-two weeks of pregnancy (Darra, 2009, p. 300). "Elective induction is artificial stimulation of uterine contractions with the aim of achieving vaginal delivery" (Selo-Ojeme et al., 2011, p. 337). It was determined that a planned and induced labor process was not seen as a medical problem or reason for concern but was based on whether or not it was convenient and from a standpoint of how labor could be scheduled. Our research came to the conclusion that natural labor is preferable unless circumstances elude to the need of elective induction.

02.04.04 Mental Illness

Colton, Palmer , Courtney Goodwin, Kasey Miller

Northwestern State University

Mental illness impacts our society. Many people have difficulty maintaining relationships, jobs, and other responsibilities. Mental illness can be treated different ways. Often mental illness is treated with various medications. These medications impact the neurotransmitters of the brain, that is to say they have a physiologic action. Many times these medications are effective, but sometimes come at a price. They can be expensive and there are a lot of possible negative side effects associated with medication consumption. The objective is to look at alternatives to medication or supplements with medication. One alternative is Therapeutic Lifestyle Changes. The hypothesis is that therapeutic lifestyle changes will have a positive impact on mental health with fewer negative side effects. Therapeutic Lifestyle Changes are new patterns of thinking, living, and acting which impact mental health. Examples of Therapeutic Lifestyle Changes include exercise, diet, religion, and relationships. The studies include expert opinions and randomized clinical trials. These are affordable and have few negative side effects, if any. For example cardiovascular exercise can improve both physical and mental health. Someone can participate in cardiovascular exercise by running outside for free. Therapeutic Lifestyle Changes can be affordable and effective for improving patient outcomes.

02.04.05 Hand Washing vs. Hand Sanitizer

Karlie, Parker , Sandy Turner

Other

In nurses working in healthcare, what is the effect of anti-septic hand washing to reduce bacteria and promote cleanliness compared with alcohol hand sanitizer? Case studies were researched to determine the answer. The use of an alcohol-based hand sanitizer is more effective compared with hand washing with antibacterial soap and water in reducing bacteria with the exception of *C. difficile* (Oughton et al., 2009). In the case of *C. difficile*, it is important to use hand washing to decontaminate (Oughton et al., 2009; Kampf et al., 2009). Hand-washing with anti-bacterial soap and water should be used to remove visible contamination (Kampf, Löffler, & Gastmeier, 2009). Currently CDC recommends alcohol-based hand sanitizing as a method of choice for bacteria reduction, unless *C. difficile* (Gordin et al., 2005). A case study is shown to help further understand the proposed research topic and interventions.

02.04.06 Communication in the Critical Care Unit

Renata, Simpson , Krystal Elliott, Roxanne Bridges

Northwestern State University

Effective communication is a vital part of a healthy work environment in Critical Care Units enabling all members of the interdisciplinary team to proactively treat the patient and family. This presentation focuses on proper communication of healthy work environments in Critical Care Units and how it may affect potential patient errors. Facility policy's regarding required meetings for hospital personnel to discuss any current issues and offer new communication techniques is beneficial in creating a healthier work environment and enabling increased patient centered care leading to increased patient satisfaction. Increased positive communication among interdisciplinary members in Critical Care Units has been shown increase nurse and physician retention, decrease patient anxiety, increase patient and family satisfaction, and decrease amount of patient errors. The ultimate goal is to decrease or eliminate patient errors in Critical Care Units and increasing communication between staff members is one way to reach that goal.

02.04.07 Tai Chi in Fall Prevention

Amy, Quesada , Angela Shuman, Benita Coffin

Other

Fall prevention is essential for the elderly population. With this group of people, one of the most common causes of injury is related to falls. This fact makes it a necessity to promote education and participation in activities that lessen the likelihood of impaired mobility and the consequences of losing one's balance. Tai Chi, a traditional Chinese exercise, has gained recognition in the United States among the elderly in the areas of balance, coordination, and the ability to increase flexibility. Our study involved evaluation of participants who were sixty years of age and older in an effort to improve ambulation and to reduce the risk and incident of falls. For our research, we evaluated elderly participants; some who were active in Tai Chi programs and others who currently lived a sedentary lifestyle. In conclusion, it was found that Tai Chi did have a positive effect on reducing the risk of falls, but more extensive research would need to be completed in order to establish the importance of Tai Chi exercise among the elderly population.

02.04.08 What is the Difference in Obesity Rates Between Breastfed and Bottle-fed Infants Through Adolescents?

Natasha, Kelso , Beth Inman, Jenniffer Warfield

Other

In this evidenced based practice presentation, we researched and compared the results of previous experiments of the differences between breastfed and bottle-fed infants, in a six month period. During our research, we focused on the independent variables: breast milk or formula feeding, and their influences on the dependent variable: childhood obesity. We referenced different levels of hierarchy to have a variety of information bases. We determined our study to be qualitative by using larger, generalized populations from various countries, and numerical data. The settings of the experiments were in natural, real-life locations such as personal homes or from interviews in different waiting rooms, which led to depending on the verbal results from mothers. It was concluded that the risk of developing obesity later in childhood was reduced with increased durations of breastfeeding during infancy. Unlike formula, breast milk stimulates inner cues to regulate appetite; which in return, reduces the risks of over-eating. Because the mother is in charge of occurrence, duration and amount of formula per feeding, the formula-fed infant is more likely to eat more than necessary. However, socioeconomic, biological, physiological, and personal habits must also be considered or further evaluated to determine their roles in later obesity.

02.04.09 Hydrotherapy Treatment for Osteoarthritis

Kaitlin, Hostetler , Brandon Wheelock, Traci Cook

Other

Osteoarthritis is a growing problem in the elderly population and is one of the most prevalent musculoskeletal disorders worldwide. It is a degenerative disease that affects the cartilage and joints where synovial membranes exist causing localized inflammation and decreased mobility. One important problem that exists with osteoarthritis is the level of uncontrolled pain. Some of the current methods to manage pain and mobility limitations caused by osteoarthritis include pharmacotherapy, weight-bearing exercise, and aquatic therapy. Full weight bearing may be difficult in the recovery process and associated with increased discomfort. Due to pain and inability to tolerate extensive physical activity, many clients discontinue traditional land-based exercise therapy. It is hypothesized that aquatic therapy may provide the most positive outcomes of increased mobility and pain control in osteoarthritis clients. The methodology included consultation of multiple research studies focused on various therapies used to manage osteoarthritis symptoms. The research utilized various levels of hierarchy including systematic reviews, randomized controlled studies, and qualitative studies that focused on this topic. Evidence based practice provides sufficient research to support that aquatic therapy is the best clinical decision when it comes to improving pain control and compliance in the elderly population.

02.04.10 Exercising to Happiness

Zac, Floyd , Tabitha Diefenbach

Northwestern State University

Research has shown that chronic depression is on the rise in the US. With the rise in depression more and more people are looking for a natural alternative to the expensive and sometimes dangerous medications prescribed by their doctors. Our research aims to prove that exercising over a several month period is just as effective at treating symptoms of depression with the added benefit of overall well-being. This method to treating depression could substantially lower healthcare costs to the patients in both decreased medications and prevention of other health related doctor visits.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

02. Education and Professional Studies

05. Physical Education

02.05.01 Efficacy Beliefs of Physical Education Teacher Education Candidates

Kay, Daigle

Southeastern Oklahoma State University

In many states, partial responsibility for teaching physical education at the elementary schools falls on the classroom teacher. During elementary education preparation, most teacher candidates are required to take an elementary physical education methods course. With cuts to programs, some universities are choosing to eliminate this course for elementary education teacher candidates. This study compares these two majors regarding efficacy beliefs prior to participating in an elementary physical education methods course and also after completion of the course. Subjects were 54 teacher candidates enrolled in 3 sections of an elementary physical education methods course. Data were collected using a survey that elicited demographic characteristics and the completion of the Physical Education Teaching Efficacy Scale (PETES). The PETES is a 35-item survey which yields efficacy ratings for seven factors. Looking at a change in efficacy over the course of the semester for all teacher candidates, a dependent t-test was utilized. A significant difference was found and efficacy beliefs improved during the course of the semester. Although preliminary and cross-sectional in nature, these results support that a single physical education methods courses can have a measurable impact on a teacher candidate's efficacy for teaching physical education, even among elementary education majors. These results suggest that a "one-shot" physical education methods courses can have

02.05.02 Factors Influencing the Academic Performance of Division II Football Student Athletes

Tia, Bennett , Mark Giese, Robert Hubbs

Northeastern State University

The purpose of the study was to investigate whether various variables (geographic location of high school, guardianship, college rank, transfer student, and current living arrangement) had an effect on athlete grade point average (GPA). Student athletes constitute a specialized campus population who confront unique challenges when adjusting to the demands of college life. It is imperative to identify factors that improve student athlete's long-term persistence and success in higher education. Ninety eight Division II college football athlete's at an Oklahoma Regional University served as participants. After proper IRB approval, the qualifying subjects were given a packet that consisted of a consent form and a Subject Data Form which was a questionnaire consisting of 11 questions. A multiple regression model was used to predict if any of the variables had a significant effect on GPA. The model summary had an R value of .229. The R Square was .052. The adjusted R Square was .043 and the standard error of the estimate was .5205. The only variable found to be significant to a student's GPA was whether a student transferred to the university. The analysis of variance indicated an F value of 5.374 and a significance of .023. The implication is that transfer students are trying to integrate into their new environment and might have a difficult time adjusting to academic demands and are often faced with numerous challenges upon transferring.

02.05.03 Body Composition in Health and Physical Education Undergraduate Students

Yoonsin, Oh , Angelica Lopez, Stephanie Boss

Cameron University

More than two thirds (69.2%) of U.S. adults aged 20 years and older are overweight (i.e., Body Mass Index (BMI) > 25) or obese (i.e., BMI > 30; Flegal, Carroll, Kit, & Odgen, 2012). A nationwide survey study (Melville & Hammermeister, 2006) of pre-service physical education majors and minors found that 47% of students are overweight or obese based on their BMI. A more recent study (Williams, Henninger, & Marzano, 2013) showed that 41% of physical education teacher education majors and minors are not in the normal BMI category (underweight, overweight, & obese). This study examined the body composition of students in the health and physical education department at a small regional state university in Oklahoma. Participants (n=91) were recruited from the health and physical education department in spring 2013. Prior to assessment, participants provided their sex, birth date and year, and ethnic information. Participants' heights and weights were measured to calculate body mass indices. Participants' body fat percentages were measured using a Tanita BF-350 and Polar TriFit software. About two thirds (66%) of the students in the health and physical education department were overweight or obese based on BMI. Less than half (47.3%) of the students were overweight or obese for their sex and age based on a body fat impedance analysis. The findings from this study show that heal

02.05.04 The Effect of Student Status on Study Time

Mark, Giese , Chance Bates

Northeastern State University

The purpose of this study was to determine if there was a difference in the amount of time nontraditional college students versus traditional students spend studying per college class or if there was a difference between males and females. Eighty two students in Personal Health General Education classes served as a convenience sample. The survey revealed that 66 traditional students and 17 nontraditional students responded with 44 being male and 39 being female. After proper IRB approval, the students were administered a three question survey that was developed by the authors of the study. The answer to the amount of study time served as the dependent variable and gender and type of student served as the two independent variables. A Two Way Analysis of Variance (X2 ANOVA) indicated neither type of student nor gender had significance ($F=1.850$, $p=.178$) at the .05 level. The implication of this is that neither type of student or gender made a difference in amount of study time

02.05.05 The Preferred Method of Weight Loss Among College Men and Women Seeking to Lose Weight

Mark, Giese , James Estes

Northeastern State University

The perception of how college men and women believe is the best way to lose weight was the focus of this study. A total of 84 male and female students were recruited from General Education Personal Health classes and served as a convenience sample. From the participants, we are able to calculate the percentage of men and women seeking to lose weight, and what they believe was the best possible method. By determining the percentage between men and women, cross tabulation, and Chi-Square, we able to determine if a preference existed between genders. A Chi Square value of 3.08 indicated that the observed frequencies did not vary significantly from those expected. From this study, it appears that there is no systemic gender bias on which is the best way to lose weight.

02.05.06 Differences in Physical Activity Patterns of University Students

Mark, Giese , Timothy Fleetwood

Northeastern State University

The purpose of this study was to determine the difference between how many times a week male and female college students participate in aerobic activities. Eighty-four (84) students enrolled in a Personal Health General Education class served as a convenience sample. After proper IRB approval, the students were administered an exercise questionnaire. In the questionnaire, the gender difference served as the independent variable and how many times a week male and female students exercise served as the dependent variable. The questionnaire results showed little gender difference in how many times a week the students exercise per week ($m = 4.33$, $F= 3.54$). A t-value 1.87 ($p=.065$) indicated that there were no significant difference between college males and females in exercising weekly.

02.05.07 The Effectiveness of the Influenza Vaccination Among University General Education Students

Mark, Giese , Macy Hudson

Northeastern State University

The purpose of this study was to determine the effectiveness of the flu vaccination in students enrolled in an introductory level biology course from October 2012-March 2013. One hundred and ninety-four (194) freshmen enrolled in six sections of either General Biology or Evolution and Diversity class served as a convenience sample. With the IRB's approval, the subjects were administered a four question survey, as well as a consent form, that asked if they received the vaccine and if they thought they were infected. The dependent variables included contracting or not contracting the virus, while the independent variables included receiving the vaccination or not. A Chi Square value of 5.96 indicated a significant difference between the number of students expected to become infected (24.1%) compared with the number actually observed (8.2%) The implication is that the students in our sample may have implemented further preventative measures in addition to the vaccination.

02.05.08 Effects of Motivational Music on a 1.5 Mile Running Time Trial

Jamie, Aweau

University of Central Oklahoma

Research has shown that music has a positive effect on performance measures during exercise and sport. The purpose of this research is to measure the effects of music on a 1.5 mile running time trial. The variables of performance time, average heart rate, $\frac{1}{2}$ distance split time, and rating of perceived exertion will be measured. Participants will each self-select and rate a motivational song. The selected song will be used for the experimental trial. The study design will be a repeated-measures design in which the subjects will be randomly assigned to two groups and each group will run with and without music. The results from the data will be analyzed using dependent t tests. The alpha level will be set at ($p < 0.05$). The researcher hypothesizes that the music condition will improve performance time, increase average heart rate, increase pace during the music condition, and not affect RPE. The results of this study will help coaches, trainers, athletes, and recreational exercisers understand how using music relates to enduring high-intensity exercise. The information can also be used to assist athletes in training and mentally preparing for competition.

02.05.09 The Relationships Between a 300 Yard Shuttle Run and Peak Blood Lactate of College Male Soccer Players

Ahmet, Ozturk

Northeastern State University

The purpose of this study was to determine the blood lactate levels of male college soccer players immediately following a 300 yard shuttle run. The sample population consisted of 15 male soccer players from NSU. Two variables were measured: lactic acid and 300 yard time and the Pearson correlation coefficient were utilized to determine the relationship between the peak lactate levels and the 300 yard shuttle time. The correlation between 300 yard run time and average lactic acid was .14 which shows no significant relationship between run times and peak blood lactate levels.

02.05.10 Ammunition Comparison - Reloaded Vs Commercial

Thomas, Salmon , Erika Salmon

Northeastern State University

Background: Political, social and economic events in late 2012 and early 2013 lead to a shortage of commercial ammunition and extreme price inflation. This prompted many recreational shooters to consider alternative sources, including reloading. Reloading is the process by which spent bullet brass is recycled to remake live ammunition. It is safe, simple and provides significant savings for shooting sports enthusiasts who may use thousands of rounds per year. While commercial 9mm bullets cost 30-60¢ per round, reloads cost 15¢ per round. Research question: Is reloaded 9mm ammunition equivalent to commercial ammunition in terms of manufacturing reproducibility and ballistic performance? Methods: Random samples were taken from three commercial brands (Winchester, Federal, PMC) and from a batch of 9mm reloaded bullets (all 115 grain, jacketed or plated round nose). A masked investigator measured weight and dimensions of each to assess manufacturing reproducibility. We then fired bullets from the same pistol (Springfield XDM, 3.8 inch; masked shooter) to measure velocity and precision (group size). Mean dimensions were compared to SAAMI standards and variances were compared between commercial brands and reloads. Results and discussion: Preliminary results indicate that reloaded ammunition is comparable to commonly purchased commercial 9mm ammunition. Detailed results and discussion will be presented.

02.05.11 Physical Activity Patterns of Health and Physical Education Majors Compared to Non-Majors

Mark, Giese , Kassandra Peck

Northeastern State University

The purpose of this study was to determine the activity of HPE majors compared to Non-HPE majors. A total of seventy-nine (79) students, twenty-eight (28) HPE majors, and fifty-one (51) Education majors served as subjects when comparing activity levels. After proper IRB approval, the subjects were administered to a four response questionnaire of activity levels taken from a health website. The students major and gender served as two independent variables and the amount of physical activity was the dependent variable. The analysis shows that the F value of the Two Way Analysis of Variance was 1.43 and was not significant ($p=.236$). This means that neither gender nor major provided significant differences in their level of physical activity per week.

02.05.12 Effect of Static Stretching on Muscle Flexibility of Division II Women's Soccer Team

Tia, Bennett , Mark Giese, Royan Forester

Northeastern State University

This study examined and determined the effects of static stretching on the occurrence of injuries with a Division II women's soccer team. The study was carried out during the Fall 2011 soccer season. Information was gathered by the researcher by administering a series of static stretching on members of the team over an eight-week period. A pre-test was performed by each participant, which was given predetermined stretches. The stretches included sit and reach, shoulder stretch, arm length, back arch, and trunk length. At the end of the eight weeks, a post-test was given where the second half of the data was collected. A dependent t-test was used to determine if there was a significant difference between the pre and post test on the participant's flexibility. Participants showed that there was a significant difference in flexibility at the post-test compared with the pre-test. The t-score of 4.4 indicate that the means was significantly different, and that the training effect increased flexibility.

02.05.13 Creating a Children's Program to Combat Childhood Obesity

Mary, Nix , Rachelle Franz

University of Central Oklahoma

Childhood obesity has more than doubled in the last 30 years, and it seems this trend will continue if children aren't educated about topics such as physical activity and nutrition. The research in this study will promote nutrition and physical activity in elementary aged children outside of the school walls. This study aims to show how nutrition and physical education can transform children's views on living an active and healthy lifestyle. University of Central Oklahoma students and faculty will design and implement a program for children in Edmond and the surrounding area. In collaboration with students in the Physical Education and Health Program, a registered dietitian will create lessons to teach children what it is like to lead a healthy life through food. The children will be pre-assessed at the beginning of the program with a test of basic nutrition and physical activity facts, and then tested again at the end of the program to show knowledge they have gained. The expected results will be the children will gain a new appreciation for physical activity and nutrition, and the children will increase their knowledge in a fun and interactive way.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

02. Education and Professional Studies

06. Professional Teacher Education

02.06.01 The Interpersonal Dimension of Maximizing Potential: A Grounded Theory Study

Mark, Maddy

University of Central Oklahoma

ABSTRACT This is a grounded theory study of the concept of maximizing potential. Using the constant comparative analytical method (Glaser, 1965) to examine the data gathered on the interaction between students and teachers, the theory of maximizing potential emerged from those data. Additional data enriched the interpersonal dimension, which identifies the processes of accommodating, doing the right thing, encouraging, supporting, mediating, and intervening as the constructs that teachers and supervisors utilize to optimize their input and the output of their students and workers.

02.06.02 Grammar Knowledge and Response to Instructional Methodology in SLP Graduate Curriculum

Linda, Sealey-Holtz , Lauren Mays, Stephanie Oxford

University of Central Oklahoma

The purpose of this study was to examine trends in undergraduate and graduate students' explicit grammar knowledge in Speech-Language Pathology curriculum in Oklahoma, and to compare efficacy of instructional methodologies, on-line and paper-pen. Each subject completed a survey of grammar knowledge. One group of subjects, completed a pre- instruction survey, then completed a self-paced grammar instruction module delivered in one of two formats (online -v- paper). A post-instruction survey was then administered. Group comparisons estimated the level of grammar knowledge by cohort group and provided a global outcome measure of incidental and purposeful grammar instruction currently provided in the speech-language pathology curriculum. The efficacy of instruction format was compared. One group of students participated in the initial grammar survey, completion of self-paced grammar instruction modules in one of two formats, then a post-instruction survey. Pre- and post-instruction survey results by group were compared to estimate the efficacy of instructional format.

02.06.03 Transforming Clinical Teacher Preparation and Performance: A Pilot Project Using edTPA Assessment and Feedback for Pre-Service Teachers

Allyson, Watson , Debbie Landry, Vanessa Anton

Northeastern State University

The Council for the Accreditation of Educator Preparation (CAEP) clearly indicates the organization goals are to increase levels of performance through evidence based practices (CAEP, 2013). Nationally we know through legislation that education reform in the area of teacher preparation is a high priority. Budget reduction, state funding for higher education and K-12 standard mandates are guiding forces in reconfiguring teacher education programs. The tie to teacher evaluation and student performance is underway and is currently used to inform academic and curricular decisions across the nation (Wilson & Hallum, 2006, Newton, 2010, Darling Hammond, Newton & Wei, 2012). At a national level the decision to link teacher practice and performance to the student achievement assessment is utilized in districts and national board certification standards. With this in mind, it is imperative that teacher education programs prepare clinical education pre-service teachers accordingly. Therefore, to continue to positively transform educational practice analysis of pre-service teachers and the use of formative and comprehensive assessment through reflective practice is a necessity.

02.06.04 Indications of Pre-Service Teacher Success: A Pilot Study Using the Haberman Star Teacher Survey

Allyson, Watson

Northeastern State University

The Haberman Foundation research is noted for providing evidence based indicators of success in pre-service teachers, veteran teachers and school administrators. Early identification of teacher success is a necessary measure that school leaders want to identify to employ high quality teachers in high challenge schools. The Northeastern State University College of Education piloted survey research with a cohort of pre-service teacher candidates using the Haberman Star Teacher Pre-Screener. The results from the pilot provided a background for emphasis to implement in future professional teacher education curriculum. The results of this pilot study underscore the Haberman research "10 Dimensions of Teaching Success" and seek to correlate those dimensions with early indicators of success in pre-service teachers.

02.06.05 NSU-CAPA: A Professional Development Program to Increase the Number of Teachers Certified in Chemistry and Physics

April, Adams , James Hicks, Jessica Martin, Saeed SaraniSophia Sweeney

Northeastern State University

This paper presents the structure of a professional development program, the results and findings from the evaluation of the first-year summer institute, and the plans for the next phase of the program based on these findings. In spite of incentives, such as the Oklahoma Teacher Shortage Employment Incentive Program and the federally funded TEACH Grant, there continues to be a nationwide shortage of secondary science teachers. The shortage is caused by teacher retirements and the loss of teachers before they are eligible for retirement (Ingersoll, 2003). According to the National Academy of Sciences (National Academy of Sciences, 2007), in 1999-2000 61% of chemistry students and 67% of physics students were being taught by teachers who did not major or hold certification in chemistry or physics respectively. Based on an analysis of 2011 Oklahoma students' high school preparation and ACT scores, the ACT recommends that Oklahoma students take more natural science courses in high school. Twenty-five percent of Oklahoma graduating seniors took less than three years of natural science courses in high school. Only seven percent of these students were evaluated as college ready (ACT, 2011). Increasing the number of highly qualified chemistry and physics teachers in Oklahoma will enable more students to take rigorous upper-level science courses.

02.06.06 A School-University Partnership in Teacher Education: Comparison of Two Course Formats

Regenia, James , DeeAnn Roach

University of Central Oklahoma

Traditional clinical experiences in teacher education involve school-site observations that supplement learning in the college classroom. The purpose of this research was to investigate the value of a clinical experience that was the core of instruction for a teacher education course. An urban elementary school partnered with a metropolitan university to provide authentic experiences for future teachers and participation of in-service classroom teachers in teacher education. Teacher candidates in a child development course met for weekly classes at a public elementary school site and interacted with children and classroom teachers for the majority of each week's class time; after regular school hours, the teacher candidates reflected and applied their experiences and observations to course content studied before class. Classroom teachers also periodically attended the after-school class time and talked with teacher candidates about practical issues related to children's development. Qualitative methods were used to compare depth and content of two groups of teacher candidates' end-of-semester reflections on learning of child development concepts and application to education. Responses to prompts were completed by students in the clinical experience course as well as by students who took the same course with the same instructor, in a traditional on-campus format. Responses were analyzed according to the ABC/123 Guided Reflection Technique developed by Welch

02.06.07 Error Management Theory: The Social Dynamics of Gender on Sexual Intent and Commitment Perception

Amelia, Brewer , Christy Singletary, Gabriel Rupp

University of Central Oklahoma

This study explored Error Management Theory, replicating previous studies that examined perceived interest and commitment in men and women. In the current study, we employ a modified version of the instruments, utilizing neutral terminology in order to include a broader demographic in terms of sexual orientation. We also make use of the BSRI scale of masculinity and femininity to examine how these characteristics might affect responses. The hypothesis for the current study was that women tend to under- perceive commitment and men tend to over-perceive sexual interest regardless of sexual orientation. Participants filled out an online survey with questions concerning potential relationship scenarios. Preliminary analysis indicated significance in self- report ratings of sexual intent between males and females. Implications concerning sexual orientation and gender social role will be discussed.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

03. Fine Arts and Design

01. Art

03.01.01 Art and Urban Space in Late Medieval Bohemia, the Polish Kingdom, and Prussia

Teresa, Pac

University of Central Oklahoma

I am pleased to present research for a book titled "Art and Urban Space in Late Medieval Bohemia, the Polish Kingdom, and the Teutonic Prussia," which is supported by UCO and Office of Research and Grants. I am writing this book in collaboration with Dr. Daniela Rywikova. She is the Chair of the Art History Department at the University of Ostrava, a partner of the University of Central Oklahoma. The book will cover the art and urban space of the central part of Europe in the fourteenth and fifteenth centuries, an area grossly underrepresented in English-language scholarship. The book will draw on an array of printed and archival sources that enliven the text. The project will also include visual material, including photographs of art objects, manuscripts, and architecture as well as maps of urban spaces, to capture the image of late medieval cities in Bohemia, the Polish Kingdom, and Prussia. The book will consist of seven parts, each including a chapter on Bohemia, the Polish Kingdom, and the Teutonic Prussia: (1) Late Medieval Town; (2) Art and Public Spaces; (3) Monastic Culture; (4) Female Urban Patronage; (5) Devotional Art; (6) Representing the Other; (7) Modern Invention of Medieval. Considering the interdisciplinary approach of this research, the proposed book aims at reaching very diverse audiences, including undergraduate and graduate students majoring in art history, history, cultural studies, architecture, and urban studies.

03.01.02 The Birth of Portraiture Photography: A Comprehensive History of The Daguerreotype & Its Societal Presence

Amanda, Meyer

University of Central Oklahoma

The research examines Daguerreotype portraiture photography in the nineteenth century. Demonstrating that the evolution of the innovative Daguerreotype process was guided by the changing social and cultural needs and trends of the nineteenth century, the examination focuses on three significant phenomena: the democratization of the portrait, post mortem photography, and the origination of self-identity. Thus, this discussion brings to the fore the birth of portraiture photography, underrepresented in scholarship on American photography.

03.01.03 Sulawesi Ancestor Figure

Leah, Neumann

East Central University

The Sulawesi Ancestor Figure was produced on the island of Sulawesi in Indonesia between the seventeenth and nineteenth centuries, and is made out of yellowish-orange sandstone. Although this sculpture bears some similarities to traditional tau tau figures commonly made in Indonesia, close consideration of the details of this sculpture reveal that it also appears to integrate Islamic beliefs and practices. Islam came to Sulawesi in the seventeenth century and used the same yellow sandstone and similar platform graves as the Sulawesi Ancestor Figure. The sculpture also portrays some of the traditional Sulawesi traditions, such as ancestor worship. With the help of a research team and books from Dr. Chubb, many resources regarding traditional Sulawesi ancestor culture, and the integration of Islamic beliefs in the former isolated island of Sulawesi, were found. The research team concluded that this sculpture is a unique object in the history of art that clearly reveals contact between the Sulawesi people and Islam.

03.01.04 Two Bodies, One Soul: Cultural Impact of the ibeji Twins

Mickayla, Fisher

University of Central Oklahoma

The subject of this research study is the ibeji of the Yoruba people in Africa. The focus is to explain the significance of the ibeji twins in the Yoruba tribe. This research will focus on three major influences in the Yoruba tribe: First, information will be provided on both the mythical history and actual history of the Yoruba, the economy, the political and religious standings. Second, provide the story of the ibej. Third, the significance of ibeji in the Yoruba tribe, how the ere ibeji are commissioned, and the customs of taking care of the ere ibeji will be discussed. This research will utilize information on the ibeji twins with a particular focus on images that served the construction of the subject ibeji twins as a powerful significance in the Yoruba tribe in order to make the audience aware of the powerful connection between the ibeji, their families and the Yoruba tribe in the visual culture of everyday life.

03.01.05 Robert Rauschenberg: The Modern Interpretation of Hell and Purgatory

Miranda, Reeves

University of Central Oklahoma

This paper compares and contrasts Renaissance artist Giotto and Pop Artist Robert Rauschenberg using examples of literature, paintings, and Sigmund Freud's theory of psychoanalysis. The author contributed to detailed research and began to compare and contrast the work of these artists and the interpretation of hell and purgatory based on Dante's *Inferno*. Giotto embodied Dante's *Inferno* in his *The Last Judgment* painting that accents the gruesomeness of hell, torture, pain, and suffering. Giotto's piece was used as a warning to follow Christ. Robert Rauschenberg is a Pop Artist of the 20th century and in his XXXIV Canto's of Dante's *Inferno* he used images from magazines and newspapers to set the idea of hell is everywhere and anyone. This premise can also be compared to Jean Paul Sartre's work, *No Exit*, which the author develops a narrative of how both Rauschenberg and Sartre have similarities of the premise: "Hell is other people." Further, this paper goes into detail of Sigmund Freud's theory of Psychoanalysis theory of ego, id, and superego. The author analyzes both Giotto and Rauschenberg works and gives a broad scope of how artists choose to paint certain images and use them either religiously or politically. Giotto represented an image to stimulate religious reverence in the Christianized world of the Renaissance and Robert Rauschenberg signified secularized America in the twentieth century.

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03. Fine Arts and Design

02. Dance

03.02.01 The Discovery Of Hidden Beauty

Caitlin, McManigell

University of Central Oklahoma

My research explores types of isolation, the importance of the five senses, regions of the brain involved in isolation of the senses, and the effects of personal isolation. I used scientific data and personal anecdotes to create my choreography. Donald O'Hebb, professor of psychology at Montreal's McGill University, researched solitary confinement. He put voluntary students in a small cell where he limited all their senses. During their week, students started to hallucinate and hear things that were not there. O'Hebb administered a cognitive test which showed a decline in elementary math skills. I explored a connection between brain dysfunction and isolation. In the research I found that some individuals do not understand how to communicate their feelings to others and have very few social skills, and if not treated by a professional, social issues become a serious problem. Through the choreographic process I learned about each dancer's experience with isolation. The dancers were involved in writing, drawing, and dancing about their personal experiences. Our collaboration produced a choreographic work which evolved through the exploration of isolation, community, and perseverance.

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03. Fine Arts and Design

03. Design

03.03.01 Design for Good: Clocktower and Inktank Studios

Amy, Johnson

University of Central Oklahoma

This presentation was part of a panel at the Head, Heart, Hand: AIGA Design Conference and addressed the role design education plays in igniting social change. Topics in the presentation include the "Design for Good for Education" initiative and student-run practices.

03.03.02 Collaborative Competition: Generating Excellence in the Design Classrooms of the Austere Economy

Amy, Johnson

University of Central Oklahoma

Designers are the quintessential poster children for doing more with less. The design approach quickly changes the question from how will we survive to how can we create excellence that will outshine our previous performance. How will we do it in a way that engages faculty and students in a cultural shift where competition for resources becomes a driver not a hindrance? More important how will we prove our advancements to administrators who may have little knowledge of design let alone our program needs? Two concepts common to the questions above are collaboration and competition, and used in combination the two are a powerful pedagogical mechanism. A common experience in sports, collaborative competition is founded on the principle that competition is an invaluable and objective method for evaluating performance for individuals and programs. Students are measured against not only their past performance but the performance of peers and peer institutions. This paper will describe the Collaborative Competition model that is being used at a regional university in the US to create "more from less" while generating important data to argue for increased program funding. The paper will highlight curricular advancements including the introduction of complex projects at earlier stages and present data that objectively quantifies increased proficiency throughout all levels of the graphic design program.

03.03.03 The Fast and Slow of Letterpress.

Amy, Johnson

University of Central Oklahoma

In many ways, letterpress and the look that can be achieved with it can be seen as a reaction to the slick design and flat vector graphics that permeate today's design world. Letterpress offers a tactile quality that can't be achieved with any other technique. Today, many designers are returning to the craft of letterpress — printing from metal type and custom engraved plates— as a unique option to offset printing. The advances in technology that led to the near extinction of letterpress printing have also enabled its revival. Photo-polymer plates, the solar responsive plastic developed in the '60s and perfected for letterpress in the '80s, allow images designed using the computer to be made into plates for impressions. This innovation freed letterpress from the confines of movable type, which has significantly broadened its uses and audience. This presentation will explore the seamless blending of the 'fast' technology of digital design, platemaking, inkjet printing and the 'slow' tactile process of letterpress in graphic design pedagogy.

03.03.04 Using Modern Technology to Develop and Design a Sustainable, Eco-Friendly, and Self-Reliant Home.

Victoria, Morris

University of Central Oklahoma

In previous years, Interior Designers would often equip their designs with having the trendiest and most captivating concepts with no ramifications for waste; but as science continues to prove that our ozone layer is deteriorating as time progresses on, a substantial amount of people are becoming more concerned with our environment. As an unceasing growing movement, living in sustainable and self-reliant homes has become quite appealing—not only for the security of the future, but also because it is quite cost-effective. To service this demand, thorough research of the steps to gradually transform traditional residential construction techniques into fully eco-friendly and self-reliant home construction has been determined. The project developed for this presentation is a result of said research, hands-on experimentation with new and recycled materials, exploration of alternative energy, and usage of prior design knowledge to collaborate all pieces into one cohesive design. The end product is a fully developed and designed sustainable, eco-friendly, and self-sufficient home to cater to this growing movement to save the earth.

03.03.05 The Design of Information Graphics and Bias in times of War and Peace

Amanda, Horton

University of Central Oklahoma

Information graphics are defined as visual designs that present facts with usually as little decorative or nonessential material as possible and in as legible and compact manner as possible, (Drucker & McVarish, 2013) and the implication is that in these designs the content is both accurate and unbiased (Wildbur & Burke, 1998). Otto Neurath revolutionized information Graphics following World War I with his development of the Isotype or the International System of Typographic Picture Education. The Isotype would continue to influence designers of information graphics and signage systems for many years to come. Neurath was motivated by both world wars to improve how information was disseminated through information graphics. Currently, David McCandless, is operating in a time of indefinable peace. Though we are continuously at war, or at least in conflict, it doesn't always feel like it, and can be confusing. Unlike in Neurath's time when both World War I and World War II were in your face constantly, or even at your front door depending on where you lived. This study looks at how bias in information design has changed since Otto Neurath. According to author Sandra Rengen, "Although graphic designers were trying to make abstract numbers easier to understand, they also frequently let themselves get carried away by the pictorial metaphor and so created a visual distortion of the data" (2012). This study asks the question, is the work of McCandless still try

03.03.06 My Solution: A Brand Strategy to Help End Multiple Sclerosis

Nichole, Thompson

University of Central Oklahoma

Multiple Sclerosis is a disease that affects the central nervous system. As of today there is no cure; however, organizations like the MS Society provide support and lead the search for a cure. The following proposal, My Solution (M.S.), provides an innovative helping hand. The idea expands on the event, Walk MS, through a unique revenue stream that can be easily tied to the existing MS Walk event. This revenue opportunity, called My Solution is a website tie-in that would allow the public to purchase the shoes in which he or she would walk in for the event. Initially this website would sell hand-painted shoes with the My Solution brand but, as time goes on, future possibilities include partnerships with companies such as Nike and Adidas, and inviting well-known artists to design limited edition shoes. Lastly, the My Solution brand, in addition to being visible during the Walk has a much longer brand shelf life than that of a t-shirt. By wearing the shoes after the event, the participant shows loyalty to the cause, and second, by nature of their arresting design, others will notice the shoes. This creates an opportunity for sales beyond the time of the MS Walk event, thus potentially leading to a year round revenue stream.

03.03.07 Freshman to Pressman: The Potential Opportunities of the Integration of Letterpress Printing into Graphic Design History Pedagogy

Stephen, Treadwell Jr.

University of Central Oklahoma

Letterpress printing in the past has been taught as a trade, a skill learned through apprenticing with pressmen. Now Universities and Colleges across the nation are purchasing letterpresses and creating letterpress labs for both Art & Graphic Design departments. The purpose of this research project is to determine how letterpress printing has been incorporated into Graphic Design Pedagogy and its potential opportunities of integration into Graphic Design History Pedagogy. The methodology for this project was to research the top 20 Graphic Design Schools according to GDUSA, a news magazine for the field since 1963, and analyze how many of those schools offer letterpress classes and what methods in which they are taught. After that information is gathered, research began for possible solutions of integration into Graphic Design History Pedagogy. The results of the research so far for integration require looking at the process of letterpress printing as a hands-on history. Students would have access to machines that are significantly older than the students themselves, yet are capable of being relevant tools for today's Graphic Design practice. This could be implemented through tours of printing facilities, businesses that primarily use letterpress printing, short-block courses, and/or full on studio courses.

03.03.08 Typographic Difficulties: Understanding Issues of Learning Typography

Lanie, Gabbard , Miranda Lloyd

University of Central Oklahoma

Although typography is an integral element in graphic design, students have repeatedly expressed how difficult it can be. The objective of this research is to discover the root of this issue and apply the findings to teaching methods and new project ideas that will increase understanding and aid student abilities in typography. Though many factors must be taken into consideration regarding the learning and comprehension experience, a hypothesis has been made that part of what makes typography difficult to grasp is the interaction and integration of positive and negative space. This is inspired by Gestalt Psychology. The main idea of gestalt psychology is that the brain interprets the whole as greater than the sum of its parts. Naturally, we tend to see the whole letter, or the whole word, and not pay attention to all of the little parts and how those parts interact and create space. In "good" typography, all of these little elements must be acknowledged and taken into consideration not only in creating typefaces, but in using typefaces in design. The way all of the little elements work together determine the "tone" of the typeface and also how it may align and flow with other elements. The methodology in which the hypothesis is being approached includes researching Gestalt Psychology, brain function and perception, how typography is approached by other educators, interviews with professional graphic designers, and surveying of graphic design students.

03.03.09 From Manuscript to iPad: The Effects of Technology on Magazine Design Layouts Across Printed and Touch Screen Tablet Formats.

Brock, Wynn

University of Central Oklahoma

History has shown that advancements in technology, while changing the way in which information can be delivered, typically mimics the visual representation of the page formats that preceded it. The earliest printed books mimicked the look and feel of illuminated manuscripts. The earliest printed magazines mimicked the format of book pages and broadsides. Additionally, advancements in technology streamlined processes that once required the skilled hands of many specialists, and have given designers control over all aspects of page layout. While personal aesthetic judgment, technical skill and intended message can all affect the format of magazines, the processes by which these visual elements are produced, making it possible for the designer's ideas to manifest into physical form. The objective of this research was to investigate the effects of technology on print and touchscreen tablet magazine formats. Through a historical visual study of magazine formats, a trend mimicry can be established where formats resemble that of previous exploration. We are now at a point where touch screen tablet publications closely resemble their traditionally printed counterparts.

03.03.10 One-Man Operas: Technical Design and Production Research Apprenticeship

Catherine, Mosley

University of Central Oklahoma

This production consisted of two one-man operas: Dominick Argento's *A Water Bird Talk* and Lee Hoiby's *Bon Appétit*. These operas were performed by Dr. Rob Glaubitz (*A Water Bird Talk*) and Dr. Barbara DeMaio Caprilli (*Bon Appétit*). Under the advising of Christopher Domanski, my objective was to identify, design, and engineer all technical aspects of the show (sound, lighting, props, set, etc.). Upon receiving sheet music at the first meeting with Glaubitz, Caprilli, and Domanski, we discussed what each performer needed for their piece. For *A Water Bird Talk*, we discussed set pieces, props, sound cues, and projections that were needed. For *Bon Appétit*, we discussed set pieces and the heavy amount of props needed. After this props lists were composed and lighting and sound design were set into motion. The first week of the spring 2014 semester props and set pieces were pulled from the theatre department inventory. We did come across some complications in finding certain prop items, one of which ended up being purchased. Another challenge faced was completing some of the set pieces. We had a display case that we had to make into a kitchen island. This was accomplished by staining a board to match the wood stain of the cabinet and attaching it to the front. One of the most interesting aspects of the production process was the sound design. Several various birdcalls were needed for *A Water Bird Talk*, along with a few other sound cues. After

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03. Fine Arts and Design

04. Multimedia and Design

03.04.01 Expanded Use of Light Motion for Video

Tan, Le

University of Central Oklahoma

The research project I plan to pursue is a Light Motion video to present to the UCO community using Light Painting and Light Art techniques. My goal is to expand the idea of what Light Motion can achieve, and to encourage video producers to make more videos using this technique. Light Painting and Light Art are not new concepts in the world of art. However, the practices have not been used very often and I believe I can express new ways to use the technique.

03.04.02 The Importance and Role of The Prisoner's Dilemma in Teaching and Simulation

Kenneth, Austion

Cameron University

The Prisoner's Dilemma has been used in various simulations and teaching environments throughout its history. The purpose of this review was to determine the importance and role of the prisoner's dilemma in simulation and teaching. Research papers were reviewed for themes to indicate the prisoner dilemma's role in the paper and in the broader context. It was determined that the prisoner's dilemma is of both historical importance and practical importance in decision-making, conflict-resolution, ethics, game theory, and in a variety of other contexts. The prisoner's dilemma should continue to be used in simulation and integrated into more classes.

03.04.03 Mixed Reality

Jonathan, Watson

Cameron University

This paper is a lit review of several experiments involving simulations that help special needs students and people with disabilities. Upon reviewing such articles, I have discovered several ways in which simulation and mixed reality is helping people improve cognitive skills, motor skills, and organization/managerial skills. Some of these simulations have helped stroke victims and people with disabilities, as well as preparing teachers for classroom management. Other simulations contain something called mixed reality or MR for short. An example of such simulation, Margaret Duff et al., developed simulations to help stroke victims and their mobility. The results concluded that using simulation and mixed reality does improve mobility. As I have reviewed the research found in this area, this lit review will help provide more support for using simulations in improving the community in which residents live.

03.04.04 The Efficiency of Simulations in Traffic Education for Young Children

Anke, Melvin

Cameron University

Since the introduction of simulations of childhood education, positive results have been seen in the use of simulations for teaching young children some basic rules of traffic. According to numerous studies, young children respond extremely well to interactive training on simulations. They understand the importance of their decisions in traffic situations. Unlike traditional instructional design programs, simulations are exceptionally effective in teaching these children what they need to learn in order to safely act in or around traffic. This simulation based training can potentially save lives by raising awareness for traffic rules. The literacy review helps us understand why simulations are so effective and how they can be integrated most efficiently.

03.04.05 Simulations on Statistics

David, Chatman

Cameron University

This literary review is about how simulations in multimedia can help bring about a better understanding of difficult to learn concepts. The concept in question for this review will be statistics. In this paper I will provide research papers and case studies of simulations over statistics and details about how the simulations were conducted. Also, I will provide details about the findings of the simulations and compare and contrast the methods and results of each simulation over statistics.

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03. Fine Arts and Design

05. Music

03.05.01 Inviting Undergraduate Research

Jeri, Walker , Brett Elliot

Southeastern Oklahoma State University

Inviting Undergraduate Research Happily, there are special times that occasionally present themselves in a music education undergraduate classroom. During what we as instructors hope are inspiring lessons, every so often students interject a bit of brilliance that serves to energize the environment. This occurred during a discussion concerning the base musical ability of “average Americans” and whether the apparent consumer culture has had an influence on what our citizens are able and willing to do, such as sing a simple song. This discussion led to the question of how to test what our community members could do and what they were willing to do. The students’ enthusiasm for this project provided an opportunity to model a quantitative research procedure with them and to collaborate with the math department. Although the results were not what we were expecting, and could be regarded as disappointing, the process created a deeper thought about the research model used and elicited an ongoing discussion about what alterations can be made to more adequately parse out what exists.

03.05.02 French Grand Opera

Aaron, Williams

Southeastern Oklahoma State University

A study on the rise of French Grand Opera from the late seventeenth century with King Louis XIV and Jean-Baptiste Lully to the nineteenth century with Giacomo Meyerbeer. This study showcases the varieties of operas, characteristics, and composers as this style comes into full swing.

03.05.03 Seventeenth-Century Opera

Cynthia, Estrada

Southeastern Oklahoma State University

This research gives a look into the origins of late Renaissance and early Baroque staged music. It follows the beginnings of opera formed by Italian composers which was then adopted by French, German, and English composers. Influences from Monteverdi, Lully, Purcell, and Schutz, give way to how and why opera is what it is today.

03.05.04 One-Person Opera: Production, Performance, and Recording of Two One-Act One-Person Operas

Robert, Glaubitz , Barbara Caprilli, Catherine Mosley, Christopher Domanski Jose Batty, Kangwa Mundende, Michael Geib

University of Central Oklahoma

This project details the process of the production, performance, and recording of two one-person operas: Dominick Argento's *A Water Bird Talk* and Lee Hoiby's *Bon Appétit*. Both opera performance and opera recording present differing issues for the producer to resolve. When the performance and recordings are scheduled in close succession as in this project, these issues are magnified. The producer must therefore devise solutions that satisfy these issues while still maintaining a high level of excellence in both areas. This project investigates these issues and describes the solutions used in the performance and recording of these two modern operas. Such issues include an unconventional performance venue, acquisition and payment of orchestra members, collaboration with other faculty, publicity, limited recording time, transportation of equipment and set pieces, encouraging student involvement, as well as typical issues of opera production such as technical theater aspects, costumes, sets, props, preparation of music by the performers and orchestra, and rehearsal time. The project also examines issues faced by performers such as musical preparation, long recording sessions, execution of the performance, and resolution of issues between collaborators. By chronicling the process from conception of the project to the performance and recording sessions, I hope to provide a blueprint to approach future operatic projects more effectively.

03.05.05 An One-Person Opera: Rehearse. Record. Perform.

Jose, Batty , Kangwa Mundende, Michael Geib

University of Central Oklahoma

This project explores the process of rehearsing an ensemble to prepare for a professional recording and live performance at the University of Central Oklahoma Jazz Lab. This process includes aspects of musical preparation such as score study, hiring musicians, providing music for musicians, working with a professional sound engineer and other professional musicians for the recording, and preparing for the live performance.

03.05.06 Italian Renaissance Vocal Improvisation

Tookah, Sapper

University of Central Oklahoma

Historical performance practice is the current “growth industry” in classical music. When performing historical music, it is important to understand how to perform ornaments, cadenzas, and other forms of elaborations in the style of the period in which the music was composed and performed. The objective of this project was to understand the sixteenth- and early seventeenth-century practice of vocal improvisation used in both sacred and secular Italian music in order to gain experience and compile resources for others to use in their own study. In order to understand this style of vocal improvisation, much of this project has been dedicated to transcribing, into modern music notation, the Spadi da Faenza method Libro de Passaggi Ascendenti et Descendenti (1624). This book contains abstract exercises and samples of actual improvisatory elaboration of compositions by Cipriano de Rore, a notable renaissance composer. Converting these exercises and examples into modern music notation has brought to light the benefits and shortcomings of using modern music notation software (Finale and Sibelius) to transcribe historical manuscripts. This project also explores the vocal technique gorgia, used in Italian renaissance vocal music, in which the singer manipulated the throat so that he/she could articulate passages of eighth and sixteenth notes which would be improvised in a piece of vocal music.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

03. Fine Arts and Design

06. Theatre Arts

03.06.01 Developing a historically-based production design for an original Native American musical

Robyn, Pursley , Christopher Miller, Scott Pursley

Northeastern State University

Traditionally, musical theatre productions necessitate a large amount of spectacle. When a musical is historically based, fulfilling this expectation can be a challenge. Combining a representational and presentational production design was the solution that our team adopted in our efforts to reflect the original Native American musical, Nanyehi: Beloved Woman of the Cherokee, through spectacle on stage at the Oklahoma premiere of the production in August 2013 at Northeastern State University.

03.06.02 Women in Shakespeare

Dell, McLain

Southeastern Oklahoma State University

03.06.03 Naumachia

Dell, McLain

Southeastern Oklahoma State University

03.06.04 A Kingdom Divided

Dell, McLain

Southeastern Oklahoma State University

- 03.06.05** **To Drag or Not to Drag**
Dell, McLain
Southeastern Oklahoma State University
- 03.06.06** **Japanese Kabuki Make-up**
Dell, McLain
Southeastern Oklahoma State University
- 03.06.07** **From the Stage to the Street: Parallel Between Sweeney Todd and Jack the Ripper**
Dell, McLain
Southeastern Oklahoma State University
- 03.06.08** **Stock Characters**
Dell, McLain
Southeastern Oklahoma State University
- 03.06.09** **Arthur Miller**
Dell, McLain
Southeastern Oklahoma State University
- 03.06.10** **All My Sons**
Dell, McLain
Southeastern Oklahoma State University

03.06.11 History of “All My Sons”

Dell, McLain

Southeastern Oklahoma State University

03.06.12 Footsteps through Fleet Street: A History of Sweeney Todd

Dell, McLain

Southeastern Oklahoma State University

03.06.13 Who Needs a Chorus?

Dell, McLain

Southeastern Oklahoma State University

03.06.14 To Us, It Wasn't Code

Dell, McLain

Southeastern Oklahoma State University

03.06.15 How a Brand is Born!

Dell, McLain

Southeastern Oklahoma State University

03.06.16 Creativity In Our World

Kathleen, Hardgrove

Southeastern Oklahoma State University

Examining the function of creativity in education and the workplace. Looking at research and practical application for improving the productivity of students and employees using creativity.

03.06.17 Breaking the Illusion: A Look at Epic Theatre

Krysti, Waller

Southeastern Oklahoma State University

Examining the formation and purpose of the Epic Theatre movement. Exploring the influences of the Epic Theatre movement on current theatrical practices.

03.06.18 Stock Characters

Trent, Pratt

Southeastern Oklahoma State University

Exploring the evolution and history of the stock character in theatrical performance.

03.06.19 Lookingglass Theatre

Justice, Graham

Southeastern Oklahoma State University

An exploration into the workings of the Lookingglass regional theatre.

03.06.20 Manhattan Theatre Club

Sarah, Felder

Southeastern Oklahoma State University

Examining the inner workings of the Manhattan Theatre Club.

03.06.21 Which Witch is Which?

Noel, McDaniel

Southeastern Oklahoma State University

Exploring theatre's fascination with witches throughout history.

03.06.22 Education of Parkour in Theatre

Tanner, Risner

Southeastern Oklahoma State University

Examining the burgeoning phenomenon of Parkour in theatrical productions.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

04. Liberal Arts

01. Communication

04.01.01 A Netnography of Baby Boomers' Adaptation of Social Media and Evolving Communication Devices

Thomas, Johnson

Northeastern State University

The Baby Boomer generation is and has been a generation that evolves with technology. This generation has been required to adapt from telephones that were plugged into walls to smart phones, from hand written letters that took days to arrive to email, and so much more. These adaptations have come during the Baby Boomers working years and they are moving into retirement now. How are they utilizing social media? Who are they communicating with when using this medium? Baby Boomers, for the purpose of this ethnographic study, are defined as those born between 1946 and 1964. The researcher will use Facebook as the fieldwork field and request volunteers to participate in the project and then follow the main feed of each participant over a period of time [approx. 6 months to a year] and analyze their usage and contacts. A follow up interview would be conducted online with each participant to review the results. There would also be a review of any other studies that are related to this study. The expected findings will most likely show that Baby Boomers will be using social media in a little more utilitarian manner than younger generations. They will be communicating more with family members through this medium than their younger counter parts. Baby Boomers will continue to evolve as the technology does.

04.01.02 Nudity in Advertisement Against Fur: The Ethical Issue of Nudity in Animal Rights Campaign

Michelle, McAdoo

Cameron University

The picture I chose is a PETA campaign against wearing fur. The ad asks how many animals must die in order to make clothing. It compares humans to animals to emphasize that killing animals is pretty much the same as killing humans. PETA is, of course, in favor of their advertisement. People in favor of this campaign include celebrities, like Pamela Anderson, Justin Beiber, and Paul McCartney. People against this campaign can include pro-fur wearers and religious groups. Other people against it might be modest people who think that the picture is too vulgar for the public. The ethical issues concerning this picture are gruesomeness, nudity, and manipulation. This ad objectifies women and manipulates the real reason for the picture. In my ten interviews I had a mixture of answers to my five questions regarding a PETA advertisement against wearing fur. Most women said it is not offensive and men said it was offensive. The ethical issues include nudity, grief, self-respect, and sexualizing women. Some people said the advertisement should be allowed, some said no it should not, and several said only in places that adults can see it. Half of the students said they were affected by it and half were not. I think this picture should not be allowed, because of the nudity as well as the objectification of women. Although, it may not be demeaning to all women it is demeaning to me and many other women and men.

04.01.03 Abstract Unethical Use of a Cow Picture

Jennifer, Landers

Cameron University

My research included interviewing eleven people about how they viewed a picture. I chose specific questions in order to see if how the different the people taking the survey were. If they were a vegetarian they would answer differently then someone who grew up around a slaughterhouse. This survey not only proves the picture was unethically used out of context but also shows the ignorance we have if we do not have the knowledge needed to make a sound judgment. The picture was used at the beginning of an article for animal rights but the content of the picture was of the cow getting a shot while in a cattle drive. The surveyors who grew up on or near a cattle ranch said the cow was not being mistreated and the ones that did not live near any livestock said that the animal was in pain or being tortured. I grew up in the country with cows and other various livestock all around and have heard people say that we as farmers and ranchers miss treat the animals. I do not agree with them and my research proves that people who do not know all the facts should not be animal rights advocates or at least not be allowed to publish their unknowledgeable opinion in places that influence unmolded minds. I also believe that the ones who are knowledgeable should not use these types of pictures to manipulate the younger less experience readers. Everyone has a right to form their own opinion based on facts.

04.01.04 Celebrities vs. Paparazzi: Who has a right to privacy?

Mikaela, Emmells-Greene

Cameron University

Celebrities and their privacy is something we continue to see in the media everyday. No one can agree as to what is right and what is wrong when it comes to paparazzi taking pictures and how far is too far. After surveying ten people in my class about a photo that was taken in Vancouver, CA of the cast of the Twilight Saga. The group was getting into a cab after attending dinner when the paparazzi followed them out of the restaurant and into the cab. The picture was of the group blocking their faces and ducking while the paparazzi took picture through the cab window. I wrote five questions pertaining to this photo and the celebrities right to privacy as well as the paparazzi right to take a picture. The responses were split down the middle. In one question, which stated, "Do you think the paparazzi have a right to take a photo", seven out of 10 responses said yes. They all said that even though it may make the celebrity feel uncomfortable, the photos are just trying to do their job and get paid. Being a Senior Communication major with a concentration in Broadcasting, I believe that the paparazzi do have the right to take the photos they need to if they want to make a living. I believe some people are not thinking about them doing a job as much as they are looking at them violating. There are other jobs that do the same types of things that paparazzi do, they are just better at keeping it under wraps.

04.01.05 Homosexuality is A Sin: The Story of Phil Robertson

Aaron, Gill

Cameron University

Misrepresentation and biased reporting is something that has been going on in the media for years now and through just regular social interactions since the dawn of time. In the screen grab that I chose of an Interview with Phil Robertson, Star of the A&E TV show "Duck Dynasty" there is a runner that states, "Duck Dynasty star calls homosexuality a sin. Phil Robertson: Would never treat anyone with disrespect." When dissected you can see that the media is trying to tarnish this man's reputation by putting the top portion that includes the words homosexuality and sin in all caps as if to contrive his words as devilish. Throughout the interview with CNN, Robertson made multiple references to the bible and talked about how he used to work out in the fields from sun up to sun down and most people took that as him being racist because he stated that he worked with some black men when he was in the fields of Louisiana. The questions that I asked were by no means anything that could be contrived as complicated. However, some of the people I asked these questions to had nothing more than a simple yes or no answer, when a yes or no answer was in no way, shape or form the way the question needed to be answered. I also got some really, well lets say "philosophical" answers to a lot of my questions.

04.01.06 Tabloid Gossip: An American Obsession?

Sklar, Williams

Cameron University

Celebrity gossip represents a guilty pleasure in which many partake. Tabloid news agencies, with the help of paparazzi everywhere, do what they can to publically humiliate these famous individuals for whatever reason. I decided to take a small collection of these pictures, all of which highlighted some grotesque flaw on an other wise perfect celebrity body, and take a poll. Determining whether or not this type of media could really be classified as news. Why is it okay to violates these people's privacy in such a way? I've made several determinations through my research. First, a solid majority of Men surveyed did not watch or read any type of celebrity media. Conversely, the women surveyed showed more interest in the subject. A small portion of the women surveyed even admitted to enjoying this type of gossip because it improved their own self-image. Overall, the issue is divided, where some consider the media vital and enjoyable, others see it as invasive, rude, and a waste of time. Either way, we will still be talking about celebrities and their mistakes because, as many polled persons indicated, when you live in the public eye, you get watched.

04.01.07 Altered Media

Tarayn, McMillan

Cameron University

In September 2000, The University of Wisconsin hoped to display that their school was diverse in enrollment. However, unable to find a photo that showed that quality they altered a photo taken at a football game in 1993 by inserting the photo of an African American senior named Diallo Shabazz that was taken in 1994. In my survey regarding the photo answers showed that students believe it is not right that they added the young mans face into the photo. If the university was truly as diverse as they say there should have been no need for it. The feelings expressed after knowing that photos such as this one can be so easily manipulated were those such as distrust, uneasy, disappointed, and scared. Some surveyors voiced that they trust in photos too much and after today will be more cautious of what they choose to believe and disbelieve. It was wrong to add in the young mans face, wither or not he became a student there or not he was not in the original photo so there fore they are lying to the public. The picture was meant to depict that the school was diverse and I think by having to add the photo of the young man in it only took away from what they where trying to accomplish. If they could not find ONE photo to show the school is diverse then why would they try to claim to be? It is not right to alter a photo so that they can have the public believe something that is not true.

04.01.08 Who is in Danger from Second-hand Smoke?

Sadie, Jones

Cameron University

Smoking is a very controversial issue within our society today. The advertisement I chose displayed a child with a cloud of smoke surrounding him. The smoke suffocated him—essentially killing him. The ad portrayed smokers as ‘murderers’ and was meant to target those who smoke, cause them to realize the harm they are putting upon those they smoke around—specifically children—and convince them to stop. This ad is controversial because smoking is already advertised as harmful to the health of those who smoke, but now it is shedding light on the harm caused to those around the smoke. People don’t like to be blamed for the harm or death of others, but that is exactly what this advertisement is doing—blaming the smoker. The questions I asked my interviewees include advertisement attention and message identification. The majority of the class answered that yes, their attention was caught by the child who was choking, and most were able to tell that the reason he was choking. Another question I asked was, does it trigger an emotional response? Everyone in the class answered yes to this question—mainly because it is a child being displayed and no one likes to see children suffering, because they are so innocent and helpless. Some may see this ad as an exaggeration, claiming second-hand smoke is not as harmful as people say, but I believe it is harmful, not only for babies but for everyone. Those who smoke need to be considerate to the

04.01.09 Why do Photos look this way?

Jamal, Parker

Cameron University

Photo manipulation is becoming more popular in the world of photo editing. Lots of companies are using this way of editing because it makes the photo look better. The photo I used was a picture of serge ibaka. You could see the color manipulation as soon as you looked at the photo. Their were bright colors that were applied to the picture. After looking at the photo I came up with some sample photo questions to find out what people think about photo manipulation. My focus was how do keep from editing in a manipulated way. People answered saying that they rather have the photo with a more real look instead of the picture looking unreal. I can understand why most people said that, because they don’t want it to look like it’s a cartoon or something I feel that doing this research project will help me later when I deiced to edit a photo that I will take that in to consideration and try not to manipulate a picture. Learn how to edit a photo can be a challenge but you just have to take the time and do it right. Try your best not to create a manipulated photo.

04.01.10 Minutes After the Twin Towers Attack

Dena, Jennings

Cameron University

On September 11, 2001, Thomas Hoepker snapped a photo of five New Yorkers sitting in a Brooklyn park seeming to enjoy a sunny day. Behind the group, the World Trade Center Twin Towers are smoldering and dark smoke is rising to the sky. The group appears to be unmoved by what is happening. Perhaps they didn't know their country was under attack. The ethical issue surrounding this photo deals with a group of young Americans acting almost un-American by showing no emotional reaction to one of the worst days in U.S. history. This photo was not released until 2006. Perhaps this was to show respect to the families who lost love. Maybe Hoepker didn't want to show insensitivity towards a national catastrophe. Ten people were asked to respond to questions about this photo asking what the group pictured was probably talking about, if the photographer had the right to take this photo and how it differs from other 9/11 photos they had seen. Most respondents said the group was talking about what they see behind them, but they didn't fully know what was happening. All felt the photographer had the right to take this photo, because they were on public property. Finally, different from many other 9/11 pictures, it shows that even though it was a devastating day, life does go on. Thirteen years after the disaster, this photo serves as a reminder that the horrific scene of 9/11 is behind us. We will never forget, but there is life outside of tragedy and the sun will continue.

04.01.11 Photojournalist vs. Human Being

Meredith, Lucus

Cameron University

On April 15th, 2013 two pressure cooker bombs exploded near the finish line of the Boston Marathon. Pictures were taken after the bombing that captured some pretty gruesome images. The two explosions killed three people and injured two hundred and sixty four of more people. The fact that these pictures were taken brings up some ethical issues. It offends some people that one would stop and take a picture of this moment rather than help the injured people in a time of desperate need. When it comes to journalism, this photographer was just capturing a moment in time that would be important history one day; he or she finds nothing wrong with capturing this moment instead of helping. They feel that it is their job to take pictures of this particular time to show the rest of the world. So is there something wrong with photographers capturing these moments instead of helping the hurt? I interview ten people to get the answer. I asked three questions on the interview. 1. Do you think it is okay for photographers to capture moments like this? 2. What is your opinion on photography covering tragedy or grief? 3. How do you think journalists should handle criticism about taking these pictures? Every person I interviewed said that it was okay to capture those moments and everyone gave pretty in depth opinions on the subject. On the last question, people thought that photographers shouldn't have to defend themselves because it is their job.

04.01.12 Abu Ghraib Prison Scandal

Nicole, Hartvigsen

Cameron University

A picture is worth a thousand words; no matter how cliché, there is truth behind the words. Many people are unaware of some of the gruesome things that go on in war. They are even more naive to believe that their own government was causing the inhumanity. Abu Ghraib was a perfect example of government power, lies, and scandal. All of which was kept from the American people for a long time. The pictures from Abu Ghraib are gruesome and inhumane. The prisoner abuse that these detainees experienced was all at the hands of U.S. soldiers. So, why did these guards intentionally torture prisoners? Well, some think it was revenge for their actions. Regardless of what some think was revenge, the torture these detainees endured was both inhumane and illegal. When asking others how they felt about the picture many were angry or dismayed. Surprising, however, was that several students were saddened for the prisoner. They weren't too concerned with the secrets our government was keeping. It makes me believe that the Abu Ghraib prison scandal is still something not many people understand or comprehend. This scandal has made a great impact on the way other Middle Eastern countries view our war tactics. While the actions of the guards who performed the prisoner abuse was ethically wrong, I do believe that it was ethically right to allow these pictures to be seen by the American people. It allowed them to visually see and understand what was going on at the Abu Ghraib pri

04.01.13 Photo Manipulation in the Media- When is it Too Much?

Ekanem, Ekpenyong

Cameron University

Almost everywhere today, we see pictures of models everywhere, young and old. They all have one thing in common- perfection. The media today manipulates pictures of individuals into nearly unrealistically flawless figures. The media says that photo shopping and altering images of people helps the sales of their magazines and products, plus it shows professionalism because of the hard work put into the editing of the photos. After interviewing college students and presenting them with a before and after picture of Madonna, I discovered the following: A majority of the participants believed that excessive photo manipulation connotes a negative meaning. This majority were females and only one male. The minority of the participants was indifferent about excessive photo manipulation. This minority were men. All participants agreed that the photo affected the way women viewed themselves. Female participants felt the photo-shopped picture looked unrealistic and could lower self-esteem while male participants said the picture could make older women want to look sexier. Majority of the participants believed the picture was manipulated for professional reasons. Minority of the participants believed the photo was manipulated solely for profit motives.

04.01.14 Photojournalism Ethical Issue in Covering Tragedies: The Helpless Lens

Steve, Orwel

Cameron University

This paper looks at ethics in photojournalism. It looks at whether it was ethical for Abbas (a photographer) to take a picture of a man about to be struck by a train. This issue resonated with lots of controversies. Some people said a raw picture evokes productive involvement, empathy, and quality action. While others said it brought forth human catastrophic mortality and revealed our thirst for information. The research showed that most people felt terrified with the image and yet they say the photographer did a good job. Based on the responses, I think a lot of people felt sad, angry and terrified because the picture was real, that was the objective of the photographer. He presented the real feeling of the whole experience and appealed to base sensationalism. Surprisingly, most people said the photographer did a good job in taking the picture but when they were asked what they would have done if they were the photographer, almost all of them said they would have helped the man instead of taking the photograph. This shows how thirsty we all are for information but at the same time feel guilty.

04.01.15 Covering Tragedy and Grief in Photojournalism: Ethical or not?

Christina, Nalsen

Cameron University

The purpose of this subject was to find out if horrific photos of tragic events should be shown to the public and if so, what influence they have on viewers. Photos can have a very strong impact on people and a picture can tell a story of an event better than words on a page. Therefore it is essential for photojournalists to understand the power of a photo and the responsibility that comes with it. A survey was given to a group of college students to see how they would react to seeing a photo from Sept. 11, 2001, which illustrated people trapped in the North Tower of the World Trade Center hanging out of the burning building before it collapsed. The objective of the survey was to collect the reactions of this group of students and see if they felt that taking photos like this was ethical or not. Arguments against showing these photos were focused on the disrespect towards the grieving family members and invasion of the victim's privacy in a horrible moment. Arguments for allowing these photos were centered on the right that the public should know the truth about the event and the right to decide for themselves whether to view the photos or not. Photos of horrific events can make an impact and create change whether in a community or an entire nation, and the findings from this research and survey have shown that young people are ready to see the truth.

04.01.16 The Importance of Being Earnest: A Discourse Analysis of Public Apologies in Taiwan

Hsin-I Sydney, Yueh

Northeastern State University

This research compares the strategies of several major public apologies conducted by celebrities in Taiwan in the form of press conferences in the last ten years. The similarity among the selected clips of the press conferences is that the person(s) apologize(s) for a wrongdoing caused by personal carelessness and wishes to get the forgiveness both from the specific victim(s) and the general audience. Thus, public apology is not only a communicative act with the definite goal to repair interpersonal relationships, but also a “planned” performance that reveals the cultural norms and the rhetorical situations in the given society. By analyzing the verbal and nonverbal cues of the speakers, the means of speaking, and the comments posted by the audience in the online forums discussing the controversies, the research aims to explore what makes a “sincere” apology and the meanings behind this type of public apology in Taiwan.

04.01.17 A Textual Analysis of the Ideal Female Image in the U.S. through Cosmopolitan Magazine during 2001-2011

Jacqueline, Alworden

Northeastern State University

The media today presents an unrealistic representation of women. The images we are exposed to on a daily basis have been altered in some way, either with Photoshop or airbrushing. As society has changed so has the ideal of a perfect woman. Billboards, ads and magazines reinforce the image of a perfect woman to the American audience. Cosmopolitan magazine is one such publication that women read and then aspire to be like the women on those glossy front pages. Yet, how many minorities or non-mainstream body types are represented in that sacred spot compared to the dominantly accepted norm, a petite white woman? Comparing the magazine's front cover over the last ten years could show this specific trend of constructing an ideal female image by excluding certain body types. In a textual analysis one could discover where the inequalities lie and how “women” is partially represented in the media.

04.01.18 Obamacare Cartoon Analysis

Mikaela, Emmells-Greene

Cameron University

The controversy over the Affordable Health Care Reform Act, also known as "Obamacare", is so large that doing a cartoon analysis was a very easy. There are many people who agree with the health care act, and there are many people who do not. I chose four cartoons to show the different sides of the argument and how the health care act is being depicted. The cartoonists that are pro Obamacare, depicted the positive things about what the health care act will bring us, but he uses republicans to make a point. The republican elephants are holding signs that say "Stop Obamacare" except we want to keep the good things. After looking at it you realize that they like the plan just not the Obama part. Same with the second cartoon, a man is against it, the women explains what benefits it offers, and the man ends saying, well then just cut out the Obama part. It depicts the republicans as being ignorant. The cartoonists that are against Obamacare were very creative in their approach. They use history to make their point. They use the Trojan horse with the IRS walking out of the horse to show that by making your own choice of not to sign up for the health care that you are going to be taxed. Almost the sense that our country is being attacked, and we let them in the front door. The artists are very drastic in trying to make their points, but they do succeed. They are able to hone in on the irony of what everyone is saying. They confront the issue head on.

04.01.19 Propaganda: Helping the Allied War Effort in World War II

Bradley, Johnson

Cameron University

Propaganda is a form of media used to win the hearts of like-minded people to fight or prevent a cause usually in form of a poster. Propaganda is mainly used when two or more opposing sides are fighting on a certain issue. This is clearly seen during World War II. The Allied lands used propaganda to not only gain support for their own country but to support allied nations. During World War II, both the United States and the Soviet Union were two powerhouses of the allied war machine. Not only was their military strength mighty they also shared a unique form of propaganda. From Our Fathers is a piece of propaganda that shows World War II era soldiers along with the warriors of old. While the American propaganda showed Revolutionary soldiers with white uniforms, the Soviet shows, Tsarist era soldiers covered in red. With Britain under the attack of the German Luftwaffe, posters were made to remind the British people all is well. But with the fear of a German invasion, propaganda makers made "Keep Calm and Move Along." Though never used it became a hit in the Modern Age. The United States wanted to boost morale of not only their troops but those of allied forces. Propaganda makers made the "This Man is Your Friend" series. Featuring allied soldiers and how they share a common goal for freedom. Lastly, research dives into two different views of propaganda and the various types of propaganda. Then I will finally provide my personal analysis.

04.01.20 “Ours was Always Aimed at Higher Education”: Discussing the Design of Lottery Scholarship Legislation

Kristopher, Copeland

Northeastern State University

In-depth interviews with 18 participants and document analysis of 86 documents reveal a social construction of citizens into four groups during the policy design of the Arkansas lottery: higher education students, typical lottery players, retail and vendor community, and gambling addicts. These four citizen groups became the central focus on determining beneficiaries within the Arkansas lottery and determining the burden that would be placed on those deriving from low-income, along with issues pertaining to gambling addiction and other social costs. The symbolic nature of education became the driving force to communicate the policy to the general public. This social construction is embedded within society, which makes it hard for legislators and the public to notice the ramifications on the poor over those that receive benefits. I argue that the individuals within the four groups do not question the social constructions and consequently accept the boundaries as fact due to the messages communicated by policymakers during the development of the policy. Additionally, I argue that social constructions embedded within our culture provide groups outside of a state legislature with the power to influence the social construction of groups to solve public problems.

04.01.21 City of Muskogee: Examining the Marketing and Branding Strategy within the City

Kristopher, Copeland , Dana Boren Boer, Dana Eversole

Northeastern State University

The City of Muskogee has struggled to create a marketing and branding campaign that is consistent among the various stakeholders within the city, which includes the Port of Muskogee, the Chamber of Commerce, and the City of Muskogee Foundation. The Mayor of Muskogee, Bob Coburn, approached the media studies faculty for help assess the marketing and branding strategy of the city. The purpose of this project is to examine the current marketing and branding strategy of the City of Muskogee. From our research we hope to not only measure the effectiveness of current strategies but also describe best practices for the future.

04.01.22 Using Icebreakers to Reduce Social Awkwardness

Dell, McLain

Southeastern Oklahoma State University

An Application of the Social Penetration Theory

04.01.23 A Content Analysis of Compliance-gaining Strategies in the Workplace

Dell, McLain

Southeastern Oklahoma State University

04.01.24 The Effects of TV Violence on Viewers

Dell, McLain

Southeastern Oklahoma State University

An Application of the Cultivation Theory

04.01.25 Investigating the Effects of Media on Society

Dell, McLain

Southeastern Oklahoma State University

An Application of the Cultural Studies Theory

04.01.26 Investigating the Effects of Social Media Outlets

Dell, McLain

Southeastern Oklahoma State University

Effects of Facebook, Twitter, and Instagram on a Person's Well Being

04.01.27 Sharing Private Information in Business Settings

Dell, McLain

Southeastern Oklahoma State University

An Application of the Communication Privacy Management Theory

04.01.28 A Look at Children-Free Couples: An Application of the Communication Privacy Management Theory

Dell, McLain

Southeastern Oklahoma State University

04.01.29 Breast Cancer Awareness Campaign

Dell, McLain

Southeastern Oklahoma State University

04.01.30 Breast Cancer Awareness Campaign: Describing the Target Audience

Dell, McLain

Southeastern Oklahoma State University

04.01.31 A Health Care Campaign: Preventing the Spread of Disease in the Workplace

Dell, McLain

Southeastern Oklahoma State University

04.01.32 Barack Obama's 2013 Inaugural Address (Through the Lens of Dramatism)

Dell, McLain

Southeastern Oklahoma State University

04.01.33 Radio Show Project Legacy 2.0: Comparing Original Songs to Cover Versions

Dell, McLain

Southeastern Oklahoma State University

04.01.34 Argument Quality: An Examination of the Washington Post's Pulitzer Prize Winning Journalism on The Democracy Exportation Project in Yemen

Dell, McLain

Southeastern Oklahoma State University

04.01.35 Argument Quality: An Examination of the Boston Globe's Pulitzer Prize Winning Journalism on Stem Cell Research

Dell, McLain

Southeastern Oklahoma State University

04.01.36 Critical Media Inquiry: Infographic Sex/Gender

Dell, McLain

Southeastern Oklahoma State University

04.01.37 Problem-Based Learning: The Three Valley Museum as the Public Relations Classroom

Dell, McLain

Southeastern Oklahoma State University

04.01.38 Logo Development and Style Guide!

Dell, McLain

Southeastern Oklahoma State University

04.01.39 Ada Recycling Coalition Strategic Communications Service Learning Project Fall 2014

Bruce, Hartley , Emily Starkey, Katelyn Holmes

East Central University

East Central University Mass Communication Department's course in PR/Advertising Campaigns collaborated with the Ada Recycling Coalition (ARC) to research, develop and implement a communication strategy to build awareness in the community. ARC is a nonprofit organization with a volunteer board that needed assistance and through interviews, surveys, research and creative concepts; this project contributed greatly to the needs of the ARC. Research components utilizing paper/pen surveys and online surveys were developed and are currently being implemented in Ada, OK. This is a positive example of service learning from ECU.

04.01.40 We Can Do It

Jamal, Parker

Cameron University

Jamal Parker Dr. Zhao Jour 4213 27 January 2014 Abstract 'We can do it' is a propaganda poster that came about around world war 2. It sparked the minds of millions because in days back then women were not looked at as being a strong person in leadership positions. In fact the propaganda is still being used till this day. The woman on the poster is 'Rosie the Riveter' is was known for working in factories during the world war II times. Even though the propaganda was made for a good cause people who didn't agree with it spoke their minds on how they felt about women being able to work with the U.S army. Over all "Rosie the Riveter" was at one time one of the biggest talks during the world war II times. She helped inspire young women and children to take a stand in what they believed in. some even say that the propaganda is one of the reason why we have women in leadership positions in the united states army.

04.01.41 Bar Talk: A Discourse Comparison of the Communication in Heterosexual and Homosexual Singles Bars

James, Rae

Northeastern State University

This research will examine what, if any, differences exist in communications among heterosexual and homosexual singles in a traditional social bar setting. Men and women, both heterosexual and homosexual, will be observed interacting with one another in small groups or individually. The researcher believes that factors like sexuality and pre-conceived gender-norms will impact how singles approach and communicate with one another. This includes instances such as what sex approaches the other such as men typically approaching women first. The research will mainly be conducted based on participant observation, detailed notes taken in the field, and individual qualitative interviews conducted with frequent patrons. These findings will explain any existing differences between heterosexual and homosexual singles, and allow participants to explain the communication norms expected in these individual settings. This research will build on previous research conducted about assumptions made in communication between homosexuals and heterosexuals (Röndahl, Innala, & Carlsson, 2006). Possible limitations include the difficulty of identifying heterosexual people who may frequent homosexual bars.

04.01.42 Advertisements: Evolving Trends

Isaac, Smith

Cameron University

ABSTRACT: Advertisements: Evolving Trends covers a short analysis of advertisements over a hundred-year period. It starts with the decade of 1890 and ends in 1980. Each decade consists of 8-10 photos and a personal analysis. There are also secondary sources to help explain and analyze. The trends of advertising are clear and continue to sell products.

04.01.43 Helping On the Home Front: An Analysis of World War II Propaganda

Lora, Miller

Cameron University

The purpose of the research was to focus on the effects of World War II propaganda on American citizens. The focus of the paper is on propaganda containing messages specified toward buying war bonds and rationing. This paper includes images of propaganda that was meant to appeal to the emotions and the patriotism of the citizens left fighting on the home front. The first images are meant to sell bonds and contain images of children being threatened by the "evil" of the enemy. The paper also includes pictures meant to strike fear in the American citizens by including images of the enemy. The last pictures are meant to encourage rationing and savings because going to war after coming out of the Great Depression left many goods scarce. In order to have enough of the scarce goods for the people left on the home front and the soldiers going over sea, people needed to save and some stuff like gasoline needed to be rationed. In conclusion even though the use of the black market spiked during this time, the propaganda was successful because American people did purchase a high number of bonds and rationed their goods.

04.01.44 Will This be on the Test? Student-Teacher Interactions in a College Classroom Setting

Christopher, Rudick

Northeastern State University

Understanding social interaction in the classroom setting is useful to both educators and students alike. In this study an ethnographic participant-observation method will be used in order to discover and describe a particular speech community: a communication classroom setting taught by a graduate student at a Midwestern university. Field notes and data will be gathered from the classroom and examined using the ethnography, a method which provides description for everyday interactions by relying on natural settings and observation of others in those settings to test assumptions about the everyday life of a people or group (Leeds-Hurwitz, 2004; Sunstein & Chiseri-Strater, 2012). This method can be employed to develop a general model for learning the particulars of any given case as well as challenge extant models of theoretical concepts (Philipsen & Coutu, 2004). In this research, theories of power and compliance in the classroom are tested in order to discover how instructional communication scholarship can be used to engage issues in ethnographic methods and vice versa. Findings are discussed with the goal of uncovering new knowledge concerning this particular speech community, and in a broad sense, the ethical issues in ethnography of speaking.

04.01.45 Bridgegate Political Retribution Scandal

Scott, Krapff

Cameron University

This study is a cartoon analysis of the political issue regarding to Bridgegate. Chris Christie, Governor of New Jersey, is implicated in a scandal over the closing of four lanes on the George Washington Bridge that tied up rush hour traffic. Christie claimed to have no knowledge of why the lanes were closed on the bridge that leads to Fort Lee, the home of Democrat Mayor Mark Sokolich (Edelman, 2014). Because Christie is a hopeful for the 2016 presidential elections, his involvement in a scandal now could have large implications for the future election. The media caught on to the story and it has gone national with many articles and cartoons discussing the issue. The cartoons are used to bring attention to the issue by the use of visual images. These images catch the eye of the consumer/voter and help to not only get the public to read the article, but also convey the underlying issues. Many distorted images along with metaphors make for an interesting cartoon.

04.01.46 Improving Student Engagement in Learning Multimedia

Abbas, Johari , Mellisa Merrifield

Cameron University

This presentation reports on findings on a study that measured student multimedia learning by providing an extra learning environment. Much research supports the effectiveness of accessible (available) learning environments in the learning process of all learners. The study also supports the very core value of Cameron's Plan 2018: "Student learning as our top priority," Action 1.10, "Improve student learning through innovative uses of instructional..." and Action 6.1, "Focus resources to achieve optimal student learning." Research on activity theory (Lev Semennovich Vygotsky, Alexander Romanovich Luria, and Alexei Nikolaevich Leontiev), the theory of perceptual learning (introduced by Eleanor J. Gibson) and work by Jerome Bruner (who first introduced Scaffolding theory) supports this kind of student learning.

04.01.47 Nonverbal Communication in Group Meetings

Christian, Madera

Southeastern Oklahoma State University

The aim of this project was to train a group of university students to become aware of the influence of nonverbal communication on relationships. We conducted a two-hour training workshop for the group of students. The goal of the workshop was to help the group members develop the ability to monitor nonverbal messages in order to enhance and build relationships in the group. The components of the project include creating a trainer's guidebook with the project overview and objectives, the participant workbook with summaries of lessons and handouts, and an assessment form for evaluating the success and disappointments of the workshop. The topics for the lesson of this workshop involved the studies of haptics (touch), kinesics (body movement), vocalics (paralanguage), and chronemics (structure of time). The group then applied their new skill in the fish bowl activity. In this activity, one person sat in the center and discussed an incident in life. The other members then offered reflections and interpretations of the event. The group finished with a discussion of the role of nonverbal communication in their interpretations. Evaluations of the workshop were positive.

04.01.48 Nonverbal Communication in Group Meetings

Jessica, Gray

Southeastern Oklahoma State University

The aim of this project was to train a group of university students to become aware of the influence of nonverbal communication on relationships. We conducted a two-hour training workshop for the group of students. The goal of the workshop was to help the group members develop the ability to monitor nonverbal messages in order to enhance and build relationships in the group. The components of the project include creating a trainer's guidebook with the project overview and objectives, the participant workbook with summaries of lessons and handouts, and an assessment form for evaluating the success and disappointments of the workshop. The topics for the lesson of this workshop involved the studies of haptics (touch), kinesics (body movement), vocalics (paralanguage), and chronemics (structure of time). The group then applied their new skill in the fish bowl activity. In this activity, one person sat in the center and discussed an incident in life. The other members then offered reflections and interpretations of the event. The group finished with a discussion of the role of nonverbal communication in their interpretations. Evaluations of the workshop were positive.

04.01.49 A Case Study: Ford Motor Company – From The Industrial Revolution To The Modern Era

Kristi, Ryan

Southeastern Oklahoma State University

The case study method is a systematic analysis of real-life situations involving the application of analytical tools to explain what happened in the case and/or what actions should be taken in the case. In this case study, I analyzed the different organizational and management styles that the Ford Motor Company has utilized over the past century. These styles include its changing landscapes, the human resources approach, decision making processes, conflict management, and organizational culture. From incorporation in June 1903 to the present, the company has experienced changes in its domestic, multicultural, multinational, international, and global markets. In this study, I link the types of communication styles used by the Ford Company with the typed of changes occurring in its landscape.

04.01.50 Developing Effective Decision Making Techniques

Sydney, Greenwood

Southeastern Oklahoma State University

The purpose of this project was to conduct a communication workshop to train participants to make effective decisions in group communication situations. In order to make better decision, participants must be able to generate ideas freely, voice their opinions comfortably, and discuss ideas openly. In my training workshop, I taught three popular decision making techniques: brainstorming, single-question form, and ideal-solution form. Each of these are practical to use in groups of any size and with any type of history. Objectives of the workshop include training participants to be able to generate and voice ideas by using decision making techniques, to discuss the ideas of others in order to determine the best decision for the entire group by using decision making techniques, and to reach an agreement about a decision for the group using decision making techniques. The components of the project included creating a trainer's guidebook with the project overview and objectives, the participant workbook with summaries of lessons and handouts, and an assessment form for evaluating the success and disappointments of the workshop. Participants were provided a task analysis of each activity conducted in the workshop. Evaluations of the workshop were positive.

04.01.51 Building a Successful Virtual Small Group

Dario, Bellettini

Southeastern Oklahoma State University

The purpose of this project was to conduct a communication workshop to provide ways for group members to create a collaborative working environment when working in a virtual team. Participants learned two specific ice breaking techniques, two specific online collaboration tools, and gained access to links to online activities to keep groups connected throughout the life of the project. I developed the training to be an online, self-paced workshop. The first lesson in this workshop involved ice breakers, which are a great way to help develop swift trust within a virtual group. The second part of the workshop involved participants learning two ways to collaborate with groups online. The two online tools I found that would help with college students are Livebinders and Facebook groups. Both sites are free, and accessible through smart phones and/or tablets and laptops. I have set the links in the presentation to go directly to the site's tutorials, so the participant can look through them at their own pace and ability level. The third part of the workshop involved activities to help create a community throughout the life of the small virtual group. These were short get-togethers online to promote team membership, create levity, and enhance trust. Links were provided to two online resources for several activities that include online charades and virtual 'office' tours. The components of the project included creating a trainer's guidebook and participant w

04.01.52 Active Learning in Photojournalism Ethics

Yanjun, Zhao

Cameron University

This is a case study on active learning for photojournalism class. As ethics in photojournalism tends to be overlooked, an active learning activity was designed and carried out. The professor first introduced common issues in photojournalism, then asked students to find real world examples individually. After that they write about the issue and design a short survey for their fellow classmates. They collect the response and summarize the results. They conclude their exploration with a reflection of the issue. The experiment greatly improved students' engagement to relevant topics, as students were eager to see each other's examples and discussions took place naturally. The effectiveness of the learning was shown by students' reflection that the ethic issues have been incorrectly overlooked. It was also shown that most students recognized the issues well.

04.01.53 100 Years of Pharmaceutical Advertisements

Tiffany, Williams

Cameron University

Over the last century, pharmaceutical advertisements for over-the-counter and prescription medications have evolved with the changes in Federal Drug Administration regulations and public policies and consumer awareness. During the first half of the century, evidence shows that the focus of drug advertisements focused on facts and effects of drugs available to consumers. As time and policy changes, the focus of pharmaceutical drug advertisements became more consumer-oriented. This form of direct-to-consumer advertising is evident in pharmaceutical ads as they correspond to society, family, and political issues over the decades. As the formation and adaptation of the Federal Drug Administration's policies changed, the consumer became empowered to know more about available treatment options, symptoms and possible diseases that would have been left untreated. These changes changed the face of pharmaceutical advertising and opened the door to more patient and doctor conversations.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

04. Liberal Arts

02. English

04.02.01 Wichita Mountain Wildlife Refuge Clean-up

Rhiannon, Poolaw , Kitty Johnson

Cameron University

A valuable contribution to the litter crisis affecting the natural habitat of Wichita Mountain Wildlife Refuge can be made through volunteer efforts, the strengthening of fines and regulations, and promoting awareness. The objective of this research is to find a plausible solution to the accumulated litter on the Wichita Mountain Wildlife Refuge. When visitors enter, often they leave more behind than just their footprints. Debris poses a threat to the animals and the environment. In such an expansive and highly trafficked area litter remains an on-going issue. We began by doing a basic library and internet search. We met with a Ranger on the Refuge and began building a relationship with the staff. After gaining more information on the problem, we began formulating a solution. We drafted a donation request letter and solicited local area businesses. We then followed up the letters with many phone calls. We then sent out emails student organizations requesting volunteers. Through our efforts to improve the WMWR, we found a true treasure. Those employed at the Refuge take an interest in preserving and restoring the natural splendor of the local attraction. They were excited by the opportunity to work with other people. We learned the hardships encountered by many non-profit organizations; we faced many instances of reluctance and red tape. We also found that there are many people willing to sacrifice their time volunteering for Refuge improvement projects.

04.02.02 Virtual Collaborative Writing: An Exploration into the Future of Group Work

Kaitlyn, Stockton

Cameron University

In today's workforce and schools, group work is becoming a useful and popular tool. Collaboration allows members with different backgrounds to come together. This teamwork promotes diversity and enables groups to experience more creativity in their projects. However, group work has come to be labeled as a "double-edged sword." Bringing together people with a multitude of personalities and ideas can create conflict. In the 21st century, gender and race play a large role in the diversity of group work as many of these voices have been marginalized. While it brings new voices to work groups, this inclusion has also been problematic. As group members may not get along while working with each other in person, the idea of adding members with different beliefs and personalities becomes even more problematic once group work becomes virtual, where team members do not even have the chance to interact with one another face-to-face. While there are many new tools to connect individuals from all over the country and world to each other, obstacles can still occur. Virtual collaboration offers many advantages and opportunities for future group projects. However, as most studies on the roles of women and minorities in group work are outdated -- especially with the introduction of women and minorities into high positions in the business world in recent years -- new research is required to assist in the future progress of the tool of virtual collaboration.

04.02.03 Digital Manipulation use in Media

Shelby, Stancil

Cameron University

The issue I chose to address is that of digital manipulation, which seems to be a growing problem with media. I asked if, when, and where digital manipulation is acceptable. The general consensus about digital manipulation is that it should be used when appropriate but is used far too much in places that it shouldn't be. The news is one such place that has no room for manipulating pictures. The manipulation of pictures is used so much in the world of journalism that people are beginning to think it normal but then become angry when they are told a picture has been altered. The trust between reader/viewer and journalism breaks when this happens. People no longer know what to believe. In fashion magazines it is a bit more acceptable to manipulate a picture as long as the subject is not altered into practically a new person. There are still problems with the use of this software even in the fashion world. Small models are being made to look almost skeletal and the young starlet gracing the cover, while seen as healthy to the normal eye, is called "fat" or "pudgy". The effect this has on young readers can be detrimental to their body image, which creates a problem in the real world. There are two sides to every software but how much will the public take before the real damage is done.

04.02.04 The Interaction of Language Transfer and Language Processing in Second Language Acquisition

John, Hitz , Nawal Alhodithi

University of Central Oklahoma

To date, research on the influence of the first language in second language acquisition has provided conflicting results. Some studies have argued that first language influence in second language acquisition has a significant impact on second language acquisition, whereas others have contended that its impact is minimal or non-existent. Our proposed research project on the second language acquisition of English relative clauses (hereafter, RCs) by native speakers of Korean and Arabic may shed some light on this important question. The participants in the study will include 20 adult native speakers of English, 60 native speakers of Arabic, and 60 native speakers of Korean. The Korean and Arabic speakers were selected because Korean RCs are closer to English RCs in their structure than Arabic RCs. Therefore, the Korean speakers are expected to outperform Arabic speakers on all experimental tasks. All participants will judge the acceptability of certain types of relative clauses with the aid of a computer, which will also measure their reading times. It is predicted that native speakers of Korean will read English relative clauses more quickly than Arabic speakers, and that their judgments of grammatical acceptability will be more accurate than those of Arabic speakers, due to the structural similarities shared by English and Korean RCs. Data is currently being collected from all participant groups. It is expected that most data will be collected before March 7.

04.02.05 I Choose My Parents: The Use of Surrogacy in Disney Animated Films

Joy, Morrow

Northeastern State University

In 1937, Disney's Snow White and the Seven Dwarves hit theatres launching the beginning of the Disney animated-film reign on Western society, particularly American society. One would be hard-pressed to find an American who does not have some knowledge of Disney films and usually that knowledge came from multiple viewings of the films throughout a person's childhood. What the Disney Studios created is a series of films that appeal to children and families. Disney took relatively known story plots to create family-friendly enjoyable movies; the source materials used by Disney included: fairytales, children's books, children's plays etc. The success of the films created a new definition of the original works. When Snow White and the Seven Dwarves is mentioned, the animated film supplants the original work for many people; the same can be said for works such as The Little Mermaid, Winnie the Pooh, and Peter Pan. With the target audience being families, several of the films seemingly emphasize family values. However, the majority of the protagonists are not happy with their familial lot and use surrogates to create a familial paradigm that they either believe is ideal or fulfills in area where their legitimate families lack. For a society heavily influenced by these films combined with an audience for whom family brokenness is a normality, surrogacy may be more relatable than the true family values with which Disney brands its animated films.

04.02.06 “As You Wish”: Analyzing the Use of Austin's Performative Utterances in The Princess Bride

Carson, Stringham

Cameron University

The Princess Bride, a movie by Rob Reiner, is a story that has something for everybody. It was a movie that took place in a world just fantastical enough to believe that anything could happen, yet grounded enough in reality that it seemed more like history. While there is certainly enough romance, miracles, and comedy to go around, the movie is also filled with performative utterances. An analysis of the film shows how two types of performative utterances— felicitous and infelicitous— were used to not only add drama to the story, but they also establish the nature of the characters.

04.02.07 Interpretation of Dreaming: Denis Johnson's use of Theme in Train Dreams.

Casey, Brown

Cameron University

According to Robert Ebert, “The moment a man stops dreaming is the moment he petrifies inside.” Robert Grainer, the protagonist of Denis Johnson's 2012 novella Train Dreams, survives the loss of his wife and daughter because he is a dreamer. Despite such overwhelming tragedy, he does not petrify inside. He does, however, become a recluse, but he might have already been one before he lost his family in a fire. The use of literal trains, the use of metaphorical trains, dream sequences, and dreaming are significant to the plot as well as to the character development of the protagonist. Being around trains, dreaming in general, specific dreams, and train dreams in particular define who Grainer is as a character. Ultimately, Train Dreams is successful because Johnson carefully, effectively, and repetitively uses the craft elements of theme, character development, and episodic structure to further the tension of the plot in his novella.

04.02.08 Lewis Carroll and Stevie Smith: Similarities Between a Nonsense Victorian and a Modernist Writer

Karri, Wheat

East Central University

Early in the 20th century Modernist writers who grew up reading the Victorian Romantics reinvented literature by writing works that were realistic and “grounded”, I argue that many still held onto the Victorian fairytales of their youth and applied them into their own works during the time of WWI and feminist movements. One female poet, Stevie Smith, still held onto the fairytales and brought her own twist on them to the Modernist world. Not only was she famous for her poems, but for her odd and childish illustrations that sometimes went along (and at times had nothing to do) with her poems. Lewis Carroll is mostly known for his works *Alice's Adventures in Wonderland* and *Through the Looking-Glass*. Many do not know the “Father of Nonsense” also applied his unique visions into photography during its early years. It was through the whimsical, yet haunting look of child portraits of Alice Liddell and her sisters that Carroll was inspired to write the Alice novels. In this project, I do not claim a direct link from Lewis Carroll to Stevie Smith, but instead, explore how possibly a mathematician's nonsense novels of a young girl named Alice may have subconsciously had an impact on Stevie Smith's poems “The Frog Prince” and “Fairy Story”. I will be comparing reoccurring themes in both Lewis Carroll's novels and Stevie Smith's poems and explore how different artistic mediums (Smith's illustrations and Carroll's photogr

04.02.09 Little Magazines Shaping Modernism with Ezra Pound

Amria, Norman

East Central University

The Modernist movement wanted to shape art into a new way for everyone. Ezra Pound, an American poet and modernist activist played a huge role in modernism. He was editor of small magazines in both America and overseas. With his help, *The Little Review* and *The Dial* shaped the poetry canon of what we know today. By looking into their history and their way of production, this project will show how they shaped the canon.

04.02.10 Personal Connections in Modernism

Molly, Trimmer

East Central University

My research aims to bring history and literature to a personal level by examining the relationships between various writers and activists during the Modernist Era. The exchange of ideas between individuals and key groups influence public opinion and actively cause conflict and change that is momentous enough to be recorded. In the context of Modernism, it is clear that the personal relationships between writers contributed to the greater public commentary on topic of British India, and such relationships led to massive change, namely the liberation of India from British rule. By examining archives of authors' letters, articles concerning Modernist attitudes, and biographies of Modernist-era writers, I have established clear connections between writers and activists such as Ezra Pound, W.B. Yeats, Rabindranath Tagore, and Thomas Sturge Moore that reveal the exchange of impactful ideas during common discourse between friends, acquaintances, and colleagues.

04.02.11 A Peak Through "A Passage To India", the Bridge That Binds, and Social Issues That Transcend Time

Amber, Huffman

East Central University

India is a young country since Independence and is still recovering post colonialism. E.M. Forster's *A Passage to India* binds the British world of Jane Austen's *Pride and Prejudice* with modern day post colonial India, as seen through the lens of Gurinder Chandhas in the movie *Bride and Prejudice*, one of the most recent adaptations of Austen's novel *Pride and Prejudice*. Forster's novel allows its reader a glimpse into the world between these two works, and explains many of the social issues that have been dealt with and the effect they have on society today. I chose to examine these works looking predominantly at the issues of the education of women and marriage in general. My research shows that although there is nearly a hundred years between each of these works certain themes remain current throughout time.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

04. Liberal Arts

04. Foreign and Modern Languages

04.04.01 Contemporary French Film as a Teaching Tool: Caché and Memory

Catherine, Webster

University of Central Oklahoma

Contemporary culture and recent history are notably difficult topics to teach and scholarly publications frequently lag behind popular considerations of events from the recent past. In this case, Michael Haneke's 2005 film, *Caché*, addresses mainstream France's desire to forget its participation in the violence of the Algerian War. This thriller surprises its main characters and the audience by exposing afresh the sealed memories that it would rather forget. As such, it allows viewers -- especially students of contemporary French culture -- to understand both the war and its legacy.

04.04.02 Helping native Spanish speakers master Spanish grammar (a pilot study)

Maria Teresa, Moinette

University of Central Oklahoma

This research investigates how heritage Spanish speakers majoring or minoring in Spanish can improve their written and grammar proficiencies. While the assumption that due their excellent oral proficiency these individuals can make an easy A in any Spanish class, this pilot study shows that in fact, these individuals often score poorly on any written assignment, oftentimes their scores are lower than those students who are native English speakers.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

04. Liberal Arts

05. Geography

04.05.01 Landscape-level Mapping of Eastern Redcedar Encroachment at the Selman Living Laboratory

Brad, Watkins , Gloria Caddell, Shey Ramsey

University of Central Oklahoma

Understanding the dynamics of plant communities within the context of landscape is fundamental for the development of better management strategies for environmental protection. The majority of the mixed-grass prairie ecosystem of North America has been lost because of human activities including fire suppression, and much of the rest is currently threatened by invasion of eastern redcedar (*Juniperus virginiana* L.). We are in the fourth year of a study to understand the rate of encroachment and the conditions under which eastern redcedar can become established in mixed-grass prairies at its western limit in Oklahoma. For the eastern redcedar population in the cells mapped at the Selman Living Laboratory, we will report density, cover, population size structure, minimum reproductive size, and sex ratio. We will also describe the distribution of eastern redcedar at the site in relation to environmental factors, including ground slope, aspect, and surrounding ground cover. We have mapped eleven of the thirteen one-hectare cells from our study site for a total of 201 trees, 97 saplings and 239 seedlings.

04.05.02 The Economic and Cultural Impacts of Tornadoes in Oklahoma: A Case Study of Moore

Keana, Dixon

University of Central Oklahoma

The purpose of this project is to understand the impact tornadoes have had on Moore because, unfortunately, it is often hit. Because Oklahoma is prone to tornadoes, it is important for cities to have a recovery plan so that they can recover in a timely manner. Sadly, tornadoes also hit neighborhoods. This can impact people culturally. Why do people stay in areas they know are prone to disasters? This question is addressed in my project. Articles provided as sources for information on: severity of the tornadoes, recovery programs and sponsors, and life in tornado prone areas. Speaking with first responders, recovery program leaders, Moore city emergency management employees, and Moore city officials will also be attempted. This project will focus on one neighborhood in Moore in order to see how people will respond after a tornado has devastated the area. Results have shown, response time is improving and people are learning what it takes for a quick recovery. Importantly, leaders are working on bettering prevention and preparedness. Even though the area is dangerous people tend to stay because it's their home. In the neighborhood this project has focused on, many of the damaged houses are being rebuilt.

04.05.03 Maps or GPS: Can you find your way during an emergency?

Toni, Trim

Northeastern State University

The purpose of this study to determine if there introduction of commercial use GPS is harming the current generation of children's ability to find their way around their local surroundings in case of an emergency. Since the introduction of GPS use for the public in 1995, the general population has become dependent on their GPS device, whether it be a cell phone or their in car dashboard screen. People are becoming extremely dependent on this technology and it is destroying the current generation's ability to navigate their own town of residency without special assistance from Siri™ or Sprint's Navigation App. This research has had personal experience of seeing a person program an address in their GPS and it was literally two blocks down the same street. This study looks at the ability of adults 18-64 years of age to pin point fixed places on a paper map. The participate was asked to fill out a quick questionnaire and place a mark on a map where the following were located: hospital, QuikTrip, police station, and fire station. The map covered the Tulsa metro area and Broken Arrow. The findings of this study concluded that men had the advantage over women when reading a paper map and pin pointing fixed locations.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

04. Liberal Arts

07. History

04.07.01 The Value of Marriage: Exploring the Plight of Victorian Irish Birth Mothers in London, 1842-1859

Jessica, Sheetz-Nguyen

University of Central Oklahoma

This poster will address research methodology, quantitative forms of analysis, and the qualitative and ethical lessons that can be drawn from lone mother petitions to the Foundling Hospital in London. While the point of the poster appears simple, in reality, it will illustrate the difficult choices young women made to preserve the lives of their infants who had no fathers, and their respectability, which would have been damaged forever if their employers, family, and friends learned about their indiscretion, to become pregnant before marriage.

04.07.02 The Rise and Fall of the Civil War Aeronautic Corps: An Operational Review of its Service from 1860 to 1863.

Forrest, Paige

University of Central Oklahoma

The American Civil War not only served as a pivotal moment in American history, but also as a testing ground for new military concepts that forever changed the battlefield. The first use of the telegraph for frontline communications, the implementation of rapid firing machine guns, and the development of armored naval vessels brought the art of warfare into the modern industrial era. Among the numerous innovations that transformed the American Battlefield of the 1860s, the deployment of reconnaissance balloons received considerable attention throughout the United States and the world. However, despite their favorable depiction in the American press, the Union's aerial reconnaissance program failed to survive the conclusion of the war. Based upon the operational reports and personal correspondences of key Northern officers and civilian officials it appears that the use of manned balloons to obtain critical intelligence remained doomed from its conception. The major flaw involved the failure of the airships to maintain the dependability essential for repeated mission as required by the battlefield generals. Although some of the problems related to poor military administration and conflicting personalities, the majority of the complications stemmed from factors related to the insufficient scientific resources to overcome adverse weather conditions and hostile terrain.

04.07.03 Lady Waterford, Louisa Anne Beresford, A Woman of Substance

Cheryl, Caffee

University of Central Oklahoma

Lady Waterford, Louisa Anne Beresford, A Woman of Substance The original objective of this research was to explore the connections between a group of social elite women in London and the East End Hospital. Five full days in the British Library proved to be too short to find any connections of the women, but led to the exploration of Louisa Stuart Beresford (1818-1891), the third marchioness of Waterford. The discovery of several manuscripts, an edited diary, and a portrait in the national gallery started an obsession into the life of one woman who lived through Victorian England and Ireland. The marchioness, a woman of many talents, lived a rich life despite the heartache she endured. At a time when noble landowners were viewed as heartless and uncaring, the Waterfords displayed immense compassion and toiled continuously to assist the tenants of their counties. Lord Waterford lived the life of a selfish, self-centered, wealthy playboy until Louisa Stuart entered his life and changed him into a philanthropic leader of his community. The Waterford's together dispel the myth that the wealthy class lacked compassion and generosity. Most material uncovered was found in larger libraries and book depositories. Further research in Ireland and England is required to continue the study into the Waterford involvement in the Irish famine.

04.07.04 Balfouria

J Michael, Johnson

University of Central Oklahoma

The state of Israel dominates the headlines. A Jewish home was created by a British Prime Minister. This dream became a reality. However, through research at the British Library and the Houses of Parliament, this was not an easy task for A. J. Balfour. The research conducted begins with an idea, legislation, and reality. The new home for the Jewish people seemed promising. However, the events of WWII and the French claim on portions of Palestine started hostility that still exists today.

04.07.05 Huaihai Campaign: Chinese Civil War

kevin, yang

University of Central Oklahoma

The Chinese Civil War was the third largest war in the twentieth century and the most important battle of that war was the Huaihai Campaign (1948-1949), which was fought near Xuzhou, Jiangsu Province between Kuomintang nationalists and Chinese communists. The pro-American nationalist government lost the battle in January 1949 and Nanjing and Shanghai soon fell to Mao Zedong's communist forces. The Cold War thus entered a new era and the American policymakers would soon face a new dilemma - A Communist China.

04.07.06 From 50 to 8,000 Confucius Students: Why Oklahoma kids want to learn Chinese?

Yue, Guo

University of Central Oklahoma

The purpose of my research is to examine why and how Confucius Institute became popular in Oklahoma. Focus on the impact of Confucius Institute on the role of university and the feedback from students, parents and teachers. Analyze how the Confucius class functions, what they teach, what kind of textbook they use and how does this relate to the theory of China Soft Power and questions about CI. Provide field study on impact and result of China's Confucius Program and cultural policies through interviews of high school students, teachers, and parents about their intention to learn Chinese.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

04. Liberal Arts

08. Political Science

04.08.01 Blue to Red: Oklahoma Uncontested and Uncompetitive Elections and Partisan Change

John, Ulrich , Charles Peaden

East Central University

If there is any maxim that approaches a truism among political scientists studying electoral democracy, it is this: "Without competition, elections are meaningless exercises. Competition, the real option for voters to redirect their representation, is what makes elections important instruments of representative government" (Campbell and Jurek 2003). The literature is replete with studies documenting the increase in uncompetitive and uncontested legislative races (especially at the state level). Oklahoma is no exception. The literature also suggests that without competition, electoral change is all but impossible. Yet, with uncontested and uncompetitive legislative races exceeding 80% most years, Oklahoma has undergone the most profound partisan political change over the past thirty years: from one party Democratic control to one party Republican control of the legislature, governor and all state-wide elected positions. Our research project asks a simple question: how has this been possible?

04.08.02 The Plight of the Roma: The Politics of the United Kingdom, France, and Germany

Jacqueline, Watson

Northeastern State University

Jacqueline Watson Northeastern State University The Plight of the Roma: The Politics of the United Kingdom, France, and Germany Abstract It is the intent of this essay to investigate the faces behind the majority of these immigrants, otherwise known as the Roma or Gypsies, and the role that they play in the makeup of the European Union's three power states of The United Kingdom, France, and Germany. This research question will be answered by looking into exactly how the individual states of the United Kingdom, France, and Germany react to and deal with this massive influx of travelling people. Furthermore, because national law cannot take supremacy over EU law, the nature of how the Union as a whole approaches these individuals will also be examined, with an emphasis placed in both cases on the latest information. Finally, we only have the past by which to judge the future, so by scrutinizing the evidence, the forthcomings of these inhabitants will be inferred.

04.08.03 Networking for Political Voice among Women in Disrupted Societies of the Middle East and Africa

Cheryl, Van Den Handel , Jacqueline Watson, Jennifer Edwards

Northeastern State University

This paper asks if women can effectively act as agents of information diffusion about women's issues throughout the Middle East and Africa to mobilize for peace and gain political voice? Secondly, we are comparing the efficacy of women in the Middle East and North Africa with women in Sub-Saharan Africa. Case studies of individual women leaders and women's organizations are categorized by region, country, and how information is transmitted. We conclude that women in African countries are more successful in obtaining political voice than women in the Middle East and North Africa. Another conclusion is that women organizing themselves in civil society groups, reaching out to other women are more successful than those women working on their own. While some men are involved in promoting women's rights, empowerment, and voice, the vast majority of all of successful women's movements are by and for women only.

04.08.04 Indigenous Rights and Resource Capture: The National and International Law Nexus - The Keystone XL Pipeline

Louis, Furmanski

University of Central Oklahoma

The "capture" of natural resources has been an enduring theme in the modern era of international relations. First occurring within the context of imperial conquest, and subsequently during practices refined under neo-colonial exploitation, it would be unrealistic to assume that with the diminishing availability of non-renewal resources we would not witness greater efforts to obtain access/control over natural resources. This behavior was term "RESOURCE CAPTURE" by Thomas R. Homer-Dixon in an often cited article, Environmental Scarcities and Violent Conflict, which appeared in the journal International Security in 1994. He described the behavior as follows: A fall in the quality and quantity of renewable resources can combine with population growth to encourage powerful groups within a society to shift resource distribution in their favor. This can produce dire environmental scarcity for poorer and weaker groups whose claims to resources are opposed by these powerful elites. I call this type of interaction "resource capture." Amongst the most "poorer and weaker", and marginalized, are, of course, indigenous peoples. It is to a description of the status of native American tribes within the United States that we now turn.

04.08.05 A Solution to Illegal Immigration

Hunter, Bailey

Southwestern Oklahoma State University

Since the dawn of the twenty-first century Americans have been faced with many issues concerning our nation. Every year thousands of Mexican citizens illegally cross the border into our nation. This pressing issue has caused much stress and tension between two sides: those who support the immigration and those who do not. While the federal government remains hesitant to tend to the problem, some states have taken action into their own hands. In 2010, Arizona governor Jan Brewer signed into effect Arizona Senate Bill 1070. This law, amongst others, creates harsh circumstances for immigrants and leaves many Mexican-Americans susceptible to racial profiling. The following presentation contains immigration statistics, cases involving illegal immigration, and also includes a solution to the commotion surrounding the Mexican-American border.

04.08.06 Criminal Proceedings and Rights of Foreign Prisoners

brandy, Hollis , Brooke Christensen

Southwestern Oklahoma State University

This presentation will focus on research about Criminal proceedings and rights of foreign prisoners. It will explore the abuse of human rights of foreign prisoners and how this can be avoided by following the provisions of the law. The objective of the study is to establish whether or not these prisoners should have their human rights taken into consideration or not and to what extent the rights would be applicable considering the rise in the number of foreign national prisoners in custody. The research of this project is to show that foreign prisoners have the right to a fair trial before judgment and their human rights must be considered during this trial period. The information used in this study was collected through literature reviews. In the end, the study shows that there are measures that can be taken to ensure that foreign prisoners are treated fairly.

04.08.07 Taking Over the Criminal Justice System: The Impact of the Private Prison System in America

Marshall, Flowers

Southwestern Oklahoma State University

: The private prison system affects our economy, our political figures at all levels and can influence the amount of time one would receive if convicted of a crime. This prison system is becoming more powerful and influential by the hour and there is no end in sight. It is a corporation that is making billions on the dime of the taxpayers. There are several different competing entities, but the most powerful is the Corrections Corporation of America (CCA). The CCA's business model is based strictly on incarcerations. The CCA operates 67 correctional and 20 detention facilities, 47 of which they own, with a total capacity of approximately 92,500 beds in 20 states and the District of Columbia. Contracts for the facilities are held between the CCA and either the federal government or state governments. Most of these contracts state that the prisons must be held at anywhere from 80 to 100 percent full capacity at all times. If at any time the number should fall below the contracted number then the remaining money must be paid at the taxpayers' expense. The goals of private prisons are at odds with the traditional goals of the criminal justice system. The traditional goals are for rehabilitation of prisoners, reducing recidivism rates, increasing public safety, and lowering crime rates in the communities.

04.08.08 International Financial Crisis Deteriorated by Monetary Policies: U.S., EU, and China

Cody, Woods , Youngtae Shin

University of Central Oklahoma

This paper focuses on monetary policy used as one of the many retaliatory measures in the 1930s and today's currency war. Both currency wars began by countries trying to avoid a financial disaster: The policies of devaluating currency as a correctional measure by industrialized countries in the 1930s led to a prolonged depression. Because this policy was often lauded to the "Right Policy" at the time, the current policy makers in the EU and U.S. also attempted to follow similar policies, but they have not worked out. So they began to look to different ways, and adopted austerity measures to ameliorate the current financial crisis. However, neither of them has shown a remedy to the current financial crisis. We would like to explore why these have not yet worked.

04.08.09 An Ethical Analysis of Joe Paterno: Unmasking Administrative Evil at Penn State University

Brett, Sharp , Rusty Olson

University of Central Oklahoma

Evil as commonly understood tends to emphasize the intent to do harm. But under conditions of administrative evil, people can "engage in acts of evil without being aware they are doing anything at all wrong" (Adams and Balfour, 2009, 4). Administrative evil is an outgrowth of technical rationality, itself a hallmark of modernity. Enmeshed in the social technologies of bureaucracy, individuals fulfill their functional roles in a larger system. Organizational priorities diminish individual values. Bureaucratic pathologies such as goal displacement, organizational aggrandizement (in this case, "protecting the brand"), and administrative evil may result. Public servants are susceptible to carrying out routine duties to such a degree that they fail to recognize the very real human consequences of their decisions. Bureaucratic enmeshment, in effect, "masks" administrative evil. Such is the case with the response by members of the Pennsylvania State University administration to Assistant Coach Jerry Sandusky. Several had longstanding knowledge of his molesting children on university property. Among these public administrators was legendary head coach, Joe Paterno. He along with a university president, vice-president, athletic director and others charged with educating college students for the Commonwealth of Pennsylvania failed to lead when leadership was needed.

04.08.10 Mass Immigration and Conflicting Ethnic Interests

Joseph, Plummer

Southwestern Oklahoma State University

What are the implications of mass immigration which displaces current ethnic majorities in their home country? Throughout the world multi-cultural policies are currently being pursued by many first world nations and nowhere is this phenomenon more evident than the United States where the traditional majority population is projected to become the majority-minority within the next thirty years. Relying on the perspective and data of the emerging field of sociobiology and the diversity studies of Political Scientist Robert Putnam, I intend to demonstrate that demographic diversity on a grand scale leads to increased ethnic conflict characterized by diminished social trust.

04.08.11 Compulsory DNA Testing In The American Criminal Justice System: Pursuit Of Justice Or An Injustice?

Dan, Brown

Southwestern Oklahoma State University

THIS PRESENTATION WILL EXAMINE THE USE OF COMPULSORY DNA TESTING IN THE AMERICAN CRIMINAL JUSTICE SYSTEM IN LIGHT OF THE RECENT DECISION OF THE UNITED STATES SUPREME COURT IN THE CASE OF MARYLAND V. KING (2013); THE PRESENTATION WILL FOCUS ON APPLICABLE STATE LAWS REQUIRING COMPULSORY DNA TESTING FOR INDIVIDUALS AND WHETHER THESE LAWS CONSTITUTE A VIOLATION OF AN INDIVIDUALS RIGHT OF THE FOURTH AMENDMENT TO THE UNITED STATES CONSTITUTION

04.08.12 The Impact of Private Prisons on the Criminal Justice System

Courtney, Beattie

Southwestern Oklahoma State University

Private prisons were first brought to the United States in the 1980s due to prison populations soaring and the high strain of political cost. Private prisons were brought about to help out in a positive manner, but with all the negative backlash, we have to wonder if private prisons are the answer to our problems surrounding the prison system. They can be helpful for the state, but can also be harmful for the inmates and the criminal justice system as a whole. In this presentation we will explore the private prisons and the debates surrounding them in the states of Oklahoma and California.

04.08.13 Modern Sequoyah: Native American Political Power in Oklahoma

Christine, Pappas

East Central University

Native American tribes have engineered a resurgence of power in Oklahoma by using sovereignty, intergovernmental relationships, and economic entrepreneurship. "Modern Sequoyah" is a reference to the 1905 proposal to create an actual state called Sequoyah where all natives would live. Today we have a "modern Sequoyah" that is not territory-based. Because of tribal sovereignty and the increasing political and economic power of tribes, natives have become more powerful today than if they had been given their own state.

04.08.14 Forfeitures: Are They Legal?

Jessica, Goetzinger

Southwestern Oklahoma State University

There is much debate regarding the legality of the forfeiture process used by federal and state authorities. Many citizens see the confiscation of property as unfair, particularly after examining the amount of revenue generated from forfeitures. The government, on the other hand, seems more conflicted about it. Although many forfeiture cases are upheld, in the late nineties both Congress and the Supreme Court passed legislation limiting the government's power to seize property after public backlash. However, forfeiture proceedings still remain a large source of revenue for government agencies, particularly on the state level. When broken down, there really two perspectives to look through: that of the American government and that of the American citizens. Although there have been instances of government agencies abusing their power, the forfeiture process is in some instances a great help or the sole source of revenue for small agencies. These agencies depend upon the money generated by the process in order to do their job and do it effectively. While this source of revenue should not necessarily be taken completely away, steps need to be taken to further protect private citizens' rights as stated under the Fifth Amendment.

04.08.15 The Failure of Immigration Reform

Tanner, Boyd

Southwestern Oklahoma State University

America was founded by a nation of immigrants, but today we are faced with the challenge of what is illegal and what can be dealt with legally. This project discusses the "Immigration Reform and Control Act of 1986" and "Illegal Immigration Reform and the Immigrant Responsibility Act of 1996" and why these two reforms are now classified as failures. By using statistics and testimonies, we are able to see the impact socially and economically these laws had on America and the immigration system. We conclude with Congress' most recent attempt at immigration reform and how this act will not be labeled a failure.

04.08.16 Failures on Past Immigration Reform and Future Attempts to Change the Trend

Ashley, Mbaneme

Southwestern Oklahoma State University

This paper will show the history of immigration from the beginning which will allow one to understand, and get an insight on the past and present changes that this law has enforced over the decades. Furthermore, this paper will specify the impacts these laws have made on immigrants through examining the illegal Immigration Reform and Immigrant Responsibility Act of 1996 versus The Comprehensive Immigration Reform Act of 2007, and present laws on immigration in 2014. The Conclusion will not provide a solution for immigration, but it will show what is happening with laws and help understand why the law failed to work and continues to change.

04.08.17 Marcus Tullius Tiro: The First Paralegal

Jenna, Owens

East Central University

As with most deeply rooted historical vocations, evidence exists that the paralegal profession most certainly existed long before it was given a formal name. While industry standards and definitions for paralegals have vastly evolved throughout the eras, the concept of an attorney employing an assistant to perform substantive legal work under their supervision is no new or even remotely recent concept. This paper will examine the life of Marcus Tullius Tiro, arguably the first documented paralegal, and the lesser known counterpart to the mighty orator and attorney Cicero. Tiro is widely credited as the creator of notae Tironianae, one of the first versions of shorthand, but his contributions to the legal profession extend far beyond this. It is likely because of Tiro's professional assistance and his transcriptions of speeches and trials that the world even knows of Cicero and his successful legal career. The American Bar Association may not have officially recognized the paralegal profession until the 1960s, but the life of Marcus Tullius Tiro (approx. 106-43 B.C.) exemplifies that as long as there have been those that have called themselves lawyers, there have paralegals, even if the title was still thousands of years in the making.

04.08.18 The Real Watergate: Water Policy in Oklahoma

Kaylin, Cullum

East Central University

This paper examines current regulations on non-point pollution. Water law in the United States differentiates between ground water and surface water by having different sets of laws for ground water than for surface water. I explain the history of treating these two sources of water differently and contemplate reforms to current law concerning ground and surface water. I will examine interest groups that have a stake in water policy, and how the laws have changed over the years. I hypothesize that interest group pressures in Oklahoma work to maintain the status quo.

04.08.19 Immigration in the United States: Policy and Reform

Jeff, Miller

Southwestern Oklahoma State University

Immigration in the United States is a hot topic on the political agenda recently. As mentioned in the 2014 State of the Union Address by President Obama, reform and change will be a pivotal part of the next year for the United States. Currently, there is an issue with the difficulty of attaining citizenship, and immigrating in a legal manner. The current system has glaring holes, and does not meet the needs of the people any longer. Throughout the presentation, statistics will be provided showing the sheer number of immigrants coming into America illegally, and the stress this puts on many aspects of American economics and lifestyle in varying areas, such as: healthcare, social systems, education, and other publicly funded programs. Although, the challenge of creating a plan that will satisfy most Americans is not easily done, it is worthwhile. Through policy change, an easier way of legally residing in America will benefit not only those illegally here and those wishing to come to the United States in the future, but all of the American people.

04.08.20 The Story of Four Little Girls: Northern and Southern Media Coverage of Birmingham's 16th Street Baptist Church Bombing

Jaysa, Hutchings

East Central University

When studying historic events that include racial minorities one sees that news articles from the North and South are different. The articles cover different facts and display different degrees of sympathy with minorities. I will study the 16th Street Baptist Church bombing from 1963 that occurred in Birmingham, Alabama, and the news articles that covered this event. I hypothesize that the Northern states' articles will be more sympathetic towards the event than articles from Southern states. I define articles as "sympathetic" by the tone of the article, the facts that are included, the length of the article, and the number of articles a paper runs on the event. To test my hypothesis I will conduct a content analysis on multiple articles from the bombing.

04.08.21 Crimes Against Humanity

Davi, Peetoom , Otoneil Soza

Southwestern Oklahoma State University

We are going to explain what crimes against humanity are and why they are defined as crimes against humanity by the International community. At the same time, we are going to see the role the United Nations plays and the measures it can take regarding this issue. Also, we will use examples of past crimes against humanity committed throughout our history.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

04. Liberal Arts

09. Sociology

04.09.01 CIA Fieldwork and Seminar: No Spooks Here Just Students, Practitioners, and Research

Elizabeth, Maier , Alina Istrate

University of Central Oklahoma

In the final year of the Crime and Intelligence Analysis (CIA) Master's program students are required to complete two courses that involve students, practitioners, and practical research to address current problems. The courses combine students working in the field with conducting research, analyzing data, making academically sound recommendations, writing a report, and presenting their findings to practitioners. Dr. Maier will address the faculty side from course prep work to course instruction. Ms. Istrate will discuss a student's perspective. From this presentation, individuals will learn how these ideas could be applied at other universities.

04.09.02 Geographical Disparities in Wrongful Conviction Cases

Christina, Buchanan

University of Central Oklahoma

Being convicted of a crime you did not commit has to be a horrible situation. Fortunately, there are many groups in the United States devoted to overturning wrongful convictions. While it is good news that innocent people are being released from jail, the question remains as to why, and where, people are wrongfully convicted. The purpose of this research project is to examine geographical locations of wrongful convictions to determine if there is a higher instance of wrongful convictions in rural areas as opposed to urban areas in the United States. From these findings, recommendations can be made for future research on this subject, along with recommendations for possible improvements to avoid wrongful convictions in the future.

04.09.03 Attitudes, Perceptions, and Beliefs of First-Generation College Going Students

Stephanie, Smith , Jay Corwin

University of Central Oklahoma

The purpose of this research is to look at the difference in attitudes, perceptions, and beliefs of first-generation college students entering and completing college. The hypothesis is that first-generation students will leave college with a greater sense of pride and leadership within their families. Studies have shown that first-generation college students have lower retention and graduation rates (Woosley & Shepler 2001). First-generation college students experience college much differently than their non-first generation counterparts. Interviews with first- generation college students were conducted and were used to collect information about the beliefs and experiences of being a first-generation college student. This information is very important because it can help future and current college students to understand the impact of getting an education. This information can also be helpful to professors and other support staff at colleges and universities. This information can provide them insight to how first-generation students are perceiving college and how they can be of greater assistance to these students.

04.09.04 A Phenomenological Study of Post-Divorce Adjustment As Seen In Midlife

Joanni, Sailor , Griselda Lloyd

Cameron University

Today, a majority of all divorces are being granted to individuals between the ages of 45 to 54 . The aim of this research was to gain an understanding of the Lived-Experience of Post-Divorce Adjustment in Midlife. A qualitative design using Moustakas' Transcendental Phenomenology was applied. The essence of the lived experience was developed from the themes, textures and structures that emerged from the data. The clinical implications of this study suggest that obtaining an understanding of the post-divorce adjustment experience may help mental health practitioners enhance the care provided to divorced individuals, divorcing couples, and their family members.

04.09.05 Prevention and Mitigation of Modern Transit Crime: Applied Victimology

Nicholas, Petschel

University of Central Oklahoma

Oklahoma City ranks as the 9th largest metropolitan area in the United States. The population of Oklahoma City is spread throughout the 621 square mile metropolitan area, and it has been difficult for transit officials to develop a public transportation system that consistently provides quality service. As of today, the only available public transportation system in Oklahoma City relies on the use of buses. There are a couple of hubs in the city, but passengers primarily rely on neighborhood stops to access the system. Oklahoma City in recent years has begun several large initiatives to revitalize the city's public transit networks, including a streetcar project, an intermodal hub, and a sidewalk restructuring plan. Even though there has been a lot of recent effort by the local authorities to bolster public transportation usage, a criminological analysis of how to improve the system has not been performed. This research involved a survey of Oklahoma City residents and their preferences and fears as pertaining to public transportation. Analysis of those surveys yielded a set of recommendations for transit authorities that wish to improve our public transit system.

04.09.06 Corporations: Friend or Foe of Rural America?

Brittany, Harlow

Northeastern State University

As corporations continue to evolve into a main global influence, it is necessary to ensure such great power is handled responsibly and for the good of mankind. This analysis seeks to explain the origins of the corporation, the relationship between US government and corporations, and the role corporations play in rural communities in order to assess the benefits and disadvantages of corporate power in America, and provide possible solutions to any subsequent disparities. This descriptive research paper is based on content analysis. Data were obtained from various media including, but not limited to, books, academic papers, articles and interviews. My research indicated there is a stark contrast between the aims of corporations and the needs of the American people, particularly in rural areas. Though consumers support US corporations, profits are typically not filtered back into American communities. My research also indicates the partnerships between corporations and US government increase the personal wealth of a select few at the expense of the average American. The apparent favoring of corporations over the American people is worth further analysis. Current trends, such as corporate personhood and deregulation, are not believed to be capable of sustaining a healthy, long-term economy.

04.09.07 Studying International Methamphetamine Trends

Rashi, Shukla , Danielle Stoneberg, Matt Magness, Shannon Jackson

University of Central Oklahoma

Methamphetamine is increasingly becoming a problem in countries around the world. As the most widely manufactured amphetamine type stimulant (ATS), methamphetamine ranks second only to marijuana as the most commonly used illicit drug worldwide. Little is known about international methamphetamine trends. This research examines global trends in use, trafficking, and production. Data were gathered from diverse types of secondary sources including governmental reports, drug assessments, and media accounts. The methamphetamine problem continues to evolve and change over time. Recent indicators suggest it is becoming increasingly complex and expansive; dimensions are appearing in new areas and shifts are being identified within and between countries around the world. This research will present information on international trends and the limitations of available sources of information.

04.09.08 Crime Analysis Pro-Seminar: Mental Health Project

Elizabeth, Maier , Alina Istrate, Michael Siany

University of Central Oklahoma

It was an exploratory study conducted during the final year of the Crime & Analysis Master's Program. Students worked with practitioners to research a current issue in the field. Law enforcement officers and mental health providers in Oklahoma were surveyed. Research questions for the project were: (1) What is the state of mental health services and/or responses in Oklahoma; (2) What is law enforcement's role in mental health; (3) What challenges face the state with regard to mental health, and (4) What are other states doing or have done with regard to this issue?

04.09.09 Determining Correlations in Suicide among Adolescents and Young Adults

Shawna, Ward , Kelsie Witt

University of Central Oklahoma

In spite of increased community awareness of youth suicide through the national Strategy for Suicide Prevention and SAMHSA (Substance Abuse and Mental Health Services Administration), suicide is the 3rd leading cause of death for youth ages 15-24 (Maimon and Kuhl 2008). The purpose of this research project is to determine the level of frequency in suicidal ideation and attempts on the University of Central Oklahoma campus as well as potential risk factors. Once this baseline is established this information will provide insight to assess areas of need regarding education and information dissemination in this population. This research will examine the incidence of suicidal ideation among this population, personal relationships among those who have attempted or committed suicide, and the effects of memorial services on those who have lost a friend or family member to suicide. This research is conducted using availability samples and personal interviews. Regression and cross-tabulations is used to analyze the data.

04.09.10 Perceptions Regarding Human Trafficking Essance Moore – University of Central Oklahoma, Forensic Science Jennifer Barger-Johnson, J.D. – University of Central Oklahoma, Finance

Essance, Moore

University of Central Oklahoma

Human Domestic Trafficking is a problem that has been overlooked for decades. The purpose of this research is to bring awareness regarding human trafficking in Oklahoma. Minors are a defenseless population that need to be protected. "Many writers use the word 'children' but focus on young women- and research on trafficked boys is non-existent" (Gozdziak, Bump, Duncan, MacDonnell, and Loiselle 14). This study will look at the perceptions that Oklahomans have regarding human trafficking, the victims, and the different types of human trafficking that exist.

04.09.11 Structured Reminiscence

Aesha, John , Michael Witham

Northeastern State University

Structured reminiscence is often used with the elderly to improve their emotional wellbeing. This research project involved using the reminiscence approach with a group of six seniors at an assisted living facility. The aim was to assess the effectiveness of the approach in improving wellbeing of the participants. The research team conducted four reminiscence sessions, which included introductions, remembering school days, reminiscing holiday traditions, and concluded with how the participants felt about the sessions. Each session was facilitated by two research team members. Before the start of the first session and after the last session, the research team assessed the wellbeing of the participants through Philadelphia Geriatric Center's Morale Scale (PGC Morale; Lawton, 1975). To assess the effectiveness of the reminiscence group approach, the team compared the participants' pre and post-test scores on the PGC morale scale through a paired sample t-test analysis. The group also utilized qualitative observations to assess the effectiveness of the approach. Although the t-test did not yield significant results, the qualitative responses reflected that the participants enjoyed the reminiscence groups. Findings will be presented in the context of implications for research and practice.

04.09.12 The Perceived Impact of Living/Learning Communities on the Persistence Rates of Low-Income Freshmen

Patrick, Harrel

University of Central Oklahoma

Nationally, the concept of a first-year experience program has gained popularity as a recruitment and retention tool. However, many first-year programs fail due to limited interaction with faculty and staff. The success of a first-year experience program directly correlates to the level of institutional commitment and "buy-in" of faculty and staff because students develop a "university identity" that is relayed through interaction with faculty and staff who demonstrated a commitment to student success (Levitz, 2008). The goal of this research study is to determine the perceived impact of a first-year living/learning community on the persistence rates of low-income freshmen at the University of Central Oklahoma. However, low-income students persist for reasons different than their advantaged counterparts (Aronson, 2008). Self-reported perceptions of persistence will detail the effectiveness of cohort-based retention practices. Criteria for selection as a participant in the living/learning community includes socio-economic based documentation determining low-income status as prescribed by Pell grant eligibility. Participants will be invited to complete a digital survey that will contain questions pertaining to persistence from one academic year to the next and possible factors affecting persistence.

04.09.13 Access Programs and Higher Education

Fabian, Hernandez , Christopher Wise

University of Central Oklahoma

Student Support Services is a federally-funded grant program designed to provide assistance to students who are low-income, first generation college students, and/or students with a disability. There is a demonstrated need for programs in higher education that specifically support individuals who belong to the previously stated categories. The American Council on Education has listed several challenges that low-income students face: managing the demands of work, family life, education, and social schedules; financing the costs of higher education; receiving adequate academic advising and counseling; and regulating self-esteem issues. There is a strong correlation between parental education rates and poverty levels. Students whose parents have not completed a bachelor's degree are more likely to live in poverty. If a student has not received adequate preparation socially, personally, and culturally for success in higher education, the student will not adjust as readily to the academic and social structures of the college community. Student Support Services offers academic and skills-building enhancement through workshops, cultural activities, tutoring services, and the mentoring program. The Student Support Services staff coordinates with faculty, campus service agencies, and the University administrators to provide a safety net to students who are often left behind.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

02. Animal Science

05.02.01 Effects of Levels of Boer Goats and Dorper Sheep on Feed Intake, Digestibility, Growth, and Slaughter Characteristics in the Central Highlands of Ethiopia

Arthur, Goetsch , Girma Abebe, Kefele Kefelegn, T Mekonnen

Langston University

Objectives were to compare feed intake, digestibility, growth performance, and slaughter characteristics of local genotypes of small ruminants in the central highlands of Ethiopia with Boer goat (B) and Dorper sheep (D) blood levels of 0, 25, and 50%. Male goats (27; 6-9 months of age) and sheep (27; 3-5 months) were housed individually in confinement during 90-day experiments. Grass hay (6% crude protein and 64% or 67% neutral detergent fiber) was consumed ad libitum together with concentrate (46% noug seed cake, 28% wheat bran, 24% sorghum grain, and 2% salt) supplemented at 2% of body weight. Initial body weight was 18.1, 20.8, and 24.9 kg for Local, 25% B, and 50% B, respectively, and 14.8, 20.3, and 17.9 kg for Local, 25% D, and 50% D, respectively. Total dry matter (DM) intake by goats ranked Local < 25% B < 50% B, and hay intake was greatest for 50% B. Intake of hay and total DM by sheep ranked Local < 50% D < 25% D. Average daily gain by goats was greatest for 50% B and by sheep was least for Local. Empty body weight of goats at slaughter and carcass weights ranked Local < 25% B < 50% B. Body and carcass weights of sheep were lowest for Local. In addition to the difference between 25% B and Local goats, these results clearly show potential for greater meat yield with the 50% than 25% level of B. The findings also depict considerable opportunity to increase meat production by crossbreeding with D, although greater benefit was not realized with 50 than 25% D.

05.02.02 Effects of Stocking Rate and Physiological State of Meat Goats Grazing Grass/Forb Pastures on Forage Intake, Selection, and Digestion, Grazing Behavior, and Performance

Arthur, Goetsch , Ahmed Askar, Ryszard Puchala, Terry GipsonTilahun Sahlu

Langston University

Boer goat does with 2 kids (D; 1 mo after kidding), growing wethers (G; 4 mo initial age), and yearling wethers (Y; 14 mo initial age) grazed 0.4-ha grass/forb pastures, with 1 animal per type in each pasture for a low stocking rate (SR) and 2 for a high SR. The study started in late spring and was 114 d with 4 periods (P1-4). Forage mass was 2,517, 2,433, 2,506, and 2,452 kg/ha for the low SR and 2,680, 1,932, 1,595, and 1,393 kg/ha for the high SR in P1, P2, P3, and P4, respectively. Diet botanical composition based on n-alkanes was similar among animal types. Likewise, chemical composition of forage samples did not differ between animal types, with averages of 11% CP and 53% NDF. Intake of ME was 1,015, 855, and 692 kJ/kg BW^{0.75} for D, G, and Y, respectively (SE = 57.4) and greater for the low than high SR in P1 (1,204, 789, 682, and 445 for high SR and 1,732, 767, 683, and 531 kJ/kg BW^{0.75} for low SR in P1, P2, P3, and P4, respectively; SE = 93.5). There was an interaction between animal type and period in ADG (13, -12, -44, -8, 83, 25, -28, 73, 127, 51, -43, and -7 g; SE = 21.5) and time spent grazing (7.5, 5.3, 7.4, 8.6, 78.6, 5.6, 10.0, 9.1, 4.8, 5.9, 8.4, and 9.5 h/d for D-P1, D-P2, D-P3, D-P4, G-P1, G-P2, G-P3, G-P4, Y-P1, Y-P2, Y-P3, and Y-P4, respectively; SE = 0.88). With this forage of moderate nutritive value, there were no findings suggesting that levels of forage mass above 1,400 kg/ha would improve performance of meat goats of different physiological states.

05.02.03 Effects of Conditions between Periods of Studies to Evaluate Electric Fence Additions to Barb Wire Fence for Goat Containment

Arthur, Goetsch , Ryszard Puchala, Terry Gipson, Tilahun SahluYoko Tsukahara

Langston University

Forty Boer (B) and 40 Spanish (S) does were used to evaluate effects of treatments between periods (IT) of a Latin square (LS) on behavior when exposed to barb wire fence and different electric fence strand additions. Evaluation pens had 1 side of barb wire strands at 30, 56, 81, 107, and 132 cm from the ground. Fence treatments (FT) were electrified strands (6 kV) at 15 and 43 (LH), 15 and 23 (LM), 15 (L), 23 (M), and 43 cm (H). For adaptation, there was weekly short-term exposure to test pens with different electric fence strand additions (B: wk 1 - no electric strands (NES), wk 2 - NES, wk 3 - 1 strand at 0 kV, wk 4 - 1 strand at 2.5 kV, wk 5 - NES; S: wk 1 - NES, wk 2 - 1 strand at 0 kV, wk 3 - 1 strand at 3 kV, wk 4 - 1 strand at 4 kV). Behavior was assessed 1 h every 2 wk in the 5 × 5 LS with different FT. In the week between measurements, 1 set of each breed was exposed to a NES test pen (IT-Y) and other sets were not (IT-N). There were interactions in pen exit between IT and period (28, 38, 18, 0, and 18% with IT-Y and 45, 13, 0, 0, and 0% with IT-N in period 1, 2, 3, 4, and 5, respectively; SE = 4.9) and fence treatment (5, 8, 15, 40, and 33% with IT-Y and 5, 3, 18, 23, and 10% with IT-N for LH, LM, L, H, and M, respectively; SE = 4.9). In conclusion, exposing goats to barb wire fence without electric strands between measurement periods did have some desirable effects but, overall, was not adequate for use of a LS design.

05.02.04 Effects of Adaptation and Meat Goat Breed in a Method to Evaluate Electric Fence Additions to Barb Wire Fence for Goat Containment

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Langston University

Forty Boer (B) wethers, 40 B doelings, 33 Spanish (S) wethers, and 42 S doelings were used to investigate effects of adaptation treatment (AT) on behavior when exposed to barb wire fence with different electric strand treatments. Five evaluation pens had 1 side with barb wire strands at 30, 56, 81, 107, and 132 cm from the ground. Fence treatments (FT) were electrified strands (6 kV) at 15 and 43 (LH), 15 and 23 (LM), 15 (L), 23 (M), and 43 cm (H). After exit from pens without electric strands (NES), AT of different modifications with electric fence strands were imposed 1 time each week for < 30 min: wk 1-1 strand at 0 kV, wk 2-LH, wk 3-LH, and wk 4-NES for 1 set of each breed (BC and SC); wk 1-NES, wk 2-1 strand at 0 kV, wk 3-L, and wk 4-NES for the other set of B (BU); wk 1-1 strand at 0 kV, wk 2-LH, wk 3-LH, and wk 4-LH for the other set of S (SU). After AT, each group was exposed to 1 FT for 1 h in period 1 and 7 wk later in period 2. The % of animals exiting pens differed among AT (5.5, 39.9, 60.6, and 0.0% for BC, BU, SC, and SU, respectively; SE=1.18) and FT (9.1, 2.8, 15.4, 62.4, and 22.6% for LH, LM, L, H, and M, respectively; SE=1.39). In conclusion, use of the same AT for B and S resulted in different behavior when later exposed to FT and BU affected pen exit as anticipated. However, SU was highly prohibitive to exit and would not be suitable for a method of evaluating different electric fence strand modifications of barb wire fence for goat containment.

05.02.05 Effect of a Cellulase Enzyme Additive on Hay Intake and Fiber Digestion in Goats

Arthur, Goetsch , Steven Hart

Langston University

Thirty-six Spanish, Boer, and Boer × Spanish wethers were used to test the effect of a cellulase/hemicellulase enzyme additive on intake and fiber digestion. Wethers were fed a low quality grass hay (4.8% CP, 48.4 ADF, and 75.3 NDF) at 115% of previous intake. Two pens of goats were offered a supplement containing the enzymes and two were offered a control supplement. Supplement was composed of 5% of a mineral mix containing trace minerals, 8% liquid molasses, 43% soybean meal, and 44% ground corn. The enzyme preparation (69% distillers dried grains, 30% urea, and 1% enzymes) was incorporated into the supplement at 2%. The supplement was fed at 5.5 g/kg BW, resulting in 8.8 g of enzyme preparation/100 kg BW. Blood and ruminal fluid were sampled prior to the morning feeding after wk 4. Following the 12-wk, intake was reduced in half the pens to 80% of intake in week 12, fecal bags were fitted on animals, and fecal and ort samples were collected 5 days. Rumen ammonia and blood urea nitrogen were similar for control and enzyme treatments. Hay intake was similar for control and enzyme treatments (2.63 vs. 2.83% BW). Dry matter digestibility and protein digestibility were similar (52.8 vs. 53.5%; 79.4 vs. 78.44%). Neutral detergent fiber digestibility and acid detergent digestibility also were similar (49.8 vs. 50.6%; 20; 26.9 vs. 25.5%). The cellulase and hemicellulase additive did not improve intake of low quality grass hay or increase fiber digestibility in goats.

05.02.06 Effects of Level and Length of Supplementation on Carcass Amounts and Percentages of Ash, N, Water, Total Fat, and Energy

Arthur, Goetsch , Roger Merkel, Terry Gipson, Zaisen Wang

Langston University

Growing Spanish (S) and Boer (B) wethers were used to determine effects of level and length of supplementation on carcass amounts and concentrations of ash, N, water, fat and energy. The experiment had 110 and 108 d periods (PR). Wethers resided on pastures with free-choice access to alfalfa hay and supplementation (SL) with 0.5 or 1.5% BW (DM basis; L and H, respectively) of a pelleted diet (16% CP and 60% TDN). On a carcass basis B goats had a lower level of water (51.3 and 55.2%) but more energy than S goats (13.6 and 12.2 MJ/kg). H goats had greater ash (0.97 and 0.87 kg), protein (4.1 and 3.5 kg), and water (12.7 and 11.5 kg) than L goats. H goats in PR2 had greatest amounts of fat (4.04, 3.65, 6.31, and 4.19 kg) and energy (255, 227, 340, and 243 MJ for 1H, 1L, 2H, and 2L, respectively), with corresponding differences in % carcass fat and energy/kg carcass. B goats had greater amounts of ash (1.03 and 0.80 kg), water (13.7 and 10.5 kg), fat (5.79 and 3.32 kg), and energy (327 and 206 MJ) than S goats. Carcass protein was greater in B goats in PR1 than PR2 and greater than amounts in S goats (4.58, 4.01, 3.37, and 3.17 kg for 1B, 2B, 2S, and 1S, respectively). Carcass protein percentage was lowest for H goats in PR2 (20.1, 18.8, 16.0, and 16.9%, for 1B, 1S, 2B, and 2S, respectively). In summary, SL and PR led to increased weights of carcass components and B goats appeared to accumulate fat in the carcass to a greater extent than S goats.

05.02.07 GIS Hot-Spot Analysis of Pasture Utilization of Two Separate Herds of Goats over Time

Arthur, Goetsch , Richard Heinemann, Steven Hart, Terry Gipson

Langston University

The objective was to characterize pasture utilization by two separate herds of goats in different years. The 14.1-ha pasture primarily contained grasses, but was reverting to a wooded area with sapling-size trees. In year 1 (Y1), 10 of 36 Spanish goats were fitted with GPS collars that recorded a fix every 5 min in the first 2 wk. In year 2 (Y2), 19 of 58 Spanish goats had GPS collars. An average nearest neighbor analysis yielded a z score of -150.2 for Y1 and -150.1 for Y2, indicating highly clustered events for both years. A GIS point-in-polygon analysis was conducted for each year using the same grid (1,792 10 × 10 m squares) for each year and with unique grid identifiers. Based on z-scores from hot-spot analysis, each square was classified as very low (VL), low (L), moderate (M), high (H), and very high (VH) usage. Y1 had greater ($\chi^2 = 13.89$, $P < 0.01$) VL and lower VH squares (82% and 1%, respectively) compared with Y2 (80% and 3%, respectively). Hot-spot analysis revealed two areas of H and VH usage for both years. One area was a small grove of trees that had almost a 100% overlay for both years. The degree of similarity in pasture usage was high as indicated by a Spearman's rank correlation coefficient (0.76; $P < 0.01$) of the square z-scores for Y1 and Y2. Even though the two herds of goats never interacted and were separated by time, their pasture utilization was strikingly similar.

05.02.08 Validation of New SNAP® Beta-Lactam Antibiotic Residue Test Kit for Goat Milk Screening

MiC, Ahrasbrak , Eva Vasquez, Italo Portugal, Kesete TestfiTerry Watson III

Langston University

Experiments of antibiotic-fortified goat milk and antibiotic-incurred lactating goats were conducted following FDA-CVM's protocols to validate New SNAP® Beta-Lactam Test Kit (SNAP NBL) for screening antibiotic residues in goat milk for human consumption. Results indicate that the SNAP® NBL Test Kit did not show any positive readings (i.e., 100% specificity) in unfortified and uncontaminated fresh or frozen goat milk. This test kit had 100% sensitivity in detecting antibiotic residues in fortified goat milk with Ampicillin, Amoxicillin, Cephapirin and Penicillin G at their respective tolerance and/or safe levels set forth by FDA for cow milk. It must be noted that this test might be more sensitive for goat milk than for cow milk with detection below the tolerance and/or safe levels of the drugs, leading to possible sub-violative positive results. The SNAP® NBL Test Kit was also effective in screening for antibiotic residues in milk throughout lactation after goats were treated with antibiotic drugs. The clearance time of antibiotic residues from the mammary glands to tolerance levels and detection levels of the SNAP test depended on the drugs used and the amounts applied. In conclusion, the SNAP® NBL Test Kit was effective in screening antibiotic residues in goat milk and is recommended for use in dairy goats.

05.02.09 Performance of Steers Wintered on Bermudagrass Fed Liquid or Dry Protein Supplement

Jefferson, Sutton , William Phillips

Redlands Community College

During the winter grazing period, stocker calves grazing dormant warm-season grasses are deficient in dietary protein and require supplemental protein to meet the daily protein needs for positive weight gain. Protein supplements are available in different physical forms, but intake must be controlled to avoid overconsumption. Intake of a pelletized supplement is controlled by limit feeding, but liquid supplements are self-fed which reduces labor cost. The objective of this research was to compare performance of stocker steers grazing dormant Bermudagrass pastures and limit fed a pelletized supplement or allowed ad libitum access to a liquid supplement. One hundred and fifty steers (average body weight 219 kg) were randomly assigned to one of eight groups. Each group grazed a 3.2-ha dormant Bermudagrass pasture and four groups were fed a pelletized supplement (20% CP) and four groups were fed a liquid supplement (24% CP). The amount of pelletized was adjusted to equalize CP intake (0.3 kg/d). Average daily gain for the 98-d winter stocker period was 0.45 kg and was not different between steers fed pelletized or liquid supplements. Steers consumed 1.5 kg of pelletized supplement and 1.4 kg of liquid daily. Liquid supplements cost more per unit of weight than compared pelletized supplements, but liquid supplements are self-fed, which reduces labor cost. Stocker operators must balance feed cost and labor cost to find the most economical way of providing supplemental protein steer

05.02.10 Stocker and Feedlot Performance of Angus, Brahman and Romosinuano Steers

William, Phillips , Makayla Leslie, Sam Coleman

Redlands Community College

Cattle producers desire to match breed type with the optimum production environment. The US beef cattle production system is segment and each production point can have a differing environments. Therefore, breeds must be evaluated under conditions found at each production point. Beef producers in the southern US select cattle that are adapted to hot and tropical climates. However, the next production point can be in the central plains under a cold climate. The objective of this study was to compare the stocker and feedlot performance of the Angus, Brahman and Romosinuano steers born in Florida (Brooksville, FL), but shipped to a temperate environment for growth and development (El Reno, OK). During the stocker phase, Angus steers (temperate breed) had greater ADG ($p < 0.001$) than Brahman steers (tropical breed; 1.0 vs 0.7 kg). Romosinuano steers, a temperate breed that is tropically adapted, had ADG of 0.8 kg. During feedlot phase, Angus (1.17 kg), Brahman (1.04 kg) and Romosinuano (1.12 kg) steers had similar ($P = 0.72$) ADG. Purebred Romosinuano steers performed better than Brahman as stockers, similar to Angus steers as feeders and may be a suitable substitution for Brahman as a tropically adapted breed.

05.02.11 Determining Stocker Performance in an Extended Grazing Season Using a Combination of Fescue and Wheat Pastures

William, Phillips , Brian Northup, Jordan Jett

Redlands Community College

Winter wheat pasture is a major forage resource in Oklahoma for grazing stocker cattle. Wheat is an annual crop that has a defined potential grazing season. Fescue is a perennial cool-season grass that is available for grazing earlier in the fall and later in the spring than wheat. The objective of this research was to determine stocker performance in a grazing scheme that extended the grazing season by sequentially grazing fescue-wheat-fescue. Two varieties of fescue were established in six 2-ha pastures. Fescue pastures were grazed in the fall and spring for 29 d. In between the fall and spring fescue grazing period, winter wheat was grazed for 136 d. Stocking rate was adjusted to match available forage density. Initial BW of the steers used was 249 kg. Steers gained 20 kg grazing fall fescue, 120 kg grazing winter wheat, and 32 kg grazing spring fescue for total BW gain of 173 kg and a final BW of 421 kg. Adding fescue as a forage resource to a typical Oklahoma winter wheat stocker operation can increase the amount of BW gain, final BW and length of the grazing season.

05.02.12 The Effect of Long-Term Diet-Induced Hyperglycemia and Hyperlipidemia on Oxidative Balance in Mouse Heart.

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Southwestern Oklahoma State University

Oxidative stress, a disruption in cellular oxidative balance, inhibits various cardiovascular functions including arteriogenesis. Hyperglycemia and hyperlipidemia are associated with oxidative stress. Therefore, we studied gene expression of NADPH oxidases 2 and 4 (Nox2, Nox4) and heme oxygenase 1 (HO1) in hearts of C57BL/6 and ApoE^{-/-} mice. These enzymes function as either antioxidants or pro-oxidants. We hypothesized that hyperglycemia and hyperlipidemia changes the expression of these genes. To model hyperlipidemia and hyperglycemia, mice were fed either a high-fat diet (42% Cal) or a low-fat diet (13% Cal). After 6 months, hearts and blood were collected for analysis. Plasma insulin, glucose, and cholesterol assays confirmed high-fat diet-induced hyperglycemia, insulin resistance, and moderate hyperlipidemia in C57BL/6 mice, while ApoE^{-/-} mice displayed extreme hyperlipidemia without glucose intolerance. High-fat diet increased plasma isoprostane, demonstrating oxidative stress. Gene expression was analyzed using RT-PCR and normalized to b-actin. Nox2 mRNA tended to decrease with the high-fat diet, although differences were non-significant. Nox4 was significantly decreased in ApoE^{-/-} males by the high-fat diet, but inconsistent results were obtained from the other groups. HO1 expression tended to be increased by the high-fat diet, although the trend was only significant in C57BL/6 females and was not observed in C57BL/6 males. Overall, a compensatory response is suggested.

05.02.13 Implications of Sexual Differences in Space Use and Seasonal Variation in Movements on Core Area Conservation in Sonoran Mud Turtles

Sean, Laverty , Paul Stone

University of Central Oklahoma

Successful conservation of semi-aquatic species requires protection of core areas that often include multiple bodies of water and intervening expanses of land. In order to delineate biologically meaningful core areas, data on space use and behavior for focal species must be available. Our capture-mark-recapture data, with 1712 captures of 692 individuals between 1994-2012, provides a unique opportunity to elucidate core area requirements and explore sex differences in space use of Sonoran mud turtles inhabiting intermittent aquatic habitats. Analyzing data for 201 turtles (those with at least two captures) with generalized linear mixed models, we document sex-specific and seasonal biases in turtle movement probabilities between key habitat types in the study area. Wet season movement probabilities in each sex were nearly ten times higher from an intermittent impoundment to ephemeral canyon pools than in the reverse direction. Understanding of the spatiotemporal variation in space use and movement, made possible through such analyses of large and long-term datasets, will facilitate measurement of core area requirements and thus inform conservation efforts.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

03. Biology

05.03.01 DOK3 Negatively Regulates Rankl-Induced Osteoclastogenesis

Sapana, Kadel , Mary Humphrey

Northwestern State University

Introduction: Osteoclasts (OCs) are unique myeloid cells that resorb bone after activation of specific cell surface receptors including receptor activator for NF- κ B (RANK). We have recently shown that downstream of kinase-3 (DOK3) negatively regulates TREM2-DAP12 signaling and inflammatory cytokine production in response to TLR stimulation of macrophages. Our goal was to test the hypothesis that DOK3 negatively regulates TREM2-DAP12 ITAM signaling in osteoclasts. Methods: Bone micro-architecture and histology of sex matched 16 week old control and DOK3-deficient (DOK3ko) mice was evaluated. In vitro osteoclast differentiation and function was investigated. RANKL and TREM2 induced cellular signaling of J774 and primary preosteoclasts was performed. Results: DOK3ko mice have osteoporosis with significantly reduced trabecular bone mass at the tibia and femur whereas cortical bone is unchanged. DOK3ko bones have increased osteoclast numbers compared to control mice. DOK3ko osteoclasts have significantly increased resorption compared to controls. In response to TREM2 crosslinking but not RANKL stimulation, DOK3 becomes phosphorylated. Further studies are underway to determine the effect of DOK3 on ITAM signaling in osteoclasts. Conclusion: In conclusion, our data supports an important role for DOK3 in the regulation of osteoclastogenesis in vivo and in vivo.

05.03.02 Analysis of Human Umbilical Cord Mesenchymal Stem Cells' Expansion Capability In Human Platelet Lysate

Eugene, Deloach

Langston University

A number of studies have recognized mesenchymal stromal/stem cells (MSCs) as an option for the treatment of a wide variety of diseases (Capelli et al. 2011, Ennis et al. 2008, Seshareddy et al. 2008). MSCs are present in almost all organs of the body (Ennis et al. 2008). The most common source for clinical MSCs is bone marrow. Unfortunately, bone marrow can be obtained only by an invasive surgical procedure and the ability of the cells to differentiate into different lineages can vary with the age of the donor (Capelli et al. 2011). The human umbilical cord (HUC) has been considered an alternative source of MSCs to the bone marrow. Most methods to expand MSCs require the addition of fetal bovine serum (FBS) to the growth medium; however, using FBS increases the risk of transmitting animal diseases (Capelli et al. 2007). One possible alternative to FBS for expanding MSCs derived from HUC is the addition of Human Platelet Lysate (HPL) which has been used for expansion of MSCs derived from bone marrow (Capelli et al. 2007). The objective of my project is to investigate whether there is an advantage to expanding HUC MSCs in media containing HPL compared to our standard medium. We expanded the HUC cells in four different media conditions: HUC standard media, 2% HPL media, 5% HPL media, and 10% HPL media. Our hypothesis was that the HUC MSCs would expand better in 2% HPL. Results supported this hypothesis; HUC cells expanded better in 2% HPL media.

05.03.03 Biological Effects of the Neonicotinoid Pesticide Thiamethoxam in Honey Bees

Lauren, Blatzheim , Ahmed Karahan, Brianna Levinson, Corey BowerDilan Ikizoglu, H. Wells, Ibrahim ÇakmakJohn Hranitz, Nazmiye Günes

Southwestern Oklahoma State University

Thiamethoxam is one of several neonicotinoid compounds that are widely used in agriculture currently. Some hypotheses propose these pesticides as a cause of honey bee colony collapse disorder (CCD), since the onset of CCD coincided with the widespread use of neonicotinoids. If used properly in agriculture, bees should encounter doses well below the LD50, which is considered "safe." While sublethal doses may not directly affect mortality, intoxication by pesticides may impair the integration of foraging under ecological conditions enough to affect hive survival. We studied the sublethal effects of thiamethoxam on the motor coordination of captive bees and foraging behavior of free-flying bees, using doses of 1/5 to 1/500 LD50. Motor responses (antennal movement, proboscis extension reflex, leg, and abdomen movement) were tested 4 h after treatments were given to harnessed bees. Foraging was assessed 60-150 minutes after ingestion in free flying bees. At 4 h post-ingestion, motor coordination of bees treated with the 1/5 LD50 dose was lower than motor coordination of control bees. On an artificial flower patch, foragers given doses as small as 1/10 LD50 returned at a lower rate than sucrose controls. The ability of foragers to distinguish between high and low sucrose nectar rewards was impaired at doses higher than 1/50 LD50. Sublethal doses of thiamethoxam disrupted both the components of foraging normally integrated by the nervous system and foraging in an ecological context

05.03.04 Sterile Technique

Allison, Arnold , Shala McIntosh

Northwestern State University

In sterile operations, what are the effects of using correct sterile technique opposed to breaking sterile field of infections rates of post-operative clients? This was an evidence based project that declared sterile field operations are more beneficial than breaking sterile field and not fixing it. The project was built upon a case study that was set up in an operating room in which the operation had a break in sterile field and nothing was done about it, leading to the patient receiving a surgical site infection. After making the case study, interventions and best practices were researched through articles to find the best solution that should have been implemented in the case study. Once best evidence based practices were established, a model study was made that provided how the situation should have been handled differently so that a better outcome for the patient would happen.

05.03.05 Therapeutic Hypothermia in Cardiac Arrest Patients

Heather, Collins , Alex Meltabarger, Heather Newlin

Other

Sudden cardiac death is a major problem and remains one of the leading causes of death in the United States. According to Scirica "most patients resuscitated after cardiac arrest will die of neurological complications" (2013). This research project examined the effects of therapeutic hypothermia on neurological deficits in patients experiencing cardiac arrest, as opposed to normothermia patients. We predicted that therapeutic hypothermia would improve neurological outcomes, which is consistent with recent research on the effects of therapeutic hypothermia. In these studies, cardiac arrest patients were placed in a therapeutic hypothermic state with a targeted body temperature of thirty three degrees Celsius. This temperature was then maintained for a 12-24 hour time period. According to Walters, Morley, and Nolan "There was good neurological outcome at hospital discharge in 49% of the hypothermia group compared with 26% of the normothermia group" (2011).

05.03.06 The Effects of Climate Change on the Distribution of Harris's Sparrow

Lindsay, Jones , Chris Butler

University of Central Oklahoma

Harris's Sparrow (*Zonotrichia querula*) breeds in northern Canada and winters in the central United States. Because northern Canada is expected to warm at a greater rate than the rest of the Northern Hemisphere, we hypothesized that the breeding range would shift north and contract, while the winter range would shift north and expand. We used Maxent to determine which bioclimatic variables are most important in determining the species' distribution. Then we used three (A1B, A2, B1) IPCC 4 climate change scenarios to predict the range of the Harris's Sparrow into the 2050s. We found that the expanse of suitable wintering area for the Harris's Sparrow in North America depended on the elevation, temperature annual range, annual mean temperature, and the mean diurnal range. A combination of isothermality, mean temperature of the wettest quarter, mean temperature of the warmest quarter, and precipitation of the coldest quarter were the most important variables affecting the breeding area of the Harris' Sparrow throughout Canada. We found that the potential breeding range did indeed shift north and contract, while the potential wintering range shifted northeast and expanded. This suggests that the numbers of Harris's Sparrows will probably decline during the 21st century and that the density of Harris's Sparrow on the wintering grounds will decline as well.

05.03.07 Relationships between Foraging Strategy and Ectoparasite Load of Neotropical Bats

Ashley, Lonetree

Oklahoma State University

Ectoparasites are an important factor in bat health. External parasites in bats usually consist of mites, ticks, and bat flies. Past studies have shown that roosting preference among bats affects ectoparasite load. My hypothesis was that foraging strategy will affect parasite load. Bats were caught at Las Cruces Biological Station in Costa Rica. Ectoparasites were collected using forceps at the time of capture. Bat species were grouped based on the following foraging strategies: frugivore, piper-specialist, nectarivore, insectivore, omnivore, and sanguivore. The ectoparasite loads of the different foraging strategies were significantly different in several respects. Omnivores had the highest total ectoparasite load and highest arachnid loads. Nectarivores had the highest bat fly load. Frugivores had the lowest total ectoparasite load. These results suggest that ectoparasite load is related to foraging strategy in Neotropical bats.

05.03.08 A Systematic Review of Prehabilitation

Jana, Washington , Emily Wadel, Kelsey Fanning

Northwestern State University

This is a systematic review of prehabilitation utilized prior to total knee arthroplasties (TKA). It was found that prehabilitation improves strength and recovery time post-operatively with no negative side effects to date. The case study examined involved a 69 year old female who had bilateral TKAs. Her treatment plan differed in the two surgeries; in that the first one she did not participate in any type of pre-operative conditioning, and prior to the second she did. The results of this study showed an increase in functional ability and strength by 30% and 50% respectively. Other evidence presented in this review also shows that prehabilitation has positive post-operative outcomes. It is felt that although the evidence to support prehabilitation is growing, there needs to be further research done on this emerging topic that encompass such things as longer prehabilitation program lengths and if long term benefits are gained.

05.03.09 The Effect of Light Intensity on the Growth and Reproduction of Chaetomium Globosum, a Common Indoor Mold

Tara, Gurung

East Central University

Chaetomium globosum is a fungus commonly found in water-damaged buildings. The spores and hyphae can be highly allergenic. In previous research, our lab showed that light regimens play a major role in growth and perithecia synthesis of fungi such as *C. globosum*. Different isolates of *C. globosum* were exposed to various time in light. Diameter of growth was measured every 7 days. The amount of ascospore and perithecia synthesis was measured after 21 days. Growth was not significantly influenced by different light regimes, but perithecia synthesis was greater in the dark when compared to light treatments. Patterns of fungal perithecia synthesis suggest that light stimulates a circadian-like rhythm. Future research will involve isolated and identifying proteins and genes stimulated or inhibited by light. Natural and artificial light plays a major role in the circadian rhythms of all organisms.

05.03.10 Endophytes and Possible Pathogens of Greenbrier (Smilax sp.)

Caleb, Biles

East Central University

Greenbrier (*Smilax* sp.) is a weed that commonly grows in gardens and wooded areas in Oklahoma. The tough stems and thorns deter travel through wooded areas. The growth habit of the plant will often take up the canopy of more desirable tree species. Removal of the plant is difficult due to the tenacious attachment to the tree it is growing on and over. Greenbriers were collected from various locations in the Ada. Samples were brought back to the ECU laboratory and the leaves were dissected. The fungal samples were allowed to grow on the agar for 7 days, and then subcultured to PDA. Approximately 30 different filamentous fungal isolates have been examined. Genera identified include *Stemphyllium*, *Colletotrichum*, *Fusarium*, *Alternaria*, *Pestalotia*, and *Aspergillus*. The most common fungus observed in plant tissue was *Alternaria*. Endophytes are found in also all plant species that have been tested. Greenbriers have a impressive ability to survive cold weather and diseases. These survival traits may be due to the endophytic fungi that live in the plant tissue. Further research may lead to an effective bioherbicide.

05.03.11 The Effect of Imidacloprid on Sucrose Sensitivity of the Honey Bee Proboscis Extension Reflex

Trimelle, Polk

Other

The proboscis extension reflex (PER) is an important motor program integrated (with motor coordination of locomotion, other feeding reflexes, memory, learning, and social communication) in the honey bee feeding behavior. In the PER, antennal stimulation with sugar solution, nectar in nature, elicits extension of the proboscis for feeding. Honey bees are very sensitive to sucrose concentration in solutions and can distinguish between nectar rewards in nature and in the laboratory. A sucrose sensitivity test has been widely used in studies of the effects of pesticides on honey bees. Our study investigated the effect of sublethal doses, ranging from 1/5 to 1/500 of the LD50 reported for imidacloprid, on the PER of Anatolian honey bees (*Apis mellifera anatoliaca*) in a Turkish apiary. We tested the PER using 0% sucrose (water), 10% sucrose, and 30% sucrose solutions at 1h before and after the administration of imidacloprid to harnessed honey bees. Bees in our study exhibited a scaled response to the different sucrose solutions, with a higher rate of response to 30% sucrose solution than the 10% sucrose solution. Repeated measures ANOVA of the PER tests revealed that sublethal doses of imidacloprid at 1/5 LD50 impaired the sucrose sensitivity response in honey bees (Wilke's $\Lambda=0.549$, $F=2.819$, $P=0.0006$). At lower doses of imidacloprid ($<1/5$ LD50), bees did not perform differently than controls.

05.03.12 Experimental Design of the Expression of Sir-2 Levels in Organ Tissues of Calorie Restricted Mice vs. Non-Calorie Restricted Mice

Zach, Zaaza , Kathi McDowell

Northeastern State University

It has been long known that calorie reduction results in an extended lifespan in yeast species and *Drosophila*. However, this mechanism is not fully understood in mammals. In this experiment we will attempt to measure and compare Sir-2 levels in mice so that we may observe whether or not calorie restriction yields the same results in mammals as it does in yeast species and *Drosophila*.

05.03.13 Ethnomelittological Classification and Knowledge by a Mixtec Speaking Community of Guerrero, Mexico

Victor, Gonzalez Betancourt , Jonathan Amith, Timothy Stein

Southwestern Oklahoma State University

In addition to being the most important pollinators of both wild and cultivated plants, bees are also deeply embedded in the cultural history of many societies. Archeological and anthropological records indicate that bees were, and remain, an integral part of the cultural knowledge of many Indigenous peoples around the world. Using semistructured interviews as well as field surveys, we investigated the nomenclature, classification, and uses of native bees in Yoloxóchitl, a Mixtec speaking community in the municipality of San Luis Acatlán, along the Pacific Coast of the state of Guerrero, Mexico. Our consultants from Yoloxóchitl demonstrated extensive knowledge of the ecology and natural history of local bees. They classified them on a wide array of morphological, behavioral, nesting, and utilitarian features such as body color, aggressiveness, nesting habits and substrate, phenology, and the utility of their honey. Because they produce honey and wax, stingless bees (Apidae: Meliponini) are the most culturally significant bees for the Yoloxóchitl community, and apparently the Mixtec and other Mesoamerican societies as well. Stingless bee species recognized by Yoloxóchitl Mixtec for the most part correspond to currently accepted taxonomic concepts in bee systematics. In sum, data on the nomenclature, classification, and use of bees in Yoloxóchitl demonstrate the importance of incorporating Indigenous knowledge in scientific studies of bee diversity

05.03.14 Non-Steroidal Anti-Inflammatory Drugs Inhibit Growth and Reproduction of Chaetomium Globosum

Taylor, Glasco

East Central University

Fungi are becoming a greater health concern in home and hospital settings. Some fungi cause serious systemic infections and all fungal spores and hyphal segments are allergenic. The purpose of this research was to determine the possible inhibitory activity of non-steroidal anti-inflammatory drugs (NSAIDs) on fungal growth and reproduction. Non-Steroidal anti-inflammatory drugs inhibit growth and reproduction of *Chaetomium globosum*. Media, Malt Extract Agar (MEA) and Potato Dextrose Agar (PDA), was amended with NSAIDs including Aspirin. Most of the NSAIDs were effective in inhibiting the filamentous fungus *Chaetomium globosum* at relatively low concentrations. Acetaminophen and mefenamic acid did not inhibit growth when compared to the control. The most effective NSAIDs in growth inhibition were Flufenamic acid, Fenoprofen, Naproxen, and Ibuprofen. Ibuprofen and Naproxen were the most effective in reducing perithecia production and ascospore production. Preliminary experiments indicated differential banding patterns when *C. globosum* was grown in naproxen, aspirin and higher concentrations of acetaminophen.

05.03.15 Experimental Design: Determination if Rapamycin Treatment of Human Cells Enhances the Association of Sir2 and rDNA

Amina, Gilling , Kathi McDowell

Northeastern State University

Rapamycin, an immunosuppressant, is used in organ transplant patients. The drug prevents the body from rejecting an organ or bone marrow during a transplant. Rapamycin has also been tested in many organisms, such as *Mus musculus*, mice, and *Saccharomyces cerevisiae*, yeast. The results show increased life in the organisms. This increase in life is due to the inhibition of the TOR Complex 1 (yeast) and mTORC1 (mice), which leads to an increased association of Sir2 and rDNA. Sir2 and rDNA association has already been determined to prolong life in *Saccharomyces cerevisiae*, *Caenorhabditis elegans*, *Drosophila melanogaster*, etc.(2). This experimental design will test the effect of rapamycin on human cells to determine if there is an increased association of Sir2 and rDNA in the human cells.

05.03.16 Age Structure of a Cross Timbers Forest within an Urban Landscape in Central Oklahoma

Chad, King , Abby Ferguson, Justin Cheek

University of Central Oklahoma

The Cross Timbers Region is a complex mosaic of upland deciduous forest and savanna that covers approximately 4.8 million hectares in Oklahoma and is dominated by post oak (*Quercus stellata*, Wangenh.) and blackjack oak (*Quercus marilandica*, Munchh.). In central Oklahoma urban landscapes, several problems threaten remnant Cross Timbers forest tracts including eastern red cedar (*Juniper virginiana*, L.) invasion and land clearing for suburban and commercial development. The objective of our research was to investigate the age structure and radial growth dynamics of a 49 ha post oak-blackjack oak forest in the city of Edmond, Oklahoma. Increment cores were collected at 30cm above ground level from post oak (n=33) and blackjack oak (n=35) that had a diameter at breast height >10cm. Standard dendrochronology procedures were used to cross date tree-ring series to assign calendar years to each tree-ring. Results indicate that the oldest post oaks and blackjack oaks dated to 1900-1910 at the site. Data analysis suggests continuous recruitment of oak during the 20th century. Several events appear to have affected the growth of oaks at the site over the past decade including drought, an ice storm, and a tornado that may reduce the continued overstory dominance of oak in the face of eastern red cedar invasion and the presence of mesophytic species in the understory.

05.03.17 Effects of Osteopathic Manual Manipulation on Asthma

Joseph, Peters , Kevin Wang

Northeastern State University

Introduction: Alternative medicine has been around since shaman or healers, long before what we consider traditional medicine. Alternative medicine consist of Chinese herbs, acupuncture and spinal alignment, which does not fit into traditional medicine. Andrew Taylor Stills, MD, who founded osteopathic medicine, recognized that alternative medicine could help his patients. Osteopathic Manual Manipulation (OMM) can be used to treat disease such as asthma. Proper alignment can be as important as a diet or medication. National University Hospital Allergy Department conducted research in Copenhagen, Denmark. The study showed that patients preferred active manual manipulation. Approved 5/13, clinical trials are to begin in Europe soon to study affects of OMM on asthma. OMM has only been seen to improve mild to moderate asthma, not severe. Hypothesis: Patients will show subjective and objective improvement with active over sham OMM. Methods: I reviewed Chronic Asthma and Chiropractic Spinal Manipulation: a randomized clinical trial that was published in Clinical and Experimental Allergy, 1995 Volume 25, Clinical Trial #NCT01853189, and Chiropractic Treatment for Asthma? You Bet! Published in Journal of Asthma, 47: 2010. Results: Although people preferred active OMM subjectively. The test results did not show clinical significance. Due to the trial size, there needs to be further research to study the affects of OMM on the spine of a person with asthma, chronic and acute.

05.03.18 Trimethoxy-Cis-Stilbene Exhibits Potent Anti-Tumor Activities via Suppression of AKT Signaling and Cell Cycle Arrest in Virus-Induced Hepatocellular Carcinoma

Hari, Kotturi , Charles Nguyen, Naushad Ali

University of Central Oklahoma

Hepatocellular carcinoma (HCC) is the fifth most common cancer in the world. Chronic hepatitis C virus (HCV) infection and cirrhosis are considered to be major risk factors for induction of HCC. Identification of novel therapeutic agents that target HCV and/or HCV-induced HCC is an unmet medical need. Our study explores the anti-viral and anti-tumor activities of trimethoxy-cis-stilbene (TMS), a synthetic analogue of Resveratrol (RES). HCV subgenomic replicon-expressing hepatoma cells were treated with varying concentrations of RES, TMS or DMSO (control) for 48 hrs. The IC₅₀ values for these drugs were determined based on HCV expression levels in the treated and untreated cultures. Effects of the drugs on cell cycle and AKT signaling pathways were investigated using flow cytometry and protein expression profiles. Cell cytotoxicity of the drugs was determined by MTS assay using normal human hepatocytes (NHH) and hepatoma cells. Both RES and TMS downregulated the HCV RNA and NS5B polymerase levels within 48 hr and showed IC₅₀ values equivalent to 100 μ M and 1.0 μ M, respectively. However, the NHH viability was not compromised during these culture conditions as determined by cytotoxic assays. The anti-HCV effects were accompanied by cell cycle arrest at G2/M phase for TMS, whereas G1/S arrest was observed for RES. Trimethoxy-cis-stilbene appears to be more potent than its parent compound resveratrol as an anti-HCV and anti-tumor drug in culture conditions.

05.03.19 Assessing Black Rail Detection Probability and Habitat along the Texas Gulf Coast

Jeffrey, Tibbits , Chris Butler

University of Central Oklahoma

The Black Rail (*Laterallus jamaicensis*) is one of the most secretive birds in North America, and little is known about the habitat requirements of Black Rails along the Gulf Coast. Qualitative observations suggest that this species' population has declined during the last century, and wetland surveys document a substantial loss of breeding habitat. We conducted surveys during the breeding season to estimate occupancy and detection probability for the Black Rail in estuarine wetlands. Surveys were conducted at Big Boggy, Brazoria, and San Bernard National Wildlife Refuges along the Texas Gulf Coast from April to May of 2013. Using a game call broadcasting Black Rail vocalizations, we solicited responses from territorial males and recorded their approximate location. Black Rails were located in two habitat types: salty prairie and high salt marsh. Detection probability varied from 0-36%. Habitat types known to contain Black Rails will be surveyed more extensively in the spring of 2014 to yield information on how these birds respond to burn regimes, hydrology, vegetation composition, vegetation structure, patch size, and other landscape attributes.

05.03.20 β 2 glycoprotein I–derived Peptides Alter Angiogenesis in Melanoma Tumors

Kellyn, Pollard

Langston University

Melanoma, a deadly type of skin cancer, causes approximately 10,000 deaths/year in the US. Growth of melanoma requires a constant supply of nutrients and blood. These tumors obtain their blood supply and nutrients by forming new blood vessels through the process of angiogenesis. Beta-2 glycoprotein I (beta-2) is a serum protein that binds to lipids on apoptotic cells and inhibits or slows the formation of new blood vessels. We derived 2 treatment peptides from beta-2 to use as competitive inhibitors. Peptide 296c-s is from the binding domain of beta-2 and is an effective chemotherapeutic when administered prior to tumor formation. Peptide p16SS is a scrambled peptide that was used as a control treatment. We hypothesized that peptide, 296c-s, will inhibit melanoma tumor growth and angiogenesis when administered to mice after tumor formation. We injected B16F10 melanoma cells subcutaneously into male C57BL/6 mice. Tumor size was monitored and recorded until tumors were removed, weighed, and stored for later analysis. Nitric oxide assay and endothelium marker CD31 were used to measure vascular growth. Myeloperoxidase assay was used as an indicator of inflammation within the tumors. Peptide 296c-s significantly decreased tumor volume, inhibited CD31 staining and decreased myeloperoxidase production, suggesting this peptide may be enhancing the immune response. This work is supported by grants from NIH P20GM103418 and AI061691, K-State SUROP, and the NIDDK Step-Up Program.

05.03.21 Taylor Dismuke and K.J. Abraham, Department of Biology Langston University, Langston, Oklahoma 73050

Taylor, Dismuke

Langston University

Azo dyes are widely used in the pharmaceutical, textile, food, and cosmetic industries. Azo dyes are characterized by containing one or more azo groups and are the largest and most versatile class of dyes. Azoreductase enzymes catalyze the reductive cleavage of azo linkages to produce aromatic amines, many of which are carcinogens. The purpose of this study is to investigate the presence and activity of azoreductase enzyme and *Enterobacter aerogenes* and isolate the azoreductase gene coding for the enzyme. Genomic DNA was extracted from both *E. aerogenes* using a standard extraction procedure. DNA extracted from both bacteria were analyzed using polymerase chain reaction. Future studies include DNA sequencing and nucleotide analysis of the azoreductase gene.

05.03.22 The Potential Value of Biopharmaceuticals to the Developing World **Holly, McIntyre , Kevin Wang**

Northeastern State University

Remarkable strides in the development of biopharmaceuticals, namely in vaccines and antibiotics, have been achieved through molecular pharming methods. Molecular pharming could provide a less expensive avenue for the production of much needed medicines in the developing world. Furthermore, the incorporation of immunoglobulins into the genome of fruiting plants has been achieved. The oral consumption of vaccines would negate the need for injectable vaccinations in many instances. Additionally, the oral route could reduce the cost of administration equipment that is often severely lacking in the developing world. It is reasonable to suggest that a wide array of vaccinations could potentially be developed in such a manner and distributed globally. Cost effectiveness could be maximized if these plants are able to be produced on a local level. One such study in Spain demonstrated that fusion of transcription factors and human IgA with the genome of a tomato plant yielded a product considered safe to consume and is likely effective against Rotavirus in humans. More research is currently needed to explore these options.

05.03.23 The Effect of LKE on Autophagy in N2 C. Elegans

Melissa, Brewer , Andrea Holgado, Ashley Rodriguez, Michael Caniglia

Southwestern Oklahoma State University

Many serious neurological disorders in the world, including Huntington's, Parkinson's, and Alzheimer's Disease, can be linked to decreased levels of cellular autophagy. Conversely, increased autophagy can protect neurons against toxic protein aggregates found in most neurodegenerative disorders. Recent research has indicated that a drug called Lanthionine Ketimine Ethyl Ester (LKE) has been shown to have positive neurological effects. LKE has been found to rescue cells that have been affected negatively by mutations, and more recently has shown positive effects in animals with an induced form of Alzheimer's disease. These promising results give reason to test the hypothesis that LKE, a neurotrophic and protective agent, acts by inducing autophagy. To test this hypothesis, we designed experiments to monitor autophagic gene expression and study their potential upregulation. During the performance of these experiments, we exposed *C. elegans* to either LKE or a control solution when developing from egg to adult. Once both groups reached adulthood, nematodes were harvested, the RNA was isolated, cDNA was produced, and finally the levels of expression of the selected autophagic genes were measured using quantitative RT-PCR. Preliminary results from these types of experiments are currently being replicated. Complete data analysis and interpretation will be presented at the meeting.

05.03.24 Angiotensin II Increases TRPV4 Localization to Plasma Membrane in Hypothalamic Neuronal Cell Line 4B: Implications for Water and Electrolyte Homeostasis

Nile, McCullough , Ashwini Saxena, J. Thomas Cunningham

Southwestern Oklahoma State University

Background: Renin-angiotensin system (RAS) plays a crucial role in regulating fluid and electrolyte homeostasis. Vasopressin (AVP), acts on the kidney by increasing water reabsorption. The syndrome of inappropriate vasopressin release is associated with excessive water retention. The molecular mechanism underlying this disorder remains unknown. Purpose: The osmosensitive transient receptor potential vanilloid type 4 (TRPV4) channel is a cation channel that is activated by stretch. We used a rat ligated rat model to demonstrate that TRPV4 protein expression and membrane trafficking is increased in AVP neurons. Using calcium sensitive dye, we noted an increased magnitude in calcium transients in response to TRPV4 agonist, GSK1016790A post-Ang II (100nM) incubation, in vitro. Methods: We used Western Blot technique to identify the effect of Ang II incubation on TRPV4 expression and cellular localization. The 4B cells were grown out in a Hyclone custom media DME/Ham's F12 1:1. The cells were treated for 1 hour with 100nM Ang II. Then, the cells were lysed using RIPA buffer and subjected to Western Blot analysis. Results: The Western Blot technique showed that TRPV4 content in the plasma membrane increases after Ang II treatment. Conclusion: We conclude that Ang II could regulate osmosensitivity by trafficking TRPV4 to the plasma membrane in hypothalamic neurons and may play a role in water and electrolyte homeostasis and dysregulation.

05.03.25 Wound Healing in a Petri Dish?

Danielle, Perlingiere , Cynthia Murray, Evon Yap, Kyle WilliamsSeth Hiddink

University of Central Oklahoma

Tissue contraction is part of the normal wound healing process and this contraction generates tension. Tension can be influenced by transforming growth factor-beta(TGF- β), a fibroblast secretion product, and n-acetylcysteine (NAC), an antioxidant, which can reverse the TGF- β driven contraction of fibroblasts. Fibroblasts, cells which generate tension, were cultured within collagen lattices which were then plated on petri dishes. After incubation (to build up tension), the collagen lattices were released manually and contraction was quantified at six time points within one hour after the release. There were eight experiments in this study which varied by cell types (3), treatments (control, TGF- β , NAC, Acid/Base, or combination), and incubation times (6). Analysis of variance was used to determine differences in mean diameters between: 1) treatment groups at ten and sixty minutes, and 2) one and two minutes within each treatment group. In all eight experiments the greatest decrease in diameter (greatest increase in tension) occurred between zero and one minute. In four of the eight experiments, the TGF- β +NAC treatment groups had the largest diameters.

05.03.26 Role of Mcm10 in Maintenance of Genome Stability

Lakelen, Crain , Sapna Das-Bradoo, Stephen Cates

Northeastern State University

DNA replication, repair, and checkpoint pathways protect us from the lesions that arise during exposure to UV light or other DNA damaging agents. However, problems such as mutations in any of these pathways can lead to an unstable genome which is the hallmark of cancer cells. Research from various labs has shown that DNA replication and repair proteins play an important role in maintaining genome stability. Our laboratory is interested in understanding the role of minichromosome maintenance protein 10 (Mcm10) in preventing DNA damage. Mcm10 is an essential part of the replication fork and plays a vital role in replication fork stability through interactions with proliferating cell nuclear antigen (PCNA), DNA polymerase alpha (α) and helicase. Previous studies from our lab show that Mcm10 exhibits a strong interaction with mediator of replication checkpoint 1 (Mrc1). Mrc1 is involved in DNA replication and serves a crucial role in the activation of S phase checkpoint. Using yeast two-hybrid analysis we have mapped the region on Mcm10 that interacts with Mrc1. Interestingly, deletion of 50 amino acids (150-200 a.a.) on the N-terminus of Mcm10 abrogates interaction with Mrc1 and furthermore, the cells display a lethal phenotype. Our next steps are to confirm this interaction by fluorescence microscopy and co-immunoprecipitation.

05.03.27 Comparison of Survival Rates in Out-Of-Hospital Cardiac Arrest With the use of Continuous Chest Compression Versus Survival Rates of Compression With Rescue Breathing.

Sugandha, Aggarwal , Jeff Howard, Shannon Germain

Other

The purpose of this research was to determine whether there was a significant difference in survival rates for patients in cardiac arrest outside of the hospital when provided with continuous chest compression when compared to the survival rates of those patients who received rescue breathing as well as compression. The main objective of this study was to prove that most cases of cardiac arrest outside of the hospital could see a significant improvement of outcomes if the public were educated to provide chest compression even if they are unwilling to provide rescue breathing as well. It was found that in cases of spontaneous cardiac arrest in which emergency medical services arrived in less than three minutes survival rates were similar between both interventions. A review of previous studies was performed and a list of possible interventions was proposed.

05.03.28 Relationships of Coleopterans and Oklahoma Fleishy Fungi

Clark Ovrebo , Craig Koenigs, Jessica Price, Wayne Lord

University of Central Oklahoma

Fleishy fungi serve as hosts for unique assemblages of insects and other arthropods. The patchy and ephemeral nature of fungal-insect communities renders them ideal platforms for the study of acquisitional dynamics, biogeography, and co-evolution. Despite their unique ecological importance, in-depth knowledge of the relationship between fungi and insects is scant. In an attempt to explore the complex associations characteristic of fleishy fungi and their associated insects, sampling surveys were conducted across central Oklahoma during 2009 and 2010. Samples encompassed 15 fungal genera containing numerous species of insects. Insect specimens were hand picked off the fungi, captured via Berlese traps, or larvae were reared in emergence containers. Fungal genera supporting high insect diversity include *Amanita*, *Armillaria*, *Pleurotus*, *Strobilomyces* and *Tricholoma*. This report will mainly address the coleopterans found on fungi. Families repeatedly encountered include Staphylinidae, Erotylidae, Tenebrionidae and Nitidulidae with 17 genera identified. The most common genera found were *Pallodes*, *Triplax* and *Cyparium*. The results so far suggest that there is a preference for the genus *Triplax* to inhabit *Amanita* species. In addition, with respect to all insect groups, only coleopterans were found on *Pleurotus*.

05.03.29 An Improved Tissue Culture Protocol for Direct Shoot Organogenesis in Peanut Mature Dry-Cotyledon and Root Tissues

Ning, Wu , Kanyand Matand, Morgan James, Nicole Newman

Langston University

Peanut is a legume of economic importance. Although biotechnology techniques have been reported in peanut, it has mostly focused on the application of standard organs. Little has been achieved using seed cotyledon, primarily because the limitation of successful in vitro culture for adventitious plant formation; and no protocol has been successfully developed for peanut root organogenesis. The objective of this study was to develop a tissue culture protocol that could induce direct shoot formation in dry peanut cotyledon and root tissue. Mature dry seeds in four explant types including whole, half, diced, and two-side-cut cotyledons and root segments from germinating embryos pre-cultured from 0 to 7 days on hormone-free culture medium were applied. The culturing media contain kinetin, 6-benzylamino purine, 2, 4-dichlorophenoxyacetic acid, or thidiazuron (TDZ) alone or in combinations of cytokinin with auxin. The results showed greatest direct multiple shoots per explant. Greater TDZ concentrations (5-30 mg/l) are recommended for greater number of shoots per mono/side-cut cotyledon (78-93). The proximal region formed more shoots than distal region. TDZ-based treatments induced greater shoot formation in cotyledon than other growth-regulator treatments. No root tissue explants that were pre-cultured more than one day formed shoots. All newly formed shoots were transferred onto control medium without growth regulators for rooting and subsequently grew normally in the greenhouse.

05.03.30 Staphylococcus Aureus Biofilm Secreted Products, Inflammation, and Chronic Wound Healing

Robert, Brennan , Melissa Reeves, Melville Vaughan

University of Central Oklahoma

Each year millions of people are afflicted with chronic wounds such as diabetic foot ulcers, pressure ulcers, and venous leg ulcers, which in part, contribute to a considerable amount of mortality in the U.S. annually. The inability of these wounds to heal has now been associated with the presence of microbial biofilms. Although there is increasing evidence for the presence of bacterial biofilms in chronic wounds, there is a fundamental gap in understanding the role of biofilms in chronic wound pathogenesis. The hypothesis is that products secreted by *S. aureus* biofilms play a direct role in the prolonged inflammation, including the production of elevated levels of reactive oxygen species (ROS) and reactive nitrogen species (RNS), which in turn play a direct role in the lack of reepithelialization associated with chronic wounds. Various immunoassays are being utilized to compare the effects of *S. aureus* biofilm secreted products with the effects of *S. aureus* planktonic secreted products on human keratinocytes and fibroblasts. Preliminary results indicate that products secreted by biofilm and planktonic *S. aureus* may have differing effects on keratinocytes and fibroblasts.

05.03.31 Characterization of Three Major Histocompatibility Complex Class II Loci in Neotoma albigula

Lindsay, Stone , Michelle Haynie

University of Central Oklahoma

The major histocompatibility complex (Mhc) is an important component of vertebrate immune systems. Genetic analysis at Mhc loci can provide information on susceptibility to certain viral strains. *Neotoma albigula* (white-throated woodrat) has been associated with at least three distinct strains of arenaviruses, suggesting an interesting coevolutionary history between the host and virus. In this study, we have been screening three Mhc class II loci to detect genetic variation within *N. albigula* subpopulations in Arizona. We hypothesize that specific alleles for each locus will be positively correlated with disease susceptibility. Initially, we screened two loci using capillary electrophoresis-based single strand conformational polymorphism (SSCP) analysis. Using this method, we found moderate levels of genetic variation at the loci and little correlation between disease susceptibility and alleles. Due to SSCP optimization issues, we have added a third locus and are sequencing the alleles to confirm their identity. We have optimized the protocol, and our results indicate we have successfully screened the Mhc loci for genetic variation. The methods used in this research, as well as previous findings, will be applied to collaborative research project with Texas Tech University and the University of Texas Medical Branch involving the association with *N. albigula* and arenaviruses.

05.03.32 Effects of Narciclasine on Invasive Properties of H-Ras Keratinocytes

Jing, Herwig , Melville Vaughan

University of Central Oklahoma

Nonmelanoma skin cancer is a type of prevalent keratinocyte carcinoma, including basal cell carcinoma, squamous cell carcinoma, and actinic keratosis. Current studies show that the progression of cell carcinoma is associated with invasion of atypical keratinocytes. Our goal is to characterize migration and transformation of keratinocytes into dermal layers. Narciclasine, a plant growth modulator, is reported to have antitumor effects and regulate the cytoskeleton organization via a Rho/Rho kinase pathway. Published data suggest that narciclasine will increase proliferation, migration, and dermal invasion of H-ras keratinocytes. To test this hypothesis we used a fibroblast-contracted collagen skin equivalent, over-laid with H-ras keratinocytes. The prepared tissues will be processed with a series of histology and antibody staining, after incubated in control media for one week and narciclasine-treated media for one week. The major stain procedure consisting of H&E staining, Laminin-5, keratin-14, vimentin, and p63 staining will be used to determine the effect on epidermal architecture. The direct effect of narciclasine on H-ras keratinocytes will be tested with coverslips to study the phenotypic change of cells under the regulation of signaling pathway. Preliminary results show a phenotypic change of H-ras keratinocytes and potential cytotoxic effects at higher doses. We plan to use a rho-kinase inhibitor to determine whether narciclasine effects are rho-specific.

05.03.33 Review of Transposon-Based Techniques for the Removal of Molecular Marker Genes

Jonathan, Nahmias

Northeastern State University

With increasing prevalence of microbial resistance to antibiotics, removing marker genes present in transgenic plants is a very popular subject of research today. The primary reason for the great research efforts is that it's thought that when eating food from transgenic crops, antibiotic resistance marker may be horizontally transferred to disease causing microbes in the gastrointestinal tract. It is still debated whether transmission of markers from genetically modified plants could cause antibiotic resistant microbes to arise, but thus far, there is no evidence that consuming food from a transgenic crop could be detrimental to one's health (Yau and Stewart, 2013). However, in a study performed by Labar A, Millan J, Okeke I, et al., there was a 50% increase in the frequency of cases trimethoprim resistance in fecal *Escherichia coli* from healthy individuals in a Nigerian school (2012). Due to this growing international problem, efforts all over the world are focused on the development of efficient techniques to remove these markers. This poster focuses on methods of marker gene removal via transposon-based techniques. Transposons, or "jumping genes," are genes that jump from place to place around the genome of an organism. Therefore, if the marker is placed within a transposon, it can "jump" away and insert in another locus or disappear from the genome completely and through several generations, marker free plants can be created.

05.03.34 An Example of Possible Martian Life Using Earth Bacteria Found in Icy Lava Rock Similar to Environments Found on Mars

Patricia, Cooper , Kevin Wang

Northeastern State University

Icy lava rock on Mars is found to be similar to those found also on Earth making it possible to compare whether life could exist in a Martian environment. This is a review (Popa et al, 2012) to see if the icy Martian lava rock containing the mineral olivine could also sustain iron-oxidizing bacteria like those found on Earth. Rock and ice samples were taken from a lava tube ice cave in the Oregon Cascades and then used in cultures with olivine, iron and magnesium in a temperature of 5°C to isolate what could survive and grow. The bacteria *Pseudomonas* sp. HerB, which was isolated from the samples, was found to be a good example of what life could be like on Mars' icy volcanic environment near the surface.

05.03.35 Long Term Responses of Rocky Mountain Tailed Frog Tadpoles (*Ascaphus montanus*) to Wildfire

A.M., Chicas-Mosier

Oklahoma State University

The Rocky Mountain tailed frog (*Ascaphus montanus*) occupies mountainous stream environments and therefore is less affected by human activities than other amphibians. Over recent decades tailed frog habitat has experienced increased wildfire frequency and severity with climate change, and since 1987, approximately one quarter of the tailed frog habitat has burned as a result of wildfire. Tailed frog tadpole populations have been shown to decline for up to seven years in areas with high severity burns as a result of their sensitivity to warm stream temperature and additional sediment. Based on this research we hypothesized that many years post-fire, tailed frog populations would still be weakened as a result of this fire-related habitat change. Our study supports long term change in population size; however, we did not find significant data supporting these mechanisms as cause for the change. Further studies will need to be conducted into the cause of the long-term tailed frog population change to understand how these organisms are affected by fire.

05.03.36 The Diet of *Cercobrachys winnebago* (Ephemeroptera: Caenidae) in two Western Oklahoma Sandy Bottom Streams

Amber, Rymer , Peter Grant

Southwestern Oklahoma State University

Cercobrachys winnebago nymphs inhabit the fine, sandy sediments of streams in western Oklahoma. Sand is an unusual habitat for mayfly nymphs, and so our goal was to determine the diet of *C. winnebago* in this substrate. A total of four collections in two streams were made in July and August 2012. The gut contents of individual nymphs were removed, placed on a slide, and covered with a gridded cover slip. The contents of 26 randomly chosen grids were counted on each slide and the results expressed as percent occurrence. Overall, the most common items in the gut were VFOM (82%), sand (13.2%), and UFOM (2.5%). High and low values for each item were 69.9-88.9%, 7.7-22.3%, and 0.1-4.6%, respectively. All other categories (FOM, diatoms, unicellular algae, filamentous algae, and animal fragments) occurred less than 1%. These results were consistent among nymphs from both streams and all four sampling dates.

05.03.37 Antimicrobial Effect of Silver(I) Cyanoximate - Coated Surfaces on Biofilm Formation of Human Pathogens

Sarah, Hamilton , Shalaka Lotlikar

Oklahoma State University

Post surgical medical implant infections caused by bacterial biofilms is the most common cause of increased morbidity and hospitalization costs. Currently, there is an increase in the use of metal complexes such as silver by incorporating them into implant materials. This leads to the reduction in the infection rate, while not introducing a toxic effect to the human cells and tissues. Silver (Ag) has been known to exhibit strong antibacterial properties by reacting with bacterial DNA or inactivating enzymes of bacterial electron transport chain. We have previously synthesized eight novel silver(I) organic complexes of cyanoximes designated as Ag(ACO), Ag(BCO), Ag(CCO) Ag(ECO), Ag(PiCO), Ag(BIHCO), Ag(BIMCO), Ag(BOCO). The compounds are non-antibiotic, water insoluble and UV/visible light resistant. Since biofilm formation is an important predisposing factor in the development of implant infections, it is essential to test the effect of these compounds on biofilm development. For this, we selected three human pathogens representing different infection profiles: *Pseudomonas aeruginosa*, *Staphylococcus aureus*, and *Streptococcus mutans*. The compounds at the concentrations of 0.5%, 1%, 2.5% and 5% were embedded into the polymeric light-curable acrylamide composite commonly used in dental practice, and applied onto the surface of 96-well plates. Quantitative 96-well plate crystal violet biofilm assays showed that *P. aeruginosa* and *S. aureus* biofilm growth was inhibited completely in

05.03.38 Experimental Design of Lifespan Extension Involving Sir2 and Calorie Restriction in *Saccharomyces Cerevisiae* Supplemented with Resveratrol

Kimberly, Pahsetopah , Kathi McDowell

Northeastern State University

Researchers use *Saccharomyces cerevisiae* to study the molecular mechanisms that underlie replicative lifespan extension. One of the most significant findings in lifespan extension is calorie restriction. Calorie restriction mediates longevity in various species including yeast, worms, flies, and mammals. Recent studies reveal other compounds like resveratrol, a polyphenol found in red wine, produce similar effects in yeast. In fact, resveratrol was shown to have anti-aging properties that "mimic calorie restriction by stimulating Sir2, increasing DNA stability and extending lifespan by 70%" (Howitz). Activation of Sir2, a histone protein deacetylase, employs a series of steps that prompt rDNA silencing and reduce rDNA recombination at the rDNA loci. This poster describes an experimental design to analyze Sir2's role in lifespan extension in yeast strains supplemented with resveratrol. By modifying different genes within the yeast strains, the design will measure Sir2's influence in aging yeast. The experimental design will examine rDNA recombination, rDNA silencing, and histone protein H4 acetylation as an implication of rDNA's role in lifespan extensions. Howitz, Konrad T, et al. "Small Molecule Activators of Sirtuins Extended *Saccharomyces cerevisiae* Lifespan." *Nature* 425.6954 (2003):191-196 Medline. Web 2. Nov.2013

05.03.39 Sex Differences In Blood Pressure And Renal Handling Of Sodium In Mice On A High Salt Diet.

Heba, Hammami , Alexander Rouch

Northeastern State University

Introduction: High salt consumption contributes to hypertension. A previous study showed that female mice had lower renal excretion of sodium (Nae) than male mice for a 15-day period of high salt consumption. The study goal is to determine if sex differences in Nae and blood pressure (BP) occur from a 30-day period of high salt consumption in mice. Methods: Female and male 12-week old mice (n=6/group) consumed a 4% salt diet in metabolic cages for 30-days. Nae was determined from daily measurements of urine sodium concentration and urine volume. Sodium intake (Nai) was determined from daily food intake. BP was measured via the tail-cuff method in each mouse. Real-time quantitative PCR was used to measure expression of renal sodium transporters. Results: For the 30-day period of high salt consumption, average Nae/Nai was significantly lower in female mice compared to male mice (53.3 ± 2.7 vs 68.1 ± 1.8 , respectively, $p < 0.0001$) in addition to the mean BP (78.4 ± 1.0 vs 84.9 ± 1.2 respectively, $p < 0.0005$). Expression of the mRNA for the sodium transporter NKCC was over 5-fold higher in the female kidney. Conclusion: Female mice retain more sodium and maintain lower BP under high salt consumption compared to male mice. Estrogen likely plays important roles in both higher sodium retention and lower BP in the females. This study indicates that female mice exposed to a high salt diet are protected from hypertension for a 30-day period despite higher sodium retention.

05.03.40 Mistletoe's Cancer Treatment Potential: A Review of Down-Regulation of Some Mirnas by Degrading Their Precursors Contributes to Anti-Cancer Effects of Mistletoe Lectin-1 by Lin-Na Li, Hua-Dong Zhang,

Daniel, Tinervia

Northeastern State University

In the United States, when we hear mistletoe we think of kisses on Christmas. However, mistletoe may hold far more potential than inducing affection on holidays. While American mistletoe is used decoratively, European mistletoe (*Viscum album* L.) is being researched as a complementary cancer treatment. Complementary treatments are used in addition to traditional treatments such as chemotherapy and radiation therapy. Mistletoe has been a popular homeopathic plant in Europe, especially Germany. It has been used for circulatory and respiratory problems. European mistletoe is a semi parasitic plant that grows on several types of trees. When used for cancer treatment, reports of improved quality of life and survivorship have been common. The active components responsible for mistletoes immune-system-stimulating and cytotoxic properties are viscotoxins and lectins. More focus has placed on research of the lectins, especially ML-1. Lectins are carbohydrate-binding proteins involved with the biological recognition phenomena. While several promising results have been reported, the validity of the experiments is questionable. Almost all trials have had major design weaknesses. Some studies had too small of a test group. Other studies lacked a control group. In a particular study, the concentration of drug varied by ± 20 ng/ml from the manufactory. That strength variation led to over half the test patients being under dosed. Mistletoe shows great promise to be a complementary t

05.03.41 Bioinformatics of the Apolipoprotein E protein in Alzheimer's Disease

Deborah, Bowman

Langston University

INTRODUCTION: During this academic year, I investigated both Bipolar Disorder (BPD) and Alzheimer's disease (AD). Whereas BPD is characterized by the highs of mania and the lows of depression and often rapidly cycling between the two, AD involves parts of the brain that control thought, memory and language. Whereas BPD has three categories (BPD I, BPD II and Cyclothymic Disorder), AD has three stages (mild, moderate and severe). It is estimated that 5.7 million Americans suffer with BPD and that 5.1 million Americans suffer with AD. AD leads to nerve cell death and tissue loss throughout the brain causing the brain to shrink dramatically, affecting nearly all its functions. The apolipoprotein E protein (apoe gene) is a cholesterol carrier that is found in the brain and other organs. The protein's exact role in the development of AD is unclear, however the genetic test to verify AD is apoe testing. Scientists estimate that APOE-e4 may be a factor in 20-25% of AD cases. OBJECTIVE: Identify the apoe mutation in AD using bioinformatics. METHODS: We visited approximately fifteen databases and generated a bioinformatics workflow to investigate apoe. RESULTS/ COMPARISON: My aim was to display the actual gene mutation along the T- coffee multiple sequence analysis. CONCLUSION: In order to compliment this project, we need to collaborate with a comprehensive university that has the resources to generate apoe knockout mice with memory deficiencies for clinical evaluation for AD.

05.03.42 Elucidation of the Bile Salt Sensitivity Gene Locus in Escherichia coli

Jim, Bidlack , Angeline Satchell, Anna Graves, Jonna Whetsel Rachael Scott, Sandra Leke-Tambo

University of Central Oklahoma

Investigations are being pursued to isolate, clone, and characterize DNA that appears to be at, or in the vicinity of, the yciS and yciM genes in Escherichia coli. The target DNA encodes for bile salt sensitivity, which, if confirmed, would necessitate a modified description of loci for the genes involved. Currently, we are working with E. coli strains BW25113, JW1271, JW1272, JC3272F, and JC3272I. We are amplifying DNA with primers for the genes involved, and then visualizing the products with gel electrophoresis. The team has been successful at amplifying some strains of E. coli. but there have been some challenges with other strains. The next step will be cutting with restriction enzymes and cloning the target DNA through use of a plasmid. This will be followed with transformation of the bile salt sensitive gene into resistant strains to see if this causes wild type bacteria to become sensitive to bile salts.

05.03.43 Further Investigations of Photovoltaic Cells Using Plant Pigments

Jim, Bidlack , Baylee Tatum, Brian Tetreault, Hunter Porter

University of Central Oklahoma

Additional experiments are being pursued to determine the viability of using various plant pigments and parts, from the same plant, in dye-sensitized solar (photovoltaic) cells. Cells were created using glass doped with a thin film of tin oxide, one side with titanium dioxide annealed onto the plate and then treated with various plant-derived materials, serving as the anode, and another was coated with graphite, acting as the cathode. Anodes were treated drop-wise with chlorophyll, chloroplasts, and anthocyanin extracted from the leaves of Purple Heart (*Tradescantia pallida*) in order to impregnate the titanium dioxide with dye. Lugol's solution (KI/I₂) was added as an electrolyte and the two cell halves were fixed together using super glue. Cells were then connected to a voltmeter and output was measured. Output of various cell treatments are currently being evaluated in a longevity study using a Pico Recorder. At this time, treatment cells are producing at least 200 millivolts (open circuit) with some cells boasting over 1,000 millivolts of output for periods of time.

05.03.44 Assessment of the Bile Salt Sensitivity Gene Locus in Escherichia coli

Jim, Bidlack , Angeline Satchell, Anna Graves, Jonna Whetsel Rachael Scott, Sandra Leke-Tambo

University of Central Oklahoma

This project focuses on a chromosomal mutation which may cause bile salt sensitivity in *Escherichia coli*. Previous experiments have shown that the mutation is located at or near the *yciS* and *yciM* genes. The current focus of the research is to confirm that the mutated strain of *E. coli* shows bile salt sensitivity. To demonstrate bile salt sensitivity, a process similar to a minimum bactericidal concentration test is performed on five strains of *E. coli*, including the mutated strain, a wild type strain, a common laboratory strain, and two knock-out strains - one lacking the *yciS* and another lacking the *yciM* gene. A sister project is currently evaluating the sequence of the mutation using a polymerase chain reaction to pinpoint and replicate the site of the mutation. Once both components of the project are complete, the mutated sequence will be cloned and placed into a plasmid in an attempt to transform a resistant strain into a sensitive strain. The results from this experiment will provide information for modified descriptions of the *yciS* and *yciM* genes.

05.03.45 The Economic Impact of Plant Molecular Farming and it's Increasing Popularity of Potential Use in the Medical Community

Shaina, Riggs , Kevin Wang

Northeastern State University

Plant molecular farming (PMF) is the industry of harvesting genetically modified plants for the use of recombinant protein in vaccines, antibodies, as well as other medicinal, therapeutic, agricultural, and economical purposes. The practice of molecular farming involves inserting DNA, with specifically encoded sequences, into an organism's genome via selective markers thus creating recombinant proteins used in the end product. The technique of transforming plastids emerged in the late 1980's and is currently making its way to consumer use. Even as the process is well under way, there are still many biosafety concerns that must be addressed and resolved before these products reach the consumer. Despite the risks, PMF could prove invaluable for developing countries that are unable to acquire necessary medicines and vaccines due to high market values. The costs associated with production, purification, storage, and transportation are substantial and PMF could prove to be a much cheaper alternative.

05.03.46 A Proteomic Approach to Identify Novel Interactions of MCM10

Bobby, Bezinque , Chance Hendrix, Dillon Cave, Sapna Das-Bradoo

Northeastern State University

A proteomic approach to identify novel interactions of Mcm10 Bobby Bezinque, Dillon Cave, Chance Hendrix and Sapna Das-Bradoo Department of Natural Sciences, Northeastern State University-Broken Arrow Maintenance of genome integrity is essential for cancer cells. Problems in DNA replication can lead to an unstable genome. One protein that has been implicated in this process is MCM10. Recent studies have shown that down regulation of MCM10 can cause genome instability which can eventually lead to cancer. Mcm10 is a conserved eukaryotic DNA replication factor that is known to interact with other DNA replication proteins. The focus of our research is to understand how Mcm10 functions to prevent our DNA from damage. To address this question, we decided to purify Mcm10 and understand its interaction at molecular level. We used budding yeast as a model system for our study. We first purified His-tagged Mcm10 from yeast using Nickel-NTA columns. This process was done under non-denaturing conditions. We were successful in purifying yeast Mcm10. This was confirmed by SDS-PAGE and Coomassie Blue staining. Our future studies are focused on scaling up this process to obtain a large amount of purified protein concentrate which will be then analyzed by mass spectrometry. Furthermore, we would like to study these interactions of Mcm10 under normal DNA replication and DNA damage conditions.

05.03.47 Elimination Processes of the Selectable Marker

Samantha, Huffman

Northeastern State University

05.03.48 Effect of Membrane Elasticity on the Assembly of HIV Gag Proteins in vitro

Rui, Zhang , Christine Morse, Donghua Zhou

Northeastern State University

The Human Immunodeficiency Virus (HIV) is the cause of the acquired immunodeficiency syndrome (AIDS) and therefore a very important type of virus to study. The assembly of HIV follows a unique pathway: The viral capsids are assembled right on the membrane of the host cell. The membrane is stretched and bent when the viral capsids are assembled and budded out. Therefore, the elasticity of the membrane should play an important role in the assembly process. In this study, giant unilamellar vesicles (GUV) with different lipids of different elasticity are formed in vitro, and Gag proteins, the main structural proteins of HIV, are injected to assemble. We use both electron microscopy and flue recent microscopy to detect the assembled virus-like particles. Our preliminary result shows that the elasticity of the membrane indeed affects the assembly product and speed. This work may help understanding the mechanism of HIV assembly and shed light on assembly-oriented medical treatments of AIDS.

05.03.49 An Organotrophic Medium as a Substitute for Stolen Chloroplasts

Stephen, Fields , Kaitlyn Riddle

East Central University

Gymnodinium acidotum is a freshwater dinoflagellate that employs a nutritional strategy known as kleptoplasty. The dinoflagellate ingests *Chroomonas coerulea*, a unicellular cryptophycean alga that has a single chloroplast. Organelles of the prey cell are sequestered within *G. acidotum* for weeks, and the dinoflagellate depends on photosynthates from the stolen chloroplasts for sustained growth. The purpose of this study is to produce cryptomonad-free *G. acidotum* cultures, because the presence of the cryptophycean organelles has complicated characterization of the *G. acidotum* genomic sequence and gene expression. In order to obtain axenic, aplastidic cultures of *G. acidotum*, supplementary organic compounds must replace products ordinarily furnished by the kleptoplasts and bacterial flora. Bacteria-free cultures are first produced through treatment with a cocktail of cell-wall inhibiting antibiotics that includes meropenem, cephadrine and carbenicillin. Dinoflagellates are then suspended in F6 medium (an inorganic algal medium) enriched with glucose, glycerophosphate, histidine and glycine. Dinoflagellate populations continue to divide and grow in this media for several weeks, but eventually die, even after subculturing to fresh, enriched media. This indicates a deficiency of complex, organic substrates. We are currently testing dilute versions of *Saccharomyces cerevisiae* complete media, which supplies the range of amino acids, an ammonia-based nitrogen source and glucose.

05.03.50 A Helminth Parasite Survey of the Sonoran Mud Turtle (*Kinosternon sonoriense*): Implications of the Evolution of Parasite Resistance

Kristen, Bliss , Chris Butler, Paul Stone, Wayne Lord

University of Central Oklahoma

The parasite-host relationship has been thoroughly documented across many taxa; its implications are wide-reaching with the propensity to affect overall host population health, fitness, community structure, and the biodiversity of many species and ecosystems. Disease resistance has long been thought to have strong genetic and possibly even environmental components with studies suggesting heritable parasite resistance among both wild and domestic populations. The Sonoran mud turtle (*Kinosternon sonoriense*) provides a unique opportunity to explore parasite burdens within a stochastic environment prone to severe seasonal water fluctuations. Fecal samples were opportunistically hand-collected during routine sampling from May 2012-August 2013 and preserved onsite using Zinc-PVA solution or 10% Formalin solution. Samples were concentrated and examined under light microscopy for the presence of Helminth eggs. One sample was found to contain trematode eggs of the genus *Telorchis* (Trematoda: Telorchiniidae) in low abundance (3-5 eggs/ 0.05 mL). These findings indicate a parasite prevalence of 3% within these populations. This level of infection is well below the majority of published studies within wild, aquatic turtles and could suggest enhanced systems of parasite resistance. Further investigation into the possible causes for such low parasite burdens and the origins of parasite resistance within this species is warranted.

05.03.51 The Transcriptome of a Kleptoplastidic Dinoflagellate and its Cryptomonad Prey

Stephen, Fields , Brent Biddy, Josh Belcher

East Central University

Gymnodinium acidotum ingests and sequesters chloroplasts and other organelles from *Chroomonas coerulea*, a blue-green cryptophyte. This mode of nutrition, known as kleptoplasty, may represent an early stage in the route to chloroplast acquisition. The purpose of this investigation is to utilize RNA-Seq and quantitative PCR to elucidate the genetic regulation of kleptoplasty. For RNA-seq, *C. coerulea* and *G. acidotum* RNA was isolated with the Qiagen RNeasy reagents, and cDNA libraries for Next Generation Sequencing were constructed with the TruSeq RNA sample preparation kit. Sequence was obtained from the Illumina HiSeq 2000 platform, and the assembled transcriptome data was annotated by BLASTX homology searches against protein databases and mapped to pathways using the KEGG annotation service (KAAS). Primers for cryptophyte genes encoding proteins participating in photosynthesis will be used for Real Time PCR to quantify expression of the transcripts in single cells of *C. coerulea* and *G. acidotum*. In this way, we will begin to identify genetic components of the cryptophyte that remain functional during sequestration and can track changes in expression as kleptoplasts age within the dinoflagellate.

05.03.52 Molecular Mechanisms of Calcium Regulation in *Pseudomonas aeruginosa*

Michelle, Waner , Kerry Williamson, Manita Guragain, Marianna PatrauchanMicheal Franklin

Oklahoma State University

Pseudomonas aeruginosa is an opportunistic pathogen that causes nosocomial infections and chronic infections in the lungs of cystic fibrosis patients. Previously we have shown that calcium (Ca^{2+}) induces virulence in *P. aeruginosa*. Genome-wide microarray analysis identified a two-component regulatory system PA2656-PA2657 to be highly induced by 10mM Ca^{2+} . Bioinformatic analysis revealed that PA2656-PA2657 two-component system is highly conserved among all sequenced pseudomonads. Microarray analysis of the mutant lacking a transcriptional regulator PA2657 showed that PA2657 positively regulates two genes encoding predicted periplasmic proteins PA0320 and PA0327. We hypothesized these proteins play a role in Ca^{2+} homeostasis and Ca^{2+} induced virulence in *P. aeruginosa*. Mutants with disrupted PA2657, PA0320 and PA0327 were tested for survival at high Ca^{2+} concentration. The lack of PA0327 caused significant reduction of growth at 10mM Ca^{2+} . Swarming motility is known to be required for biofilm formation in *P. aeruginosa*, and earlier has been shown to be induced by Ca^{2+} . Therefore, the mutants were also tested for Ca^{2+} -induced swarming. Although, there was no effect on swarming distances, the mutant lacking PA0327 showed strikingly different colony morphology and a lack of pigment when grown at 10mM Ca^{2+} . Current experiments aim to study the role of PA0327 in Ca^{2+} -induced pyocyanin production. Future studies will focus on the role of PA2656-PA2657 in *P. aeruginosa* virulence.

05.03.53 Two Proteins may Preserve Red Algal Photosynthesis from High Light Damage

Sukyoung, Kwak , Steven Karpowicz

University of Central Oklahoma

One helix protein (OHP) is associated with the photosynthetic apparatus in green plants and is necessary for recovery of photosynthetic activity after exposure to high light levels. Photosynthesis is well-studied in green plants, but not in other photosynthetic eukaryotes. Red algae are distant relatives to green plants. In the red alga *Porphyra umbilicalis* (nori), we have identified several genes encoding proteins that are homologous to proteins involved in protection of photosynthetic ability in green plants. To identify whether the function and regulation of *Porphyra* OHP is similar to green plant OHP, we are using *Chlamydomonas reinhardtii*, which is a green alga and *P. umbilicalis* to examine mRNA gene expression. Green plants' OHP mRNA and protein expression responds to high light intensity, so we will investigate the regulation of the protein by checking expression of *Porphyra* OHP mRNA before and after high light levels by using qPCR. We created an artificial microRNA to knock down expression of the OHP gene in *Chlamydomonas*, performed molecular cloning of the amiRNA, transformed *E. coli*, and isolated the plasmids that have amiRNA insert. We are transforming *Chlamydomonas* with the plasmids and expect the cells to have a high light-sensitive phenotype. We will then perform a genetic complementation of *Chlamydomonas* with the homologous *Porphyra* OHP gene. We intend to demonstrate the function of *Porphyra* OHP and whether it would have the same function as green algae OH

05.03.54 A Review of Moxibustion

Tanner, Ryan

Northeastern State University

I compiled some information on the subject of Moxibustion. Moxibustion has some real and positive effects on the body. Moxibustion is a treatment that stimulates specific acupuncture pressure points that of the body. This is accomplished by burning a herb at these points on the body. The points on the body where these herbs are burnt stimulate blood flow in different areas of the body, this allows moxibustional therapy to nerves, stroke, and other physical ailments of the human body.

05.03.55 Caffeine Effects on Myofibroblasts: A Class Research Project

Melville, Vaughan

University of Central Oklahoma

Caffeine has been tested in vitro on cardiac muscle cells and its effects are well known. Recently caffeine was shown to reduce fibrotic conditions in animal studies. Since myofibroblasts participate in fibroses, our goal was to determine whether caffeine affected the myofibroblast phenotype. This project was undertaken by the Molecular Cell Physiology class in the Biology Department at UCO. Research teams of 3-4 students each used a specific assay to test caffeine's effects. Students cultured rat dermal fibroblasts in the presence of transforming growth factor-beta to induce myofibroblasts, and in the presence or absence of 5mM caffeine. When fibroblasts were grown under immediate tension, caffeine mostly affected cell shape and reduced proliferation. When cells were grown in collagen lattices, where tension is generated slowly, cells became rounded and died. These differences suggest that caffeine greatly affects rat dermal fibroblasts' ability to function under reduced tension conditions. The goal of this semester's class is to determine what effect caffeine will have when tension is already generated in the collagen lattice.

05.03.56 A review of Electronic Cigarettes Student: Doreen Yang Instructor: Dr. Kevin Wang, Northeastern State University

Doreen, Yang

Northeastern State University

Electronic cigarettes are used primarily to quit smoking. While they may possibly be helpful for this purpose, numerous suspects are concerned about potential toxicity. There are few and scarce studies posted publicly on electronic cigarettes that suggest research is urgently essential, primarily on the efficiency and toxicity of these devices. I review the current evidence on the safety and effectiveness of electronic cigarettes. Some of the study cases selected electronic cigarettes that were most popular in markets, while others did surveys of volunteers who were users and non-users of electronic cigarettes. Levels of nicotine were analyzed using gas chromatography. Electronic cigarettes were purchased online from vendors and analyzed, concluding the levels of nicotine as lower compared to regular cigarettes. Though they are not FDA approved, they still seem to be available everywhere from the internet to the mall. More severe chemical studies are necessary, along with extensive research.

05.03.57 Initial Steps towards Understanding the Role of Autophagy in Neurons

Elizabeth, Jansing , Andrea Holgado, Austin Bradshaw, Timothy Stein

Southwestern Oklahoma State University

Cellular autophagy or self-eating is an essential metabolic process by which cells recycle organelle's components and macromolecules. Research from animal models of Alzheimer's disease has shown that autophagy protects nerve cells from degeneration through a molecular mechanism that is not fully understood. To better understand the neuro-protective role of autophagy in the brain we began investigating LGG-1, a molecular marker of autophagy induction. Preliminary data obtained using *C. elegans* demonstrated that LGG-1 accumulates in cells with induced autophagy, suggesting that this protein could be used to monitor autophagy induction. Based on these studies we hypothesized that expression of LGG-1 in neurons will allow us to examine autophagy under normal and disease conditions. To test this hypothesis we began engineering a modular plasmid containing a neuronal promoter and the sequences of mCherry in frame with LGG-1. Thus far we have already obtained the mCherry sequence as well as the LGG-1. We will further continue by inserting these two sequences into the plasmids containing promoters for the expression in cholinergic and GABA-ergic neurons. Once these plasmids are produced they will be injected into *C. elegans* and autophagy induction will be investigated.

05.03.58 Traditional Chinese Medicine and Its Impact on Western Medicines

Ofelia, Patrick , Kevin Wang

Northeastern State University

Oriental medicine also known as traditional Chinese medicine (TCM) has been around for thousands of years. Herbology and acupuncture are different practices within Chinese medicine. This research will focus mainly on Chinese herbology and its development in Western medicine. What is herbology? Traditional Chinese herbal medicine (TCHM) includes the use of whole plants, minerals, and some animal substances to promote natural health and healing. With TCM, health is seen as a balance between the outside world and our functional entities (aging, breathing, digestion, etc.). When disease occurs, it is because there is a lack of balance between the two. Chinese herbology uses natural elements to restore the balance. Some of these medicines include herbal teas, tonics, roots & herbs, powders, and other forms of medicine. These herbal formulas are easily digested by the body and aid as natural remedies for digestion, pain, sleep, body ailments, and other health problems. The use of Chinese herbology has been incorporated into Western medicines within the last 150 years. This research will focus on different methods and practices from TCHM that have been modernized and in use in the Western world and today's society.

05.03.59 VGLL4 Functions as a New Tumor Suppressor in Lung Cancer by Negatively Regulating The YAP-TEAD Transcriptional Complex (Review)

Ahmed, Zendah

Northeastern State University

THIS IS A REVIEW OF DR.WENJING'S RESEARCH PAPER:"VGLL4 Functions as a New Tumor Suppressor in Lung Cancer by Negatively Regulating The YAP-TEAD Transcriptional Complex." Each year, people over the age of 45 have passed away because of lung cancer due to second hand smoke or by smoking cigarettes themselves. Dr. Wenjing and colleague research scientists have been working tirelessly on ways to counter the effects of cancer cells multiplying and growing in different regions of the body. Recently, scientists have found a certain protein-coding gene called VGLL4 to be a tumor suppressor gene that helps hinder the advancement of lung cancer cells by interfering with the activity of Yes-associated (YAP) oncogenes, transcriptional enhancement factors such as the TEAD gene, and the Hippo signaling pathway.

05.03.60 Determining the Effects of Narciclasine on Myofibroblast Differentiation

Madeline, Mahoney , Marko Ilikj, Melville Vaughan

University of Central Oklahoma

Myofibroblasts are cells that differentiate from fibroblasts. They are characterized by the expression of α -smooth muscle actin stress fibers. TGF- β 1 can differentiate myofibroblasts from fibroblasts through the Rho-kinase pathway. Narciclasine is a plant growth modulator that was shown to be a Rho-kinase activator, as well. However, narciclasine can also induce apoptosis in cells. Our goal was to determine whether narciclasine affects myofibroblast differentiation. To test this we grew normal human fibroblasts in the presence of TGF- β 1 to promote the myofibroblast phenotype, followed by narciclasine treatment. Cells were plated and stained in four groups that included a control, narciclasine only, TGF- β 1 only, and TGF- β 1 with narciclasine treatments. Myofibroblasts were identified by expression of alpha-smooth muscle actin deposited into cytoplasmic stress fibers. The results showed a significant increase of myofibroblasts in the narciclasine treated group, when compared to control. In addition, narciclasine did not upregulate the cells already treated with TGF- β 1. These results suggest that the upregulation of Rho-kinase done by narciclasine is not significantly more than that done by TGF- β 1. Studies are underway to determine whether narciclasine affects the ability of myofibroblasts to generate tension.

05.03.61 Chinese Herbology

Wyll, Okda , Kevin Wang

Northeastern State University

Wyll Okda and Dr. Yueju Kevin Wang Faculty Advisor: Dr. Yueju Kevin Wang Chinese herbal medicine is a traditional Chinese medicine that has been practiced for thousands of years and continues to make advancements despite modern scientific medicine. China currently uses over million tons of herbs yearly, with licorice being the most widely used. The use of Chinese herbal medicine is to reinstate a sense of balance within the body, spirit, and energy. There is wide spread of practice for herbal medicines. Different types of herbs or extracts can perform different treatments and prevention diseases from occurring. It is vital to understand that not all herbs possess a single quality, but have a certain mixture of properties and temperatures that can effect up to twelve organ systems. There is different ways to classifying the herbal medicine but the two most commons are in the form of nature and flavor. The four natures include cold, cool, neutral, warm, and hot. The five flavors are sweet, salty, sour, bitter, and pungent. Although herbal medicine may contain contaminants and there is modern scientific medicine that could be more efficient use of treatment; however, herbal medicine has been practiced since the beginning of mankind, typically include less side effects, and is completely all natural

05.03.62 Phylogeography of Sonoran Mud Turtles in a Fragmented Landscape

Laura, Kimmel , Michelle Haynie, Paul Stone

University of Central Oklahoma

Phylogeography is the study of the geographic distribution of genetic lineages. When well-planned and executed, phylogeographic analyses can show historical patterns of gene flow and genetic isolation. Naturally fragmented freshwater habitats often create replicated natural experiments well-suited to phylogeographic study. The often subdivided topography of individual mountain ranges in the Madrean Sky Islands make the habitat ideal for studying genetic variation of the Sonoran mud turtle at three levels: within drainages, among drainages, and among mountain ranges. Our goal is to obtain whole blood samples from 20 individuals per drainage for three discrete drainages per range for a minimum of four ranges. To date, we have sufficient samples from the Peloncillo, Galiuro, and the Huachuca Mountains, and two complete populations from the Pajarito Mountains. After DNA extraction from available samples, I amplified and sequenced 400 bp of the left domain of the mitochondrial DNA D-loop for 22 samples across three mountain ranges. Initial analysis of the sequences indicated only two probable diagnostic nucleotide differences among individuals. We have designed new primers to determine if the right domain of the D-loop will show more variation. Future research will focus on obtaining DNA sequences from all available samples as well as obtaining blood samples from the remaining population in the Pajarito Mountains.

05.03.63 Mapping Avall and PvuII Restriction Enzymes on pUC19 is affected by Methylation

Muatasem, Ubeidat , Nick Whalen, Shasta Jones

Southwestern Oklahoma State University

Mapping restriction enzymes on plasmids is a tool used by molecular biologist to design cloning strategies and probes in addition to many other useful purposes. These enzymes were isolated from bacteria and named according to the source. Bacteria use these enzymes to protect itself from foreign DNA that is either injected into the cell by viruses (transduction) or acquired from the environment or from other bacteria. The bacterium that is the source of the enzyme has methylase that adds methyl groups to the restriction site to prevent the enzyme from digesting its own restriction site in the bacterial genomic DNA. Methylated restriction enzyme sites cause problems if they are not known. In our principles of biology I lab, students learn mapping of Avall and PvuII restriction enzymes on pUC19 plasmid. They do so by digesting the plasmid with each enzyme separately and then both together (double digest). Based on the bands sizes, a map can be constructed. Over the years, pUC19 was purchased directly from New England BioLabs (NEB) without knowing if the preparation of the vector was performed in methylase negative (dam-/dcM-) or methylase positive bacteria. The double digest with both restriction enzymes showed a mixture of both a methylated and nonmethylated vector. This made the mapping very difficult to study and the map difficult for the students to construct. In our lab we are in the process of clarifying this and providing solutions for this problem.

05.03.64 Mycosporine-like Amino Acids in Oscillatoria Limnetica

Murray, Verbonitz , Ratnakar Deole

Northeastern State University

Mycosporine-like amino acids (MAA) are small molecules that contain a central cyclohexenone or cyclohexenimine ring and a wide variety of substitutions. MAAs absorb UV light that can be destructive to biological molecules like DNA, RNA, Proteins, etc. MAAs are wide spread in the microbial world and have been reported in many microorganisms including eubacteria, cyanobacteria, micro-and macro-algae, as well as some multi-cellular organisms. In the present study we investigated cyanobacterium *Oscillatoria limnetica* isolated from solar lakes often exposed to UV stress, for production of MAA. The cyanobacterium was found to synthesize a single MAA, mycosporine-glycine (absorption maximum at 310 nm) when isolated and purified by high-performance liquid chromatography grown under UV stress. MAA induction in presence of other stress factors such as pH, salt and temperature was also checked. The present study provides a first insight into MAA biosynthesis in genus *Oscillatoriae* and thus widens the field of research for molecular analysis of these evolutionary and industrially important compounds.

05.03.65 Biodegradation of an Azo dye by Citrobacter Freundii

Kj, Abraham , Chelsi Black, Nicholas Simon

Langston University

Citrobacter freundii is a human intestinal bacterium capable of breaking down azo dyes. Azo dyes are generally considered to be compounds that are synthesized or of natural origin. Lot of attention on this field is towards microorganisms from the human intestine that are involved in the metabolism of azo dyes ingested as food additives. Hundreds of these dyes and their degradation products are carcinogenic in nature. They not only get into our bodies via water, but also through inhaling and ingestion of food. The aim of this research was to study biodegradation of a reactive dye, direct blue 15 by C. freundii. The hypothesis is that C. freundii will be able to decolorize and degrade the azo dye into one or more compounds. Varying concentrations of the substrate, the direct blue15 were used for enzyme assay. Results demonstrated decolorization of the dye by the bacterium. Future studies will focus on the analysis of the compounds and characterization of the enzyme involved in biodegradation.

05.03.66 Generating Caenorhabditis elegans UNC-33 Antigens to be Used for the Synthesis of Polyclonal Antibodies

Mason, Howe , Andrea Holgado, Jacob Fuller, Matthew AbbottMichael Caniglia

Southwestern Oklahoma State University

UNC-33, the C. elegans homolog of the collapsin response mediator protein-2 (CRMP2), has been demonstrated to be involved in neurodegenerative disorders, primarily Alzheimer's Disease. However, the physiology and interactions of these associations are vague. In order to further understand UNC-33, our group decided to use molecular biology and work toward the production of polyclonal antibodies specific to UNC-33. To do this, we first produced plasmids by incorporating the nucleotide sequences for the UNC-33 into the GST tag Gene Fusion System. Next, we began with the production of two antigens UNC-33 amino acid 48 to 212 and UNC-33 amino acid 48 to131 (UNC-3348-212 and UNC-3348-131). During this process, we developed the parameters of an efficient protocol for the expression and purification of these polypeptides. Once we established an effective protocol, we performed numerous batches of expression and purification, and tested the purity of GST fused UNC-3348-212 and UNC-3348-131. Overall, these procedures resulted in the production of 1.24 mg/mL and 0.84 mg/mL of GST fused to UNC-3348-212 and GST fused to UNC-3348-131, respectively. Currently, these purified polypeptides are being injected into laboratory animals for the generation of polyclonal antibodies for two of the three UNC-33 isoforms. To complete our molecular toolkit, we are producing a third UNC-33 antigen that will detect all three UNC-33 isoforms furthering the knowledge of the UNC-33 protein family.

05.03.67 Minimum Tensional Requirement for Proliferative Myofibroblasts

Julie, Hamilton

University of Central Oklahoma

This study continues research development in the proliferation of myofibroblasts. Fibroblasts are extensively important in the area of wound healing, and found prevalently in connective tissue. Fibroblasts are able to differentiate into myofibroblasts, which are more highly contractive than their predecessors. Their growth and contracture strength are heavily dependent on tension generation, therefore this study aims to find the approximate minimum amount of tension required for successful myofibroblast proliferation of DP147htert cells in a stress-released collagen matrix. This will be done by setting DP147htert cells in a collagen matrix and allowing separated lengths of growth to occur. Upon each respective time lapse I will sample the matrices, stain and photograph them using an immunofluorescence microscope. I will be able to determine when minimal tension was achieved by pin-pointing the time frame in which the proliferation of regular fibroblasts into their brighter, stress-fiber containing counterparts, myofibroblasts. I expect to find that proliferation occurs approximately 3-4 days into tension generation. Through studying these proliferative effects of fibroblasts and myofibroblasts, a better understanding of their unique properties and life cycles will be gained, leading to opportunities to potentially study wound healing in the most molecular of levels.

05.03.68 Review: Rice-Based Oral Antibody Fragment Prophylaxis and Therapy Against Rotavirus Infection

Ricky, Yang

Northeastern State University

Rotavirus is the leading cause of diarrhea in infants and young children worldwide, mainly in developing countries. I reviewed this study by (Dr. Tokuhara et al., 2013) in which a transgenic rice-based, orally administered product against rotavirus is created by producing rice expressing an antibody fragment, ARP1 (MucoRice-ARP1). MucoRice-ARP1 rice powder or rice water offer a novel approach to the prevention and treatment of rotavirus-induced diarrhea, which could reduce the medical and economic burden in both developed and undeveloped countries. To test this, mice were used as test subjects. Orally administered MucoRice-ARP1 greatly decreased the viral load in immunocompetent and immunodeficient mice. Heat treated MucoRice-ARP1 at 94°C for 30 minutes, used prophylactically significantly reduced the percentage of animals with diarrhea on day 2 of the experiment. Long-term stored MucoRice-ARP1 applied prophylactically also significantly reduced the incidence of diarrhea and disease severity. In this experiment (Dr. Tokuhara et al., 2013) showed MucoRice-ARP1 to successfully prevent and treat RV-induced diarrhea.

05.03.69 The Role of CRMP in Proper Synapse Formation in Drosophila

Caleb, Hubbard

Other

Proper synapse formation is essential to the development of a functional nervous system. Numerous genes regulate each step of this process, from axonal specification and elongation to the location of the correct neuronal partners. Collapsin response mediator protein (CRMP) is a phosphoprotein known to regulate several aspects of neuronal development and synaptogenesis. CRMP has been associated with several pathological disorders and neurological diseases. However, the specific mechanisms of this protein have yet to be fully elucidated. In the model organism *Drosophila*, a prior genetic screen has identified CRMP as necessary for proper development of the R7 photoreceptors. The screen revealed that the R7 photoreceptors in the retina of *crmp* mutants do not form a synapse in the correct layer of the medulla. This suggested that the *crmp* gene may be required for normal neuronal development. If this is true, we would expect mutants to display phenotypes in the neuronal physiological function and in the morphology of synapse formation. We tested this prediction with two approaches: To test the functionality of these mutant photoreceptors we conducted electroretinograms (ERG's) in adult *Drosophila*. To examine synapse morphology, we tested whether the numbers of synaptic boutons along the neuromuscular junction differ in the mutant phenotype in *Drosophila* larvae compared to wild type. We found phenotypic differences in both electrophysiological function and developmental mor

05.03.70 High Success Of Subordinate Male Social Tactics And Female Promiscuity Promote Sexual Conflict In Collared Lizards

Joshua, York , Michelle Haynie, Troy Baird

University of Central Oklahoma

I tested the extent to which mating relationships among collared lizards were driven by intrasexual competition among males displaying territorial and non-territorial social tactics, or adaptive mating choices by females over three seasons when local sex ratios (LSR) varied markedly. Surprisingly, neither the distribution of reproductive success, nor mating success among males, varied with LSR. Territorial and non-territorial males achieved similar mating success and reproductive success in all three years. Although females were equally promiscuous with a similar number of territorial and non-territorial males in all three seasons, promiscuity decreased offspring survivorship. Because females do not appear to have any adaptations that balance these costs, this suggests that females are 'making the best of a bad job' by accepting unwanted copulations. The cause of sexual conflict and the high success of non-territorial males may be linked to the homogenous, continuous topography of the human-constructed habitat at our study site, which differs substantially with that of the natural habitat of collared lizards.

05.03.71 Ampicillin Resistant Bacteria From Waste Water Treatment Plant

Eric, Paul , Cody Moulton

Southwestern Oklahoma State University

The occurrence of antibiotics in the environment has become a public concern. Recent environmental monitoring activities reveal the presence of a broad range of pharmaceuticals in soil and water. The emergence of bacteria resistant to antibiotics is common not only in areas where antibiotics are used, but are increasingly occurring in aquatic environments. Studies show that municipal waste-water treatment plants (WWTPs) are important point sources of antibiotics and antibiotic-resistant bacteria in the environment. The main objective of this work was to study the antibiotic resistant bacteria in raw and treated waste-water from a local municipal waste-water treatment plant (WWTP) that receives domestic and pretreated industrial effluents in Weatherford, OK. Raw and effluent water from the treatment plant were used to isolate Ampicillin resistant bacteria. A Gram positive and a Gram negative isolate were identified. The isolates were tested against various other antibiotics using the disk diffusion method and found to be resistant to multiple antibiotics. Each of the isolates did harbor a plasmid and the plasmids were of a different molecular weights. The plasmids are being characterized.

05.03.72 Orientation of Burrows in Cynomys ludovicianus

Matthew, Bryson , Chris Butler, William Caire

University of Central Oklahoma

The black-tailed prairie dog (*Cynomys ludovicianus*) is native to the Great Plains of North America. A social animal, *C. ludovicianus* lives in towns which provide protection against predators by combined surveillance. The purpose of the study was to determine whether the openings to the burrows at the perimeter of the town were oriented away from the center, which would facilitate detection of predators. Oklahoma study sites were located at Elmer Graham Toll Plaza near Lawton and Beaver River Wildlife Management Area, and were visited from 19-20 October and 15-17 November, 2013 respectively. Locations of burrows were plotted using GPS. Magnetic azimuths of the burrow openings were taken with a lensatic compass. Data were plotted using QGIS to create a map of the burrows in the town and vectors for perimeter burrows were created from a derived centroid. The deviation of the azimuth from each vector was calculated, categorized into 12 groups, and analyzed by a χ^2 test. The orientations of burrows at the perimeter of the colony were randomly distributed. This is in line with previous studies suggesting that prairie dog burrows are used for ventilation.

05.03.73 Response of Chlamydomonas reinhardtii to Medium Viscosity

Thi, Nguyen , Gang Xu, Huong Do, Steven Karpowicz

University of Central Oklahoma

The single cellular alga *Chlamydomonas reinhardtii* is a model organism involved in many research areas of biology, especially cilia structure and function. Its locomotion is provided by its cilia. Cells of this species can grow on a simple medium of inorganic salts, using the molecule acetate as well as photosynthesis as sources of carbon and energy. The objective of this study is to determine whether physical forces experienced by the cell affect gene expression, and whether gene expression influences cilia behavior. Specifically, we are determining whether different medium viscosities will affect cilia function and influence gene expression. We tested if medium viscosity affected growth rate, but the results indicated no significant difference. However, cells do show a 7-fold decreased velocity in more viscous growth medium. RNA isolation is being performed and will be followed by RNA sequencing to determine gene expression patterns in cells grown in the different medium viscosities.

05.03.74 Scientists Easing Concerns about Genetically Modified Food by Removal of the Selectable Marker

Alexia, Dickey , Kevin Wang

Northeastern State University

Transgenic plants, (commonly known as genetically modified organisms) are useful for a variety of reasons: creating healthier crops, increasing the number of crops we are capable of producing, and cheaply mass-producing medications. The transgenic plants are created by giving a plant a desirable trait that it otherwise would not have. A selectable marker is then used to ensure the gene of interest has been successfully inserted into the plant's genome and then isolated. The selectable marker is an antibiotic or herbicide resistance gene that tags along with the gene of interest on a vector which inserts itself into the genome of some of the plant's cells. The antibiotic kills off all the cells that have not been transformed. Horizontal gene transfer between plants and microorganisms is a big concern among consumers. If the antibiotic resistance gene is transferred to bacteria, then the bacteria would become resistant to the antibiotic also; this contributes to the growing problem of antibiotic resistance among bacteria. One way of suppressing some of the controversy associated with genetically modified organisms is by eliminating the selectable marker through microbial site specific recombinases. An enzyme would literally cut out the marker after the plant has been transformed, eliminating the antibiotic resistance gene while leaving the desired trait intact.

05.03.75 Plankton Survey of Tulsa Botanic Garden Lake

Patty, Smith , Dalia Acosta

Tulsa Community College

Plankton samples were obtained from the Tulsa Botanic Garden lake through the months of September, October, and November of 2013. The Garden is located on 160 acres of pristine Cross Timbers and prairie ecoregions. This site provides a unique opportunity to survey plankton samples and understand plankton succession in a recently man-made lake. The plankton samples were examined for both phytoplankton and zooplankton identification.

05.03.76 Molecular Cloning and Protein Expression of a Heart Disease-Indicator Protein

Eun Kyung, Shin , Mohammad Hossan, Steven Karpowicz

University of Central Oklahoma

The protein cardiac troponin I (cTnI) is expressed exclusively in heart tissue and is important to heart muscle relaxation. Typically, the concentration of cTnI in the blood is negligible and cannot readily be detected, but cTnI concentration can increase to 0.08 ng/ml during cardiac cell death, such as occurs before and during cardiac arrest. To improve diagnostic tests for this heart-health indicator protein, we are interested to express cTnI and demonstrate that microfluidics can be used to concentrate the protein to a detectable level. Here, we describe our ongoing project of molecular cloning of the cTnI gene into an expression plasmid, transformation of *E. coli* with the plasmid, and expression and isolation of cardiac troponin I.

05.03.77 Chemical Composition of Femoral Gland Secretions in Male Collared Lizards

Abigail, McGee , F.N. Albahadily, John Bowen, Thomas JourdanTroy Baird, Wayne Lord

University of Central Oklahoma

Chemical signals, in the form of femoral gland secretions, are used by lizards having well-developed chemoreception (e.g. Scleroglossans; Teiidae, Scincidae) to communicate intraspecifically. Although they have highly developed visual signaling, male collared lizards (*Crotaphytus collaris*) also produce secretions from femoral glands, and periodically sample these secretions by licking the substrate, which suggests chemical signaling as well. We analyzed the femoral gland secretions of male collared lizards (N=6) using gas chromatography-mass spectrometry. Results suggest compounds that are also found in the femoral secretions of *C. collaris* are similar to compounds in the secretions of a congener, *C. bicinctores*, as well as those of some scleroglossan lizards. Six of these compounds are similar to those identified in femoral gland secretions of *C. bicinctores*, and one of them is the compound that has been identified in scleroglossans as a signal of RHP. Future research will examine this possibility by comparing the levels of hexadecanol in territorial versus non-territorial collared lizard males.

05.03.78 Review of Traditional Chinese Medicine versus Western Culture Drugs in the Treatment of Alzheimer's Disease

Kelsey, Perry , Kevin Wang

Northeastern State University

Alzheimer's disease is characterized by progressive loss of memory and cognitive ability. While there is no known cure for Alzheimer's disease, drug development over the past several years has yielded medications with the ability to slow the progression of the disease. Traditional Chinese medicine has been used in the treatment of many diseases for thousands of years. Recent studies of the acetylcholinesterase inhibiting abilities of some of these ancient herbs have shown promising results for the treatment of Alzheimer's disease. In a review of clinical trials of traditional Chinese medicine and clinical trials of pure drug medicines of the Western culture, traditional Chinese medicines showed greater acetylcholinesterase inhibitory effect as well as fewer side effects. Results of these studies may prove to be the gateway to integrating traditional Chinese medicine into the treatment of Alzheimer's disease and possibly other cognitive diseases.

05.03.79 Bioinformatics Of Dihydropyrimidinase–Related Protein 2 In Schizophrenia

Amber, German , Sharon Lewis

Langston University

Introduction: Schizophrenia is a mental illness is characterized by a breakdown of thought processes and poor emotional responsiveness. Contrary to what many believe, schizophrenia does not imply a "split personality," or "multiple personality disorder." Rather, the term means a splitting of mental functions. Common symptoms include auditory hallucinations, paranoid or bizarre delusions, and disorganized speech and thinking. As a result, people suffering with schizophrenia have significant social or occupational dysfunction. OBJECTIVES: Identify the gene mutation in drp-2, since it has been implicated in susceptibility to schizophrenia. METHODS: We visited approximately fifteen databases and generated a bioinformatics workflow to investigate drp-2. Anticipated Implications: My aim is to display the actual gene mutation along the T-Coffee Multiple Sequence Analysis. To complete this project, we must collaborate with a comprehensive university that has the resources to generate drp-2 knock-out mice to produce biomarkers.

05.03.80 Review of Plant Pharming of a Full-sized, Tumour-targeting Antibody Using Different Expression Strategies

Shaman, Kidd

Northeastern State University

The goal of the work from authors Maria Elena Villani, et al. was trying to obtain a human antibody against an antigen called tenascin-C (TNC), associated with tumors, and to compare two systems for purifying antibodies based on the quantity of antibody they produce and the quality of the antibodies. To do this, the human gene for immunoglobulin G antibody (H10) is engineered so it can be expressed in plants. Using an affinity-purification process on *Nicotiana tabacum*, it was found to produce 0.6-1.1 mg/kg of the antibody. H10 was then purified from *Nicotiana benthamiana* using a process called the *Agrobacterium*-mediated gene-transfer system. With this process, a gene called the p19 silencing suppressor gene was taken from the artichoke mottled crinkle virus and used in the purification process. This process yielded a much higher 50-100 mg/kg of H10, and produced antibodies that were shown to be full-sized antibodies that bound to TNC at a rate of 75%, and also accumulated around the blood vessels of tumors. From the data, the H10 purification process from the *Nicotiana benthamiana* was shown to have a higher yield of functional antibodies, which when used in conjunction with the p19 silencing suppressor gene, can lead to a quick, inexpensive way of reproducing H10 using plant pharming. Paper from Plant pharming of a full-sized, tumour-targeting antibody using different expression strategies published in the Plant Biotechnology Journal (2009) 7 pp 59-72

05.03.81 Expression of an Endogenous, Motorless Transcript of Myosin V

Stephen, Fields , Desiree' Lyon

East Central University

The *Caenorhabditis elegans* hum-2 gene is a class V myosin with three predicted alternatively spliced transcripts. The 5.4 kb hum-2A and B transcripts consist of 17 exons spanning 12.8 kb of genomic DNA to give predicted 207 kD products with strong homology to all of the motifs present in mammalian myosin Va. The hum-2C transcript is of particular interest because it would yield a truncated product consisting of a cargo-binding tail but no motor domain. Other than the presence of the myosin V-specific carboxy-terminal DIL motif, there are no other features that would suggest specific functions for the truncated HUM-2 protein. The purpose of this investigation is to localize and quantitate expression of the unique hum-2C transcript. Transcriptional fusions of an internal hum-2C internal promoter with GFP indicate that this transcript is more widespread than the full length transcripts and that it is concentrated in the neurons. A translational fusion of the HUM-2C protein to GFP shows the protein to be localized to particles moving down neuronal axons. Real-time PCR with primers common to all three hum-2 transcripts indicate constitutive expression during different nutritional stages of the lifecycle. We are using primers specific for the unique first exon of hum-2C to track expression of hum-2C under different growth conditions and in different genetic backgrounds. We are also performing bioinformatic analyses to identify similar truncated transcripts in mammalian systems.

05.03.82 Does Habitat Geometry Influence the Social Behavior of Male Collared Lizards?

Cody, Braun , Troy Baird

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Theory predicts that the economics of territory defense should be influenced by variation in the spatial distribution of resources critical for survival and reproduction. Because size and geometry of habitat patches necessarily dictate the configuration of resources, they are expected to influence the cumulative costs relative to the benefits of defense. Territorial male collared lizards should establish territories that promote access to females while minimizing defense costs. Where habitat patches are larger and variable in shape, defense costs may be increased because males must travel further to confront and repel rivals and court females. By contrast, both potential mates and rivals are likely more concentrated on compressed habitat patches. Such a distribution may mandate increased advertisement to rivals, but may also decrease travel costs of defense. Under this hypothesis, males should be able to invest more time and energy courting females. We used quantitative field observations to test the influence of habitat geometry on the behavior of territorial males. Males defending territories on compressed habitat patches courted more different females, more frequently than males defending territories on more expansive patches. By contrast, frequencies of broadcast display and encounters with rival males did not differ. Male occupants of compressed habitat patches probably incur lower costs of patrol, and they appear to invest the extra time and energy in courting females.

05.03.83 Examining the Relationship between Pollinator Size and Nectar Standing Crop Levels in Invasive Plant Populations in Greece and the USA

John, Barthell , H. Wells, JeAnna Redd, John HranitzT. Petanidou, Victor Gonzalez Betancourt

University of Central Oklahoma

Pollinators can be attracted to flowering plant species according to a number of variable rewards. Due to endogenous (e.g., morphology) and exogenous (e.g., competition) constraints, variables such as body size and shape within and among species can correlate with plant reward characteristics. We examined the relationship between body size of bee pollinators visiting plots of the invasive plant species *Centaurea solstitialis* L. and the nectar standing crop levels recorded in those same plots. Our findings show significant differences in average bee body size (estimated with head capsule width) according to average nectar standing crop levels. As a general rule, large-bodied bees visited plots with relatively high standing crops more often than did small-bodied bees. This finding is consistent within and between the island ecosystems where the study occurred, including Lesvos (Greece) and Santa Cruz Island (USA). The results are also discussed in the context of pollinator guild composition and the taxonomic and biological characteristics of bee species visiting *C. solstitialis*.

05.03.84 Using Optogenetics to Study Exocytosis in C. Elegans Motor Neurons

Wil, Markus , Andrea Holgado, Elizabeth St.John

Southwestern Oklahoma State University

Synaptic vesicle exocytosis is a process in which neurotransmitters are released from vesicles in a presynaptic terminal into the synaptic cleft. Fusion of the filled vesicles is made possible by SNARE proteins. The vesicular SNARE protein synaptobrevin interacts with the target membrane SNARE proteins, syntaxin and SNAP-25, creating a SNARE complex, commencing vesicle fusion. Neurotransmitters like GABA and ACh are conserved in the motor-nervous system of humans to C. elegans. Thus, understanding their release properties and regulation is crucial for motor function knowledge in normal conditions and pathological disorders. Utilizing the model organism C. elegans, we propose to study the rate of synaptic vesicle exocytosis via optogenetics, as well as ascertain their regulatory mechanisms. To do so, a plasmid was created that includes a region of genes that will express a pH sensitive, red fluorescent protein called pH Tomato, as well as regulatory sequences that drive expression in cholinergic or GABAergic neurons. The plasmid also contains sequences coding for the amino terminus and transmembrane domain of synaptobrevin, a synaptic vesicle resident protein that targets the fused pH Tomato to exocytic vesicles. Currently, the modular plasmid has been made and sequenced. Future plans include microinjecting the plasmid into our model organism, and monitoring the rate of vesicle fusion in both wild type and mutant animals that could have deficiencies in their rate of exocytosis.

05.03.85 Using Transgenic Plants to Produce Blood Clot-Dissolving Proteins

Lauren, Tull , Kevin Wang

Northeastern State University

Introduction: Lumbrokinase (LK), in earthworms, and Nattokinase (NK), in *Bacillus subtilis*, can dissolve fibrin clots without causing excessive bleeding. Our goal was to clone LK and NK, transiently and stably express the proteins in tobacco and prove the recombinant proteins retain anti-thrombolytic activity. Methods: Genscript Co synthesized codon-optimized and wild-type gene fragment of LK (PI293) and NK (GenBank: AF368283.1). The DNAs were isolated and inserted into a vector, pBYR2fp, for transient expression and pCambia2300-Phas1470-Nos, for stable transformation and expression. Fibrin dissolving assay tested gene expression and function of the transient expression vector. Results: We optimized LK and NK gene codon for tobacco codon usage bias. Codon-optimized and wild-type genes shared different nucleic acids; the primary protein sequence is identical. Codon adaptation index (CAI) of LK and NK increased and GC content decreased allowing for higher expression of foreign protein. Eight vectors for transient expression and stable transformation were made and checked by restriction reactions. Transient expression vectors tested positive for gene expression and function with fibrin dissolving assay. Conclusions: Expression vectors of LK and NK for transient and stable plant transformation were made. Transient expression vectors were expressed and tested positive for clot dissolving function. Next we will test gene expression and function of the stable expression vectors.

05.03.86 Bee Pollinator Visitation at Two Color Morphs of Chasteberry Bushes on the Greek Island of Lesbos

John, Barthell , Brianna Levinson, C. J. Pascual, Corey Bower Lauren Blatzheim, S. Burrows, T. Petanidou Trimelle Polk, V.H. Gonzalez Betancourt

University of Central Oklahoma

The Mediterranean plant species *Vitex agnus-castus*, also referred to as Chasteberry, or locally as Texas Lilac, has inflorescence colors ranging from white to blue or purple depending upon the individual plant. We studied pollinator (bee) visitation rates at relatively uniformly-colored bushes of either white or blue flowering forms of *V. agnus-castus*. Both bee visitation rates and the peak visitation times differed in a variable manner between the two morphs but the overall number of pollinator species did not significantly differ between them; nectar quality and volume of the blue and white inflorescences were also recorded and are compared with these findings. The lack of significant differences in pollinator visitation rates and their rewards at bushes of *V. agnus-castus* suggests that these flower colors may not matter to foraging bees and is consistent with findings in other studies that examine bees foraging at artificial flowers. In addition, however, these morphological differences, coupled with nectar flow and quality dynamics, may reveal a mechanism for ensuring outcrossing potential for the plant.

05.03.87 Biotechnology of Plants and Pharmaceuticals

Mohammed, Shaban , Kevin Wang

Northeastern State University

Biotechnology has become a lot more popular in the present day. It has become a field of study that more people are looking into and learning new material about. What is Biotechnology? The term biotechnology means to use living organisms or their products to assist in the industry of either, agriculture or pharmacy. In my paper, I will focus on plant biotechnology and pharmaceutical biotechnology. I will also focus mainly on antisense gene technology for both, agricultural and pharmaceutical reasons. The population is increasing at an incredible rate, which means the demand for food is also growing. As a result of the increased demand for food, we need to increase crop production. In order for crop production to keep up with the population growth, plant biotechnology must step in. Plant biotechnology encompasses the manipulation of the plant genome to make the plant or products more useful. Plant biotechnologists, people that work in the field of plant biotechnology, use plant transgenesis. Plant transgenesis means to transfer genes directly to plants. Plant transgenesis has many different methods, including conventional selective breeding and hybridization, cloning, protoplast fusion, gene guns, and antisense gene technology.

05.03.88 Molecular Farming: Using Transgenic Plants in the Production of Human Recombinant Proteins

Lyndsey, Weeks , Kevin Wang

Northeastern State University

The molecular farming of plants is emerging as a valuable field in the synthesis of biopharmaceuticals for the treatment of immunological diseases worldwide. Using a plant-based platform, such as tobacco, to produce recombinant proteins can lower the production costs of pharmaceuticals, making medicine readily available for use in third world countries. Molecular farming couples the principles of DNA recombination and plant transformation to generate a safe and effective approach to treating disease and there has been success in the production of recombinant proteins found in blood plasma such as serum albumin, antibodies, and cytokines. Genetically modified plants (GMP's) can be used as a safe and effective alternative in the synthesis of biopharmaceuticals and recombinant proteins. Despite the advances in molecular farming, there are many upcoming challenges and obstacles that will be reviewed.

05.03.89 Review on Bacteria

Shafiq, Al-Rifai , Kevin Wang

Northeastern State University

Living a lifestyle filled with eating nutritiously and exercising profusely is vital for ensuring a strong and healthy body. However, in order to fully understand healthiness, one must study and read on potential pathogenic microbes. Furthermore, I have read many peer reviewed articles on different bacteria, ranging from microflora to strictly pathogenic bacteria. For example, Staphylococcus aureus is a bacterium that lives on and in our body normally. However, if one were to get a cut, Staphylococcus aureus could infect the cut and cause a skin infection. If not treated, Staphylococcus aureus could seep into the blood and cause bacteremia, which would then cause concerning complications. Moreover, an example of a strictly pathogenic bacterium is Salmonella enteritidis, a bacterium which causes food poisoning. It is very important to be informed on these microscopic organisms; therefore, I have made a review of different articles to share a broad amount of information on the bacteria that could change a life forever. In this review of other peer-reviewed articles, I will discuss the different types, but most common bacteria that can cause disease, I will give a method of treatment for different bacteria, and I will examine different types of antibiotics available. It is not only important to understand bacteria for yourself, but it is also important to understand bacteria for the people around you.

05.03.90 Analysis of Marine Derived Fungal Siderophores by LC-MS

Monica, Stalls , Jessica Martin

Northeastern State University

Iron limitation is a major factor influencing the growth of microorganisms, from infection of a mammalian host (where iron is tightly controlled by protein complexation) to aquatic and marine environments (where iron is not soluble or is complexed by organic ligands). Many microorganisms produce low-molecular-weight, iron(III)-specific chelators called siderophores to compete for iron. The objectives of this project are to identify novel siderophores produced by different marine-derived fungi strains and to evaluate them for use as antimicrobial or antineoplastic agents. Marine fungal strains were evaluated for siderophore production using an iron-dye containing agar. Siderophore-producing strains were cultured in artificial seawater broth, the iron-binding compounds were isolated by RP-HPLC, and the purified compounds were analyzed by mass spectrometry. In this study, 8 out of 11 novel strains evaluated have produced siderophores, and so far the siderophores from three of these strains have been positively identified; the remaining strains are under investigation. Two strains of the genus *Leucosporidium* were found to produce the siderophore ferrichrome, and a strain of *Rhodotorula mucilaginosa* (ATCC 201848) was found to produce rhodotorulic acid. We report here recent evaluation of new marine fungal strains by LC-MS.

05.03.91 Agoutis on the Alert!

Sharonda, Carson , Enzo Aliaga-Rossel

University of Central Oklahoma

The expression of anti-predation behavior can be the difference between life and death. The signs of anti-predation behavior can be expressed by auditory, vision, tactile, and olfactory cues. Agoutis (*Dasyprocta punctata*) for an example are mammals that use auditory cues to avoid predation. These mammals are a key component to the Neotropical forest as seed dispersals, seed predators, and prey for several species. They spend the day defending their territory from invading agoutis, searching for food, looking for potential mates, and watching for predators. The objective of the research was to study the alert behavior of agoutis in two different habitats at the Las Cruces Biological Station located in Las Cruces, Costa Rica. A group of agoutis from the artificial Wilson botanical garden and from the secondary forest were studied to see which group would express more signs of anti-predation behavior. One group has grown accustomed to the presence of humans and hearing everyday disturbances while the other group has not grown accustomed to the presence of humans and hearing everyday disturbances. When observing the response of agoutis hearing the sound of a predator, test calls from an ocelot were played. The calls were played at about fifteen to twenty meters away and were played at an increasing distance the longer it took the agoutis to respond.

05.03.92 Precipitation Effects on Tree Ring Width for *Ulmus Americana* L. in Oklahoma City

Carmen, Cowo , Chad King, Chris Butler

University of Central Oklahoma

Low precipitation affects the size of annual growth rings in trees. American elm (*Ulmus americana* L.) has little literature published on its response to low precipitation. Cores from twenty American elm trees were obtained from a forested region in northern Oklahoma City. Tree ring widths for 2008- 2013 were compared to annual precipitation rates of northern Oklahoma City for the corresponding years. Results using a one- way ANOVA revealed a significant difference in tree ring widths by year ($F_{5, 114} = 2.950$, $p = 0.015$). Tukey's HSD post hoc tests showed a significant difference in tree ring growth (mm) for years 2011 (2.12 ± 1.05860 mm min, $p = 0.010$) and 2013 (3.94 ± 2.42756 mm min, $p = 0.010$). Calculation of a Spearman rank- order correlation coefficient indicated a significant positive relationship between annual rainfall in northern Oklahoma City and American elm tree ring width ($p = 0.039$). Knowing the effects of drought can help predict future responses of trees to changes in precipitation. Predicting responses of species to microclimatic changes can help researchers plan and implement future conservation efforts.

05.03.93 Results Not Typical: A Review of Obesity Science, Mythos, and Media

Rose, Welch

Cameron University

The objective of my research was to explore current scientific research regarding obesity and its impact on our national health and medical spending. This topic interested me because anyone who takes part in any type of media consumption is constantly blasted with the idea that an obesity epidemic is gripping our nation, presumably with fat fingers coated in French fry grease. This conventional wisdom would have us believe that each year without a solution to our crisis of weight brings with it almost a million American deaths and the advent of chronic diseases that cost our country over a hundred billion dollars in medical costs. But despite these entrenched ideas surrounding obesity in both our conventional and common medical wisdom, how solid is the science behind this idea? Are the fatties really squashing our national health and budget? Research scientists have been addressing this issue for over fifty years, and as one might expect, the data is clear: Obesity, as defined by body mass index, is not a cause for concern. After an extensive literature review, I was able to conclude that most 'common knowledge' regarding these topics was grossly inaccurate; surprisingly, this included information by some leading health experts. Further, my research indicated that the cause of this misinformation seems to be the media presentation of weight science, in an effort to sell the American public an imaginary disease and cure.

05.03.94 Necrophagous Honeybees: Evolutionary Conservation of Predatory Foraging Behavior

JeAnna, Redd , John Barthell, Thomas Jourdan, Wayne Lord

University of Central Oklahoma

Honeybees (*Apis mellifera*) have a remarkable sense of olfaction and are direct descendants of wasps. Wasps are predatory insects whose diets consist of other insects and carrion. This study sought to determine whether or not the odor detectors in honeybees can be redirected from floral attractants to carrion. Four chemicals present in carrion were used in varying combinations to simulate carrion. For each odor, bees were trained by exposure to the scent paired with a sucrose solution in the mouth of the hive for one to two days prior to experimentation. Three feeding stations were set equidistant from the hives and each other. Each of the feeders consisted of a 1.5M sucrose solution and scent was added to the third feeder. The number of bees feeding at each station was tallied in 20 minute intervals. Upon conclusion of the timed trials, the stations were moved to the next location. This was repeated until the scented station had been in each feeding location. Each trial was repeated at 25m and 50m. A final trial was conducted using actual carrion in place of the carrion scented sucrose solution. For all odors and combinations, the bees showed a trend of preferentially visiting the feeder containing the scent with which they were trained. They also showed interest in actual carrion in the final trial. The findings of this study indicate the ability of the honeybee to revert to the ancestral characteristics of the wasps by seeking out the feeders with carrion odor.

05.03.95 Antimicrobial Plant Proteins

Tahzeeba, Frisby , Dennis Frisby, Elizabeth Carter

Cameron University

Pests and pathogens have typically been controlled through the application of chemical pesticides but resistance to antimicrobial products is increasing in alarming numbers. Also, the use of chemical pesticides is under attack because of economic, environmental and health issues making it necessary to find alternate strategies for more effective solutions. Naturally occurring pesticidal compounds are synthesized by the plant defense system which include antimicrobial proteins and lower molecular weight natural products. Once an antimicrobial activity is discovered, one can identify and sequence the gene product, i.e. an antimicrobial protein, and use this information to isolate the gene or use approaches to directly clone the gene. These isolated genes can then be introduced into plants via various techniques of plant transformation to increase resistance to pathogens. The long term focus of our research is to find alternative ways to protect crop plants from fungal and bacterial pathogens and to discover antimicrobial compounds for potential use in human and veterinary medicine. The specific goal of the present research project is to discover, isolate and characterize antimicrobial proteins from plants. Plant species were collected locally and screened for antimicrobial activity. Antifungal activity was discovered in two plant species and partially purified from one. Our current data indicates that activity is due to protein and not polypeptide such as defensins.

05.03.96 Optimizing Protocols for Measurement of Ion Leakage and Chlorophyll Content in Dark Stressed Plants.

Gnanambal, Naidoo , Allan Eastham, Eugene Deloach

Langston University

Abiotic stress adversely affects plant growth. Determining membrane permeability as a result of environmental stresses, growth and development, and genotypic difference is accomplished by measuring solute leakage from plant tissue. We hypothesized that greater leakage would occur with increased light deprivation. We planted *Arabidopsis thaliana* : wild type and Lox 4 mutants. After growing plants for three weeks, some flats were placed in the dark. We measured the ion leakage at zero hours, six hours, and 24 hours post darkness. Similar sized leaves or rosettes were rinsed with deionized water, and immersed in 25 mL of deionized water for 4 h with shaking at 100 rpm. The conductivity of the solution was measured with an Oakton CON 510 Series conductivity meter. These samples were then autoclaved, and conductivity was measured again. Relative ion leakage of the autoclaved was calculated. We repeated these steps for each time period and obtained two measurements for each. Chlorophyll isolations and measurements of samples subject to the same conditions (including sampling time) were also carried out. We discuss the effects of light stress on ion leakage and chlorophyll content in wildtype and Lox4 mutants.

05.03.97 Neural Circuits of Disgust Induced By Sexual Stimuli in Homosexual and Heterosexual Men: An fMRI Study

Zinar, Simsek

Northeastern State University

Researches have demonstrated neural circuits related to disgust influenced by internal sexual orientation in male. Scientists used (fMRI) technique to study the neural responses to disgust in homosexual and heterosexual men to investigate that issue. 16 homosexual and 16 heterosexual total of 32 healthy male volunteers were scanned while viewing alternating blocks of three types of erotic film: heterosexual couples (F-M), male homosexual couples (M-M), and female homosexual couples (F-F) engaged in sexual activity. All the participants rated their level of disgust and sexual arousal as well. The F-F and M-M stimuli persuaded disgust in homosexual and heterosexual men, respectively. The common motivations related to disgusting stimuli included: bilateral frontal gyrus and occipital gyrus, right middle temporal gyrus, left superior temporal gyrus, right cerebellum, and right thalamus. Homosexual men had greater neural answers in the left medial frontal gyrus than did heterosexual men to the sexual disgusting stimuli; however, heterosexual men exposed significantly greater activation than homosexual men in the left cuneus. ROI analysis showed that negative correlation were found between the magnitude of MRI signals in the left medial frontal gyrus and scores of disgust in homosexual subjects ($p < 0.05$). This research showed that there were regions in specific as well as in common for each type of erotic stimuli throughout disgust of homosexual an

05.03.98 Different Durations of Electroacupuncture Stimulations and Its Effect on Skin Blood Flow and Muscle Blood Volume

Mahmood, Khattab , Kevin Wang

Northeastern State University

The objective of this research is to determine whether or not the duration of electroacupuncture stimulations causes a different response for skin blood flow as well as muscle blood volume. The authors did not state their hypothesis so my own hypothesis is that the longer the duration of the stimulation the more increase in skin blood flow as well as muscle blood volume and vice versa. An increased amount stimulation time will correlate to an increase on the skin blood flow and muscle blood volume. A lower amount of stimulation time will show a decrease on the skin blood flow and muscle blood volume. To test the hypothesis, a couple of experiments were tested. In the first experiment, healthy male students were divided into two groups that consisted of an electroacupuncture group and a no-stimulation group. In the second experiment, the male students were divided into three groups each with different durations of stimulation. The results of the first experiment showed a difference between the two groups. In the electroacupuncture stimulation group, we saw an increase in muscle blood volume instantly as well as at all durations. No change was observed, however, for the no-stimulation group. For the second experiment, results showed no difference between the groups. The muscle blood volume increased at all three stimulation times. The skin blood flow saw an increase following stimulation at 5 and 10 minutes, respectively. Author's Names: Mori H, Kuge H, Tanaka TH, Taniwaki E.

05.03.99 The Climate Change Conundrum of the Lesser Prairie-Chicken

Tegan, Boyd , Chris Butler, Zoha Qureshi

University of Central Oklahoma

Lesser Prairie-Chickens have a very restricted range, breeding in areas dominated by sand sagebrush (*Artemisia filifolia*) and shinnery oak (*Quercus havardi*) in Kansas, Colorado, New Mexico, Oklahoma and Texas. The population has declined by 97% since the nineteenth century and the U.S. Fish and Wildlife Service recently proposed listing Lesser Prairie-Chickens as "Threatened". The goal of our project was to determine how climate change may affect the distribution of this species by the 2050s. Location data was downloaded from ORNIS and bioclimatic variables were downloaded from Worldclim. We used Maxent to determine which bioclimatic variables were most important. We used three scenarios from IPCC 4 (A1b, A2 and B2) in order to project how the range might shift by the 2050s. We found the current distribution was determined by altitude, precipitation of driest month and mean temperature of driest quarter. Under all three scenarios, the range of the Lesser Prairie-Chicken shifted north and the area of highly bioclimatic conditions declined. These results suggest that climate change may be an additional stressor on this rare and declining species.

05.03.100 Enzymatic Activity and Azo dye Metabolism in *Sarcina Aurantiaca*

Kj, Abraham , Tanjanique Reed, Tiffany Glover

Langston University

Azo dyes are widely used in cosmetic, textile, food and pharmaceutical industries. They metabolize azo dyes to colorless aromatic amines. The ability of human intestinal microbes to interact with metabolites directly or after recirculation may contribute toward different toxicological disorders and disease. Azoreductases from bacteria represent a novel family of enzymes with little similarity to other reductases. The hypothesis is that the azoreductase enzyme is present in *S. aurantiaca*, a human intestinal bacterium that will biotransform the azo dye to one or more compounds. The azo dye, Direct Blue -15 was treated with cultures of *S. aurantiaca*. Our studies demonstrated that *S. aurantiaca* was able to reduce the azo dye at different concentrations. The degradation of the azo dye indicates that azoreductase was functionally expressed in the bacterium. These results warrant further study to isolate the azoreductase gene followed by DNA sequence analysis.

05.03.101 Do the Cucumbers Still Squirt in a Drought? Population Fluctuations of Squirting Cucumber, *Cyclanthera Dissecta*

Alfa, Abame

Southwestern Oklahoma State University

Cyclanthera dissecta (Cucurbitaceae) is a weedy annual vine native to western Oklahoma. This species has been poorly studied, but is closely related to medicinal and edible species, including *Cyclanthera pedata* and agricultural weeds. We have tracked changes in a population of *Cyclanthera dissecta* near Weatherford, Oklahoma, for four years in order to determine baseline population size and effects of unusual weather conditions on this plant. We compare population size, average plant size, and average number of fruits per plant for the four seasons, and look at environmental factors, particularly drought and early freezes, that may influence plant growth and survival.

05.03.102 Review: The Role of Flavonoid Didymin in Ras Kinase Inhibitory Protein Cancer Pathways.

Mark, Cox

Northeastern State University

: This is a review abstract of "Novel Flavonoid Didymin Inhibits Neuroblastomas" Phytochemicals are naturally occurring chemicals found in plants, and have been widely used as an alternative medicine for thousands of years, flavonoids are a group of phytochemicals that have been of recent interest in medical research. Didymin is a flavonoid, a study by Fahd Al-Mulla at Kuwait University, has shown a significant role in the regulation of Ras Kinase inhibitory proteins. In neuroblastomas Ras Kinase inhibitory proteins (RKIP), have previously displayed the ability to modulate the expression and stability of molecules associated with cancer, specifically cyclin D1, vimentin, p21, and GSK3beta (Al-Mulla 2012). A better understanding of this flavonoid and its importance of RKIP regulation could rid the use of dangerous drugs with adverse effects such as rituximab, DETANONOate, and trichostatin. A better understanding of didymin will lead to whether or not it could be a safer treatment in cancers that already express RKIP, or if it should be limited to RKIP-depleted cancers (Al-Mulla 2012).

05.03.103 Association Between Bronchial Asthma and TNF

Tiffani, Wood , Kevin Wang

Northeastern State University

The potential causes of bronchial asthma have been studied very extensively in recent publications. The aim of this study was to research the association between bronchial asthma and tumor necrosis factor (TNF) as a possible cause of the disease. Methods: I used EBSCOhost to search for the latest publications including the keywords "tnf" and "asthma." I chose three of the most recent publications pertaining to my topic to research. Results: TNF- α polymorphism, TNF- α -308G/A, was shown to have an association with asthma in Egyptian children (Shaker, Sadik & El-Hamid, 2013, p.799). Significantly increased levels of TNF and TNF receptors were identified in the sera of patients with bronchial asthma compared to healthy patients (Golikova, Lopatnikova, Kovalevskaya-Kucheryavenko, Nepomnyashih & Sennikov, 2013, p.705). TNF antagonist treatment was shown to be more effective in reducing goblet cell numbers in the lungs than the corticosteroid treatments that are currently being used to treat bronchial asthma (Yilmaz, Karaman, Bagriyank, Firinci, Kiray, Turkeli & Yuksel, 2013, p.771). Conclusion: TNF has been shown to have many associations with bronchial asthma, establishing it as a likely candidate for further research into the cause of the disease. I believe that further research into these associations is pertinent, in that this research could be used for further treatment options for the disease.

05.03.104 Effects of Hyperglycemia and Advanced Glycation End-Products on Actin Cytoskeleton and Focal Adhesions in Wound Healing in Vitro

Michael, Williams , Barbara Safiejko-Mrocza

University of Oklahoma

Diabetes mellitus is a serious health problem worldwide. Diabetics are subject to a number of serious health risks and complications, one of which is impaired wound healing. Previous studies in our lab have shown that human gingival fibroblasts in vitro show delay in the rate of wound population under diabetic conditions, as compared to those in physiological glucose levels. Population of wound space by gingival fibroblasts depends mostly on cell migration and proliferation. Cell migration involves a number of factors, including the dynamic rearrangement of the actin cytoskeleton, and the formation and maintenance of focal adhesions. I hypothesize that one or both of these processes are impaired in diabetic conditions. To test this hypothesis, I created artificial wounds using gingival fibroblasts in conditions that mimic a diabetic environment. I monitored healing wounds in different experimental conditions with a phase contrast microscope. I also fluorescently labeled actin to examine its distribution in cells at the wound edge using fluorescence microscopy. So far, microscopic analysis of the actin cytoskeleton has shown a decrease in the number and size of protrusions at the leading edge of migrating cells in the presence of hyperglycemia and glycated proteins. I am currently studying the distribution of focal adhesions to determine if their dynamics may affect the migration of fibroblasts in the process of wound healing as well.

05.03.105 Preventative Measures Against Diabetes and Obesity among Native American Communities: Exploring the Impact of Environmental Interventions (A Review)

Jiles, Pourier

Northeastern State University

Among American Indian communities, obesity and diabetes are diseases, which continue to persist at a much greater rate compared to other ethnic minorities. Although the steps to counteract this trend are known, like working to improve the average diet and increase the physical activity of the population through environmental interventions, only a small amount of work has been accomplished within American Indian communities. As a result 3 case studies were created. The first case study included a child centered school-based trial known as the Pathways trial. The next trial focused on individual food preparers and shoppers within a food-store program called the Apache Healthy Stores Program. The last trial was unique because it incorporated multiple institutions, including the local food stores, elementary schools, and health and social service agencies, and it focused on the adult First Nation employees of each institution. The results obtained from these 3 trials were varied, but the lessons gained are more important. The results showed the need for a more focused approach to supply and demand, institutional and multilevel tactics, and a securing a sustainable base for the programs.

05.03.106 Effect of Estradiol on c-Fos Immunolabeling in the Brain of Furosemide Treated Female Rats

Sheri, Toal , Kathleen Curtis

Oklahoma State University

Objectives: We examined CNS activation in response to body Na⁺ depletion using the natriuretic drug furosemide to compare responses to short-term and long-term Na⁺ depletion, and to determine whether estradiol alters CNS responses to Na⁺ depletion. Methods: Adult female rats were OVX, recovered for 7 days, then given estradiol benzoate (EB) or oil vehicle (OIL). Furosemide treatment (Furo) followed one of two protocols: 1) short-term – 2hrs after Furo, rats were anesthetized and perfused with paraformaldehyde; brains were removed and cut into 40 μ sections; 2) long-term – rats were returned to their cages for 20hrs after Furo, and then processed as described. Sections were immunolabeled for fos (Santa Cruz; 1:30000), mounted on slides, and examined under a microscope. Results: Fos immunolabeling was apparent in the supraoptic and paraventricular nuclei of the hypothalamus of both EB- and OIL-treated rats after short-term, but not long-term, Na⁺ depletion. In forebrain circumventricular organs, fos immunolabeling was present after both short-term and long-term Na⁺ depletion. Conclusion: CNS areas involved in body fluid balance are differentially activated by Na⁺ depletion depending on the length of the depletion. Thus, CNS responses to Na⁺ depletion are a function of the duration of the depletion and may be further influenced by the ovarian hormone estrogen.

05.03.107 Identification of Microbes

Kameron, Lindsay

Langston University

Microbes utilizing asphalt as a food source are being identified using the 16s ribosomal subunit. Genomic DNA from the microbe in question is being isolated using the alkaline lysis method. Future experiments included elongating the 16s ribosomal gene using a standard E. coli probe. The Resulting information will be run against a data base to obtain the Genus and species name of the bacteria.

05.03.108 Mps1 Protein Kinase Acts Through Dam1 to Regulate Chromosome Segregation

Jamin, Brown , Dean Dawson, Regis Meyer

Southwestern Oklahoma State University

The improper partitioning of chromosomes during cellular division is a deleterious event that leads to chromosome imbalances. Such imbalances are a common feature of a number of human diseases. Interestingly, the proteins that mediate chromosome segregation for ensuing division are often overexpressed in cancer cells, rendering these modulators appealing targets for therapeutic treatments. One such protein is the conserved kinase Mps1, which is essential to the process by which chromosomes are correctly oriented and attached on the spindle for segregation. It is known that Mps1 regulates chromosome segregation by the phosphorylation of several target proteins, including Dam1, a component of the kinetochore to which spindle fibers attach. It is less clear, however, what role the phosphorylation of Dam1 by Mps1 serves in properly orienting chromosomes on the spindle. In characterizing this role, we imaged yeast cells expressing mutant forms of Dam1 incapable of being phosphorylated by Mps1 to determine if this regulation is necessary for promoting the proper segregation of chromosomes. In addition, we attempted to rescue the defective segregation of mps1 mutants by expressing forms of Dam1 mimicking an Mps1 phosphorylated state. Our results suggest that Mps1 acts to orient chromosomes in part through Dam1. Ultimately, these findings are important in providing a more complete understanding of how chromosomes are correctly segregated during cellular division.

05.03.109 Decision-Making in Conflicting Behaviors of Field Collected Fruit Flies (Drosophila Melanogaster)

Irene, Lopez , Jimena Aracena

Southwestern Oklahoma State University

Fruit flies (*Drosophila melanogaster*) are excellent models to study the genetic basis of behavior. Our main purpose is to test the flies' ability to make decisions between conflicting excitatory inputs: feeding and mating. Individual virgin and previously mated flies of both sexes were placed in plastic vials and deprived of food for 0 or 24 hours. One male and one female were placed in a testing arena containing food. We recorded the hierarchy of behaviors (mating, grooming, feeding, or courting) as well as the time spent on each behavior for each individual fly. Preliminary observations suggest that both virgin and previously mated flies spend about fifty percent of their time walking and exploring. It also has shown that mating status highly influences their behavior. Virgin flies spent more time courting than mated flies. Mated flies were more likely to feed than virgin flies.

05.03.110 Integrative Biological Effects of the Neonicotinoid Pesticide Imidacloprid in Honey Bees

Trimelle, Polk , Ahmed Karahan, Brianna Levinson, Corey BowerDilan Ikizoglu, Ibrahim Çakmak, John HranitzLauren Blatzheim

Other

Foraging in honey bees is a highly integrated behavior involving numerous reflexes and motor programs. The proboscis extension reflex (PER) is an important motor program, integrated with motor control of locomotion, in the honey bee feeding behavior. Our study investigated the effect of sublethal doses, ranging from 1/5 to 1/500 of the LD50 for imidacloprid, on the PER and motor responses of honey bees. We tested the PER using 0% sucrose (water), 10% sucrose, and 30% sucrose solutions before and after the administration of imidacloprid to harnessed bees. Bees in our study exhibited a scaled response to the different sucrose solutions, with a higher rate of response to 30% sucrose solution than the 10% sucrose solution. Sublethal doses of imidacloprid at 1/5 LD50 impaired the sucrose sensitivity response in honey bees (Wilke's $\Lambda=0.549$, $F=2.819$, $P=0.0006$). At lower doses of imidacloprid ($<1/5$ LD50), bees did not perform differently than controls. At 4 h post-ingestion, honey bees were scored for their motor coordination. Bees fed doses of imidacloprid higher than 1/100 LD50 showed reduced motor coordination similar to that of thermally stressed honey bees. These results show that imidacloprid, even at doses 1/5 to 1/100 LD50, impaired basic motor coordination fundamental to locomotion and foraging. Sublethal doses of thiamethoxam disrupted two components of foraging, the PER and overall motor control, normally integrated by the nervous system in the honey bee.

05.03.111 Hormesis: An Integrative Model for Stressors Affecting Honey Bees

Corey, Bower , Charles Abramson, Ibrahim Çakmak, John HranitzNazmiye Günes

Other

Stress proteins are highly conserved among all organisms and allow for organisms to survive environmental stresses by protecting proteins under diverse environmental conditions. Previously, we showed that ethanol ingestion affects bee physiology and behavior in ways similar to humans; including increased blood alcohol content, reduced locomotor activity and coordination, impaired cognition, increased aggression, and poor communication among worker bees. Honey bees also exhibit a hormetic dose-dependent stress response to ethanol. We used honey bee microarrays to study gene expression in the brain at 0 h and 4 h post-feeding of an ethanol dose that stimulates a maximum compensatory stress response (intoxication). Microarray analysis detected 603 reporters that differed between treatment and control bees. Ethanol-induced stress altered expression of gene networks for cell signaling and stress tolerance, promote oxidoreduction balance, maintain chemical homeostasis, regulate locomotion, and communication. These coincide remarkably well to the externally visible symptoms in physiology and behavior. In parallel studies, we observed similar sublethal dose responses for pyrethroid and neonicotinoid pesticides. We suggest that the study of the responses by gene networks are useful to integrate genetic, physiological, and behavioral affects of pesticides on honey bees.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

04. Botany

05.04.01 Using Digital Photography to Estimate Canopy Development of 'Noiret' Grape Vines After the Second Growing Season

William, Phillips , Bill Baker, Caleb Kimberling, Laura Gruntmeir

Redlands Community College

Grape vine spacing (distance between vines within the row) and rooting system (grown on grafted rootstock for disease resistance or on own rootstock), can impact grape vine canopy development. Greater canopy is an indication of rapid growth rate. The objective of this experiment was to determine the impact of vine spacing and rootstock on canopy development of 'Noiret' grape vines at the end of the second growing season (2013). In 2012, seven rows of 'Noiret' grape vines were established in a split plot design. Within row, grape vines were spaced at 8- or 10-foot intervals and were either own rooted or grafted onto '101' or 'Riparia' rootstock. Vines were trained to a high cordon system with drip irrigation. Digital photographs (taken in October) and a calibrated grid system were used to estimate the surface area of one vertical plane of the canopy and used to statistically compare canopies of the different treatments. No significant differences ($P > 0.22$) were noted between grafted vines planted at 8- or 10-foot intervals within the row. 'Noiret' vines not grafted onto rootstock, own rooted, and planted 10 feet apart had the least amount of canopy. Based on canopy developed by the end of the second growing season, we concluded that producers planting 'Noiret' vines should use grafted rootstock and plant vines 10 feet apart within row. This procedure will fill the fruiting zone canopy with the fewest n

05.04.02 Using the At-Risk Tool to Assess the Vulnerability of Native Edible Plants to Over Harvest

Zella, Classen

Southwestern Oklahoma State University

Five edible plant species native to the United States were scored using the United Plant Savers' At-Risk Tool. This tool is used to quantify and compare vulnerability to overharvest for wild collected medicinal plants. The species chosen, Tomatillo *Physalis longifolia*, Persimmon *Diospyros virginiana*, Pawpaw *Asimina triloba*, Chokecherry *Prunus virginiana*, and Prairie Turnip, *Pediomelum esculentum* all have traditional uses as both food and medicine. These species have been the subject of recent investigations into their promising chemical compounds and medicinal properties. Scores from the At-Risk Tool will help determine if wild harvest can be sustained if one of these species becomes the next "anti-cancer super-food".

05.04.03 Collection, Identification, and Preservation Techniques of Plant Samples Collected in the Field

Mandi, Foutch

Southwestern Oklahoma State University

Proper collection, identification, and preservation techniques are important when plant samples are used as taxonomic and herbarium specimens. Using proper tools and collection methods aid in the proper preservation and eventual plant identification process. Recommended techniques for collection, preservation, and identification of plants in the field are discussed in a manner that should aid anyone wishing to collect and preserve plants. Proper collection includes gathering materials that will aid in the proper identification of the plant. This can include leaves, roots, flowers, stems and seeds. Proper identification uses the plant's characteristics to determine the species. Proper preservation includes pressing and mounting of the specimen.

05.04.04 Preliminary Search for Biologically Active Secondary Metabolites from Cyclanthera Dissecta

Ashlie, Walker , Lisa Castle

Southwestern Oklahoma State University

Antimicrobial assays were performed on *Cyclanthera dissecta* (Cucurbitaceae) to determine if the weedy annual vine warrants further investigation as a medicine. Students at Southwestern Oklahoma State University have begun long term monitoring of a local *Cyclanthera dissecta* population in order to learn how it responds to changing weather and land use patterns. The native species is very poorly studied, but has life history traits that suggest it could be a problematic weed, as well as edible and medicinal relatives including *Cyclanthera pedata*, *Cyclanthera explodens* and *Cucurbita foetidissima* that suggest it might have healthful properties for humans. In this study we examine the results of the initial antimicrobial assays performed on de-fatted organic extract of dried *Cyclanthera* vines. These analyses are the initial stages of identifying bioactive compounds.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

05. Chemistry

05.05.01 Development of a Paper Based Biosensor for the Detection of Antibodies in Serum

John, Bowen , F.N. Albahadily, Hazim Amairah, Mary TappertNicolas Shafer, Robert Brennan, William Wilson

University of Central Oklahoma

05.05.02 Development of a SPME GCMS Method for the Analysis of Phthalate Esters in Surface Waters

John, Bowen , Dalton Lewis, Erin Brooks, Evan McIntyreF.N. Albahadily, Juliette Chisom, Keith JacksonThomas Briscoe

University of Central Oklahoma

Various phthalate esters that are used as plasticizers in PVC have been implicated as endocrine disruptors in humans and rats. These compounds are often found at low concentrations in tap water. This analytical method uses Solid Phase Micro Extraction and Gas Chromatography was developed to detect and quantitate three phthalate esters in natural waters and drinking waters. The method was used to test streams with outflow from sewage treatment plants as well as tap and deionized water.

05.05.03 Characterization of Odors from Four Species of Stinkhorn Mushrooms Using Solid Phase Micro Extraction and GC MS

John, Bowen , Clark Ovrebo, Kaci Rosales, Mark Anton

University of Central Oklahoma

Odors from four separate stinkhorn mushroom species including Phallus impudicus, Lysurus Phallus rubicundus, Lysurus mokusin and Mutinus elegans were evaluated using headspace SPME-GCMS. There was little correspondence in compounds common to all species, and it was found that there was a definite differences in the relative amounts and in the compounds from fresh and frozen samples.

05.05.04 Structural Determination in Chemistry from the Mid-Nineteenth Century to Today

Luis, Montes

University of Central Oklahoma

One of the primary questions chemists ask is "What is this substance?" In an effort to answer this question chemists use various methods to identify the arrangement of atoms within a molecule. Currently this involves primarily instrumental techniques. However, these instrumental techniques have not always been available to chemists. In this poster, a timeline will be presented showing changes in the extent to which chemists were able to answer this question. As examples, evidence for the structure of various alkaloids will be presented to show how the accepted evidence for the structure of these compounds has changed over time.

05.05.05 Cloning, Expression, and Purification of Aromatic Aminotransferase Ar09

Russell, Evans , Chirstian Fleming, Lilian Chooback

University of Central Oklahoma

The pathway for the biosynthesis of lysine in *Saccharomyces cerevisiae* is a seven-step pathway beginning with α -ketoglutarate and acetyl-CoA and finally leading to the production of L-lysine and α -ketoglutarate. Because the pathway is not present in humans, the enzymes in the pathway are potential candidates for drug development. Interruption of the lysine biosynthetic pathway is known to be a lethal event in fungi. Several of the enzymes in the pathway have been investigated in detail regarding their kinetic and chemical mechanisms. The fourth step in the pathway is thought to be catalyzed by an aminotransferase which converts α -ketoadipate to L- α -aminoadipate. However, the specific aminotransferase in yeast that catalyzes this reaction was not identified. There are several putative aminotransferase genes present in the yeast genome for which the metabolic role has not been elucidated or the enzyme characterized. Our lab has been involved in identification and characterization of the aminotransferase that is likely involved in the lysine biosynthetic pathway. Based upon sequence homology we have identified 2 genes in *S. cerevisiae* which would be a good candidate for aminotransferase. The Aro8 gene which codes for an aromatic aminotransferase have been cloned and characterized (Arch. Biochem. Biophys. 2011, 516(1)). Currently, we have cloned Aro9 gene in the expression vector PET16b, and working on the expression, purification, and charac

05.05.06 Cloning, Expression and Characterization of Dihydrodipicolinate Reductase

Lilian, Chooback

University of Central Oklahoma

05.05.07 Cloning, Expression and Characterization of Dihydrodipicolinate Reductase

Yvonne, Daugherty , Lilian Chooback, Russell Evans, William Karsten

University of Central Oklahoma

Dihydrodipicolinate reductase catalyzes the NAD(P)H dependent reduction of the carbon-carbon double bond of the a,b unsaturated cyclic imine dihydrodipicolinate to form the cyclic imine tetrahydrodipicolinate. The enzyme is a component of the lysine biosynthetic pathway in bacteria. The gene (DapB) that encodes dihydrodipicolinate reductase has been cloned and characterized, but the protein has low expression and the purification is time consuming. The goal of this research project was to clone DapB into an expression vector containing a six-histidine tag. The gene sequence was used to design the forward and reverse primers. E.coli chromosomal DNA and PCR was used to amplify the gene. The PCR product was sequenced to confirm the identity of DapB. Dihydrodipicolinate reductase was cloned into the expression vector pET16b. The histidine-tagged protein was expressed and purified. SDS/PAGE analysis of the protein shows that the protein is estimated to be 95% pure and has a subunit molecular weight of 28 kDa. The enzyme activity was measured using a coupled assay in the presence of dihydrodipicolinate synthase and measuring the absorbance at 340nm. This protein purification is completed in one day and 4 liters of culture produces approximately 40 mgs of protein.

05.05.08 NMR Relaxation Times From a Spreadsheet: Nonlinear Curve Fitting Using Microsoft Excel and Visual Basic for Applications

James, Dechter

University of Central Oklahoma

Spreadsheet software can be used for a wide range of problems in engineering and science. The Solver tool that these applications possess can be used for optimization problems including non-linear curve fitting. Visual Basic for Applications (VBA), built into Microsoft Excel, provides a powerful programming environment which greatly enhances the usefulness of the Solver tool. For example, while the simple error analysis provided by the Solver tool is useful, it is not specific to the parameters that are adjusted to accomplish the fit. VBA can be used to calculate the errors in these fit parameters. The combined use of the Solver tool and VBA are demonstrated for the problem of calculating nuclear magnetic resonance (NMR) relaxation times in a spreadsheet environment using Microsoft Excel.

05.05.09 Zinc Determination in Hair with Flame Atomic Absorption Spectrometry

Jennifer, Chen , Issa Nour-Mohammadi, John Bowen

University of Central Oklahoma

Zinc is essential in many bodily functions, cell development, and the immune system. A zinc deficiency can cause lethargy and poor immune function, as well as age related degeneration in the elderly. The purpose of this study was to analyze hair samples using flame atomic absorption spectrometry to determine if there is a zinc deficiency in students at UCO. Results from 15 students will be presented and compared against a standard zinc solution and a spiked hair sample.

05.05.10 Acid- Base Mechanism of the Dihydropicolinate Synthase from Escherichia Coli

Lilian, Chooback , William Karsten

University of Central Oklahoma

Dihydrodipicolinate synthase (DHDPS) catalyzes the formation of dihydrodipicolinate from pyruvate and L-aspartate- β -semialdehyde (L-ASA). The enzyme catalyzes the first committed step for the biosynthesis of L-lysine in bacteria and plants. The enzyme from *Escherichia coli* is feedback inhibited by lysine, the end-product of the pathway. Although numerous x-ray structures have been solved for DHDPS from a number of organisms, few mechanistic and kinetic studies have been done on the enzyme. We have undertaken a study of the pH dependence of the kinetic parameters of DHDPS in order to elucidate the acid-base chemical mechanism of the enzyme. The kinetic mechanism is ping pong at high pH values with pyruvate binding to free enzyme. An active site lysine ϵ -amino group (K161) attacks the carbonyl of pyruvate and forms a Schiff base intermediate. The loss of a proton from this intermediate leads to the formation of an enamine intermediate, with the loss of the proton accounting for the irreversible step and the ping pong kinetic mechanism. Although the first half of the mechanism that involves formation of the covalent intermediate between pyruvate and K161 is well supported by kinetic and structural studies, it is considerably less certain as to what occurs following binding of L-ASA.

05.05.11 The Design, Synthesis, and Application of a Series of Ni(II) Complexes of Glycine Derived From Metal Coordinated Secondary Amines

Trevor, Ellis , Mackenzie Bergagnini

Southwestern Oklahoma State University

A series of a new type of "N-H" Ni(II) complexes of glycine Schiff Bases will be introduced as well as a study of the general aspects of their reactivity. Studies into the reactivity of these complexes confirmed that the incorporation of a secondary rather than a tertiary amine into the ligand of these Ni(II) complexes does not interfere with the homologation of the glycine residue. Therefore, these derivatives are of high synthetic value for the general synthesis of α -amino acids. Specifically, the utility of these complexes was demonstrated via the asymmetric synthesis of various α -substituted pyroglutamic acids by Michael addition reactions with optically active Michael Acceptors.

05.05.12 Polymeric Sutures in the Teaching Lab: Synthesis, Degradation, and Mechanical Testing

Lindsay, Davis

Langston University

The ability of chemists to tune the properties of synthetic polymers is highlighted in this new experiment developed for incorporation into high school and college level chemistry laboratory curricula. One dimension of this experiment involves the synthesis of copolymers as model suture materials. Ideal model polymers should have degradation and mechanical properties comparable to commercial sutures. In this specific work, polycaprolactone was reacted with different ratios of D,L-Lactide or L Lactide in an attempt to prepare block copolymers of varying compositions. These specific polymers were chosen to study the effects of crystallinity on polymer properties with the intention of finding a strong, degradable material to incorporate in the new experiment.

05.05.13 Discovery of Novel Lanthanum Ruthenate Phase of $\text{La}_{2.5}\text{RuO}_{6.25}$

Evann, Comeaux

Langston University

A new lanthanum ruthenate phase was discovered through reaction via the solid state method. Through varying the ratio of starting materials, the composition of the phase was determined to be $\text{La}_{2.5}\text{RuO}_{6.25}$. Magnetic measurements were conducted in order to determine the oxidation state of Ruthenium and the magnetic properties of $\text{La}_{2.5}\text{RuO}_{6.25}$. Preliminary characterization indicates paramagnetism to low temperature where a ZFC/FC divergence indicates spin freezing at 10K. Future work will be needed to fully characterize the crystal structure and properties of this new compound.

05.05.14 Reactions of Molybdenum(VI)Oxide with Water Vapor at High Temperatures

Dwight, Myers , Kaysi West

East Central University

Modern superalloys contain a wide range of metals in trace quantities. Formation of volatile hydroxides at elevated temperatures is an important mechanism for corrosion of metal alloys or oxides in combustion environments (N. Jacobson, D. Myers, E. Opila, and E. Copland, J. Phys. Chem. Solids 66, 471-478, 2005). Even when heated to relatively low temperatures (ca. 1300K or less) in air at atmospheric pressure, metal oxide samples show significant mass losses. Reaction with atmospheric moisture to form volatile hydroxides is one possible mode of material transport under these conditions. We are currently studying the reaction of molybdenum(VI)oxide with water vapor. Preliminary experiments using a box furnace under ambient atmospheres have been performed at various temperatures to determine the extent of vaporization due to volatility of the metal oxide and/or humidity in the atmosphere. In our experiments, molybdenum (VI)oxide shows a significant mass loss under ambient atmospheres at temperatures as low as 873K. Transport experiments with heated samples in flowing reaction streams of water vapor in oxygen are currently being performed. Volatile species are transported downstream and condense in a cooler region of the apparatus and can be collected for analysis. Thermodynamic data for these species is obtained by varying the temperature of the experiments. Results to date for these studies will be presented.

05.05.15 Oxygen Content and X-ray Diffractometry of Yttrium-Barium-Copper Oxide Superconductors Doped with Cobalt, Nickel, or Zinc

Dwight, Myers , Tyler Griffin

East Central University

It is well known that addition of small amounts of other transition metals to the yttrium-barium-copper oxide (YBCO) superconductor decreases T_c and ultimately eliminates superconductivity in YBCO (Xu et al. Mat. Res. Soc. Symp. Proc. Vol. 169, 221 (1990)) . We have prepared $YBa_2Cu_3-xMxO_y$ superconductor samples doped with trace metals at levels up to $x \sim 0.08$. Doping metals used were Nickel , Zinc, and Cobalt. One can calculate the theoretical average distance between dopant atoms in the Cu-O chains, and therefor the average effective Cu-O chain length for a given composition. The primary focus of our research has been to investigate the superconducting properties of both known YBCO superconductors and of doped YBCO samples. Prepared samples were tested for superconductivity by their demonstration of the Meissner effect when cooled with liquid nitrogen. As well as testing for superconductivity d-space calculations were taken on individual samples based upon X-ray Diffraction patterns. Oxygen content of the superconductor samples can be determined by means of iodometric titration (Appelmann et al. Inorg. Chem. 26, 3237 (1987)). Results to date will be presented and discussed.

05.05.16 Synthesis and Application of Immobilization-specific Molecules for Use in SPR Experiments

Skylar, Snowden

University of Oklahoma

Surface plasmon resonance (SPR) is an optical technology used to observe biomolecular interactions in real time by immobilizing a molecule to a sensor chip and analyzing the response when an analyte molecule is injected over. Many different sensor chemistries are available depending upon the desired chemical attachment methodology. We describe first the synthesis and application of a disulfide exchange reagent (2-(pyridinyldithio)ethaneamine or PDEA) for specific capture of sulfhydryl-containing molecules. Then we describe the bifunctional immobilization of carbonyldrazide to couple glycosylated molecules to a non-charged polysaccharide sensor chip. Both of these techniques are useful for specific capture of various biomolecules and represent utility in the field of SPR.

05.05.17 Computational Investigation of Metallocene-Mediated Polyethylene Chain Propagation with Ethylene Approaching from Back Side of Growing Polymer Chain

Paritosh, Das , Matthew Hunt

Cameron University

This paper presents results of our computational studies of ethylene insertion into the Zr-C bond of zirconocene-based catalyst systems with ethylene approaching from the back side of the growing polyethylene chain. The energetics data for this step are compared with those of the propagation step in which ethylene is inserted from the front side. DFT/B3LYP methodologies have been employed for computation, with $[\text{CpCH}_2\text{Cp}]\text{ZrCH}_2\text{CH}_2\text{CH}_3^+$ used as the primary model for the active catalyst species. For comparison purpose, some computational data have also been obtained on catalyst systems bearing F and CH₃ substituents on the Cp ligands. The barrier for back-side ethylene insertion into the unsubstituted catalyst system is slightly higher than that for the front-side process (by about 2 kcal/mol). In contrast, the back-approach barrier becomes considerably lower upon substitution of the eight H-atoms of the Cp rings by F atoms (by ~6 kcal/mol).

05.05.18 A Laser Flash Photolysis Study of Fragmentation Modes and Kinetics of Radical Cations Photogenerated from Aryl Alkanes.

Paritosh, Das , Douglas Cyr

Cameron University

Employing nanosecond laser flash photolysis, the relative importance of two fragmentation modes, namely, C-C bond cleavage and deprotonation, has been sorted for the radical-cation of 1,1,2,2-tetraphenyl ethane photogenerated by electron transfer to cyanoaromatic singlet excited states. in acetonitrile at room temperature. The kinetic data for this aryl alkane suggest that the C-C bond cleavage dominates over the deprotonation by a ratio of about 2:1. In addition, the deprotonation kinetics of diphenyl methane, triphenyl methane, 1,1-diphenyl ethane, and several phenyl-substituted alcohols have been studied and the activation parameters determined for several systems from temperature dependence.

05.05.19 Quantitative Analysis of Alanine in Urine

Jennifer, Fessler

University of Central Oklahoma

Autism is a genetically inherited disorder that is diagnosed by certified clinicians based on behavior history recorded through interviews. Research has shown that autistic children have specific metabolic levels that are significantly different from their atypical counterparts. If these levels can be repeatedly verified as specific to autism then a shift in diagnostic criteria may occur. This experiment looked at quantitatively measuring the level of alanine in urine mimicking a test that could be done in a doctor's office. A second challenge was the ability to do this experiment on the available equipment. Typically, a High Performance Liquid Chromatography (HPLC) with Mass Spectrometer would be used to measure amino acids, like alanine or a highly sensitive Nuclear Magnetic Resonance (NMR) Instrument. These instruments are not found in most labs. Therefore, a method was developed to run urine samples on the Gas Chromatography Mass Spectrometer (GCMS) available at the University of Central Oklahoma using materials that were affordable to any lab. The urine samples were prepared and derivatized before running on the GCMS. Alanine was measured at levels of 1021ppb, however the expected result was 18000ppb. Even though levels were significantly low more work could be done to refine the method and improve recovery levels making quantitative amino acid experiments accessible to any researcher.

05.05.20 Protein Engineering: Designing an Artificial Nuclease

Lori, Gwyn , Jordan Thompson

Southwestern Oklahoma State University

Antibiotic resistance is a major global concern. Methicillin resistant *Staphylococcus aureus* (MRSA) strain USA300 causes ~97% of MRSA related skin infections. To alleviate this problem, nucleases can be engineered to specifically attack genomes of antibiotic resistant bacteria, rendering them harmless. A nuclease is an enzyme that hydrolyzes phosphodiester bonds that are found in nucleic acid backbones. The repertoire of naturally occurring DNA related nucleases can be classified as specific or non-specific. Despite the ubiquity of these enzymes in nature, unique target sequences that are recognized by site-specific nucleases is limited. For this pilot project, the SaeR gene and the nuc gene were identified as targets in the MRSA strain USA300 due to their role in MRSA virulence. To design a nuclease, an extensive literature search was conducted of naturally occurring nucleases. The model nuclease SwaI recognizes the sequence, 5'-ATTT↓AAAT-3', which naturally exists in the SaeR gene. In the design phase, the complete SwaI gene was deconstructed into four smaller gene segments called JT1024A, JT1024B, JT1024C, and JT1024D. A variety of constructs were made from the gene segments: A+B, B+C, and C+D and cloned into pUC19 cloning vectors. Plasmids were purified, and subsequently sequenced. Future goals include protein expression and activity determination. The overall goal of this project is to study the process of efficiently engineering artificial nucleases.

05.05.21 Preliminary Search for Biologically Active Secondary Metabolites from *Cyclanthera dissecta*

Ashlie, Walker

Southwestern Oklahoma State University

Antimicrobial assays were performed on *Cyclanthera dissecta* (Cucurbitaceae) to determine if the weedy annual vine warrants further investigation as a medicine. Students at Southwestern Oklahoma State University have begun long term monitoring of a local *Cyclanthera dissecta* population in order to learn how it responds to changing weather and land use patterns. The native species is very poorly studied, but has life history traits that suggest it could be a problematic weed, as well as edible and medicinal relatives including *Cyclanthera pedata*, *Cyclanthera explosiva* and *Cucumis metuliferus* that suggest it might have healthful properties for humans. In this study we examine the results of the initial antimicrobial assays performed on de-fatted organic extract of dried *Cyclanthera* vines. These analyses are the initial stages of identifying bioactive compounds.

05.05.22 Teaching Stereochemistry in an Undergraduate Organic Chemistry Course: A More Efficient Arrangement

Daniel, McInnes

East Central University

Stereochemistry is a topic that requires students to gain an understanding of numerous difficult concepts. Students who do not comprehend the various aspects of stereochemistry as they are presented in lecture will not be able to gain a working knowledge of the subject. It is therefore crucial for those who teach stereochemistry to present topics in such a way that one concept flows gracefully into another; that is, an effective arrangement must be employed while presenting the material. An improved method of teaching stereochemistry is presented in this study.

05.05.23 Using a Picospin NMR Spectrometer in an Undergraduate Organic Course

Charles, Crittall

East Central University

Organic chemistry students must learn to correctly interpret NMR spectra in order to be successful in the course. A majority of students struggle with this task. Pedagogically, a hands-on approach to learning is a powerful method for instructors in both classroom settings and in the teaching laboratory. Direct experience with acquiring and processing NMR spectra to determine product purity or to monitor the course of a chemical reaction is extremely valuable. The expense of an NMR instrument has prevented its use in most undergraduate classrooms. Recent advances in technology have resulted in the creation of the Picospin 45 TM NMR as a less expensive alternative. This paper will discuss my experiences in using the Picospin TM NMR spectrometer in organic chemistry.

05.05.24 Synthesis and Purification of Flexible Heteroatinoids E1 and E9.

Audrey, Johnston , Luis Figueroa

University of Central Oklahoma

This work is to synthesize 2 flexible heteroarotinoid compounds (FlexHets) that have potential therapeutic value in the prevention or remission of ovarian cancer. These compounds are derived from retinoic acid which has high efficacy as an anticancer drug, but also has debilitating side effects. A FlexHet known as SHetA2 has been extensively studied and shown to induce apoptosis within cancerous human ovarian cell lines to a much greater extent than in normal human ovarian cells in culture. Many derivatives of this compound have been developed, and previous studies have identified two Flexhets to be of interest, E1 (N-(4-Nitrophenyl)-N'-(1,2,3,4-tetrahydronaphthalen-7-yl)urea) and E9 ((4-Nitrophenyl)-N'-(2,3-dihydro-1H-inden-6-yl)urea). These compounds have only been synthesized once before in milligram quantities sufficient for cell toxicity screening, but that amount is insufficient for further cell-based assays necessary to evaluate their mode(s) of action. Therefore the goal of this project is to synthesize and purify E1 and E9 for further evaluation in cell culture models for human ovarian cancer. These purified compounds will be used in undergraduate research at the University of Central Oklahoma by Dr. Dana Rundle and in the laboratory of Dr. Doris M. Benbrook at the University of Oklahoma Health Sciences Center.

05.05.25 The Mechanisms of Various Radical Inhibitors

Mehdi, Drissi

Oklahoma School of Science and Mathematics

Radical inhibitors are common in both biological systems and nutrition. The key to the importance of radical inhibitors is the formation of a heavily stabilized radical. Radical inhibitors often cause a have a large enthalphy of reaction with radical compounds making further chain reactions likely to be endothermic and unfavored. Instead they often react with another radical to form an even more stable compound and to also cause a termination step to occur. This report will focus on the reaction mechanisms of radical inhibitors in general along with associated enthalphies of reaction. Examples of radical inhibitors whose reaction mechanism will be followed include hydroquinone, ascorbate, and BHT.

05.05.26 Comparison of the Functionality of High Density Lipoprotein Cholesterol in Overweight Youth Before and After an Exercise Trial

Britani, Vann

Langston University

High density lipoprotein (HDL) cholesterol is the form of cholesterol that is thought to play a protective role in cardiovascular health. HDL-cholesterol is known for its role in reverse cholesterol transport, removing lipid deposits from blood vessels and helping to prevent cardiovascular disease. HDL-cholesterol also plays a protective role as an antioxidant. The goal of this project is to establish a cell-free assay to measure the anti-oxidative properties of HDL-cholesterol and to test whether this property changes in response to a short-term exercise program performed by overweight sedentary adolescents. The fluorescence assay we set up is performed in a 96 well plate and uses dihydrorhodamine 123 (DHR), which will spontaneously oxidize. The goal of the assay is to measure how effective the HDL-cholesterol samples are at slowing that oxidation. We measured the increase in fluorescence of DHR with and without HDL-cholesterol every 2 minutes for one hour. Adding HDL-cholesterol significantly reduced the oxidation rate. Participants in the exercise study improved their aerobic fitness but did not lose weight. Their HDL-cholesterol concentration did not change. We have shown that the assay is reliable and can be used to study human samples with only a small volume. Our hypothesis was incorrect, short-term exercise training does not significantly alter body weight or cholesterol concentration, it also doesn't improve health by increasing HDL functionality.

05.05.27 The Effect of Macromolecular Architecture on Functional Group Accessibility in Poly(4-hydroxystyrene) Blends

Carl, Aronson , Christine Hellard, Mark Williams, Tia Dunn

Northeastern State University

An investigation of phenolic functional group accessibility in hyperbranched poly(4-hydroxystyrene) (PHS-B) is presented. The phase behavior and extent of hydrogen bonding in blends of either PHS-B or linear PHS with a complimentary Lewis base polymer were calculated from glass transition temperature (T_g) enhancements measured using differential scanning calorimetry (DSC) techniques. Lewis basic linear polymers used in this study included polyvinylpyrrolidone (PVP), poly(vinylpyrrolidone-co-styrene) (PVPS), and poly(methylphenylphosphazene) (PMPP). The effects of local steric screening as well as the thermodynamic competition between inter-molecular and intra-molecular hydrogen bonding are discussed with respect to the observed compositional dependence of blend T_g. The separate effects of inter-polymer hydrogen bond strength and copolymerization on the fraction of hydrogen bonded PHS-B hydroxyl groups are compared to linear PHS. The effect of varying the Lewis base linear polymer molecular weight on the hydrogen bonded PHS-B fraction is discussed respect to the free energy of mixing polymers from Flory-Huggins theory. The polymer blend data herein yielded the beginning of a molecular architecture-functional group accessibility relationship for use with the design of novel hyperbranched macromolecular synthetic targets.

05.05.28 Photochemistry in Undergraduate Organic Laboratories

Roosevelt, Mathews , Elizabeth Nalley, Kristen Worthen, Truman Deeb

Cameron University

In an effort to make our undergraduate organic laboratories more green we are writing our own laboratory manual which employs synthesis which are more green and utilizes procedures and techniques which the students are more likely to use in research. One set of laboratory experiments utilizes the Rayonet Photochemical Reactor to carry out photochemical syntheses. A series of experiments will be described in this poster which utilize photochemistry in carrying out the synthesis. Descriptions of other techniques will also be included which have help to convert our laboratories to a research based environment.

05.05.29 Fluorinated Graphene: A Density Functional Theory Study

Ryan, Johnson

Langston University

Graphene is a promising material for a variety of technologies, including microelectronics, supercapacitors, sensors, and mechanical actuators. In this study, density functional theory calculations were used to investigate the bonding properties of graphene and a single fluorine atom, thereby putting the basis to understand fluorinated graphene materials. Our study first focused on validating the first principles computational approach on simple diatomic molecules: O₂, CO, N₂, and F₂. In particular, we calculated bond length, dissociation energy, and vibrational frequency of the molecules, and we compared our results to available experimental data. We found that our density functional theory scheme gives molecular properties deviating by about 3 % from experimental data. Secondly, we used our density functional theory scheme to calculate the bonding energy, ΔE , of a fluorine atom with a perfect graphene layer. In particular, ΔE was computed by referring the total energy of fluorinated graphene to that one of a pristine graphene layer and half the energy of F₂. This calculation gives an energy value for ΔE of -0.72 eV, indicating that F atoms chemisorbed on graphene are more stable than in the gas phase. These results put the basis to understand the chemical and physical properties of fluorinated graphene consisting of supported multilayer carbon films incorporating large concentrations of F.

05.05.30 Dye-Sensitized Solar Cells: Energy for the Future

Roosevelt, Mathews

Cameron University

In this research dye-sensitized solar cells were constructed using an organic dye, brilliant green with titanium dioxide nanocrystals. Different formulations of Titanium Dioxide with different sized particles were used and the properties and performance of the solar cells were compared. These cells consist of titanium dioxide nanocrystals that are coated with light-absorbing dye molecules and immersed in an electrolyte solution, which is sandwiched between two glass plate. Light striking the dye frees electrons and creates "holes"--the areas of positive charge that result when electrons are lost. The semiconducting titanium dioxide particles collect the electrons and transfer them to an external circuit, producing an electric current. The cells can be connected in series to produce cells with voltages as high as five volts which can be used to power a small motor.

05.05.31 Dye-Sensitized Solar Cells: Energy for the Future

Ciara, Kelley , Elizabeth Nalley, Jennifer Green, Seth GeigerSidney McCormack

Cameron University

In this research dye-sensitized solar cells were constructed using an organic dye, brilliant green with titanium dioxide nanocrystals. Different formulations of Titanium Dioxide with different sized particles were used and the properties and performance of the solar cells were compared. These cells consist of titanium dioxide nanocrystals that are coated with light-absorbing dye molecules and immersed in an electrolyte solution, which is sandwiched between two glass plates. Light striking the dye frees electrons and creates "holes"--the areas of positive charge that result when electrons are lost. The semiconducting titanium dioxide particles collect the electrons and transfer them to an external circuit, producing an electric current. The cells can be connected in series to produce cells with voltages as high as five volts which can be used to power a small motor.

05.05.32 Microwave Synthesis in Undergraduate Organic Labs

Dane, Swinford , Elizabeth Nalley, Jessica Gesell, Kristen WorthenTaj Ahmad, Truman Deeb

Cameron University

Allowing many chemical reactions to be completed within minutes, microwave heating has revolutionized preparative chemistry. As a result, this technology has been widely adopted in both academic and industrial laboratories. Integrating microwave-assisted chemistry into undergraduate laboratory courses enables students to perform a broader range of reactions in the allotted lab period. As a result, they can be introduced to chemistry that would otherwise have been inaccessible due to time constraints (for example, the need for an overnight reflux). A number of the chemical transformations use water as a solvent in lieu of classical organic solvents. This contributes to greener, more sustainable teaching strategies for faculty and students, while maintaining high reaction yields. In this poster, four syntheses using microwave heating will be described.

05.05.33 Crystallization of HRasG13D for Structural Determination

Njemile, Miro

Langston University

The purpose of this research is to study the structure of the oncogenic protein RasG13D, a mutant of the small GTPase Ras, which is involved in signal transduction associated with the control of cell proliferation, differentiation and survival. Mutations in Ras are found in about 20-30% of all human tumors and thus its oncogenic mutants, including RasG13D, are important targets against cancer. The RasG13D mutation in particular is frequently found in lung, prostate and thyroid cancers. Two isoforms of the Ras protein, H-Ras and K-Ras, were first mutated at codon 13 to code for aspartate instead of glycine (H-RasG13D and K-RasG13D). After successfully performing mutagenesis, the newly mutated plasmid was expressed in E. coli cells in order to make a cell pellet. H-RasG13D was then purified as well as crystallized. Initial crystals were obtained and there was plenty of protein for further optimization to yield highly diffracting crystals. The structure of H-RasG13D is currently being solved in the Mattos laboratory.

05.05.34 Global Warming: Absorption of Carbon Dioxide Emissions by Trees to Reduce Global Warming

Gabrielle, Williams

Langston University

Carbon dioxide emissions from power plants are one of the leading contributors to global warming. Carbon dioxide emissions are projected to increase by about 1.5% from 2010-2020. This poses a serious threat to life on earth. The melting of the polar ice caps brought about by global warming is a critical issue. If these polar regions become uninhabitable, arctic life will suffer and slowly diminish without a stable habitat. Also, the warm and wet weather conditions provide the perfect environment for several cultures of bacteria, including some new species that could be potentially detrimental to humans. Trees have a high absorption capacity for carbon dioxide. Therefore, our goal is to develop a system consisting of (1) absorption of carbon dioxide emanating from power plants by water, (2) spraying this carbonated water solution on pine trees, and (3) absorption and photosynthesis of carbon dioxide by pine trees. This project will therefore demonstrate that utilization of this system will reduce the carbon dioxide emissions contributing to global warming.

05.05.35 Using the Vernier Polarimeter to Determine the Effect of PH on Optical Activity of Amino Acids

Jessica, Gesell , Elizabeth Nalley, Philip Worthen

Cameron University

Molecules that contain at least one chiral center exhibit a physical property known as optical activity. The optical activity can be measured experimentally using a polarimeter. It does this by measuring the rotation of plane polarized light produced by a solution containing chiral molecules. A biologically relevant molecule that contains a chiral center would include several different amino acids. The optical activity of amino acids is dependent on pH due to the effects of charge on the conformation of the structure. In this study, we measured the optical rotation activity using a Vernier Polarimeter for several amino acids with varying pH and then attempted to explain the results based on the structure of the amino acids.

05.05.36 Carbon Nanotubes: Past, Present, and Future

Avinash, Deshmukh , Soorajath Boominathan

Oklahoma School of Science and Mathematics

Carbon nanotubes are an allotropic form of carbon with a cylindrical structure and are composed of fused five- and six-member carbon rings. This research paper will discuss the history of these molecules, indirectly stemming from the discovery of fullerenes in the mid-1980's and resulting in discovery of the nanotubes in the early-1990's. Various methods of synthesis will be presented, including arc discharge and laser ablation. Properties of the molecule will be discussed, especially those that distinguish carbon nanotubes from other forms of carbon. Several current applications of carbon nanotubes will be described in detail, and ongoing research and unanswered questions in this field will be highlighted. The paper will conclude with a discussion of the overall prospects of carbon nanotubes in both scientific research and their potential applications. Information will be gathered via a survey of scientific literature published on this topic from the past 25 years.

05.05.37 Utilization of Iodine Crystals to Prevent Depletion of Ozone Layer

Danielle, Wright

Langston University

The depletion of the ozone layer is affecting the quality of life. The ozone layer is what protects us from the ultraviolet radiations that cause cancer and many other health issues. Ozone particles are very dynamic and can be broken apart very easily. Currently ozone is being broken down at a high rate which is causing the depletion of the ozone layer. One of the causes behind the depletion of the ozone layer is a result of chlorofluorocarbons being released into the atmosphere. Chlorofluorocarbons are one of the main constituents in aerosols. The chlorine atoms act as catalysts for the destruction of ozone. Since chlorine atoms are the main cause of the depletion this study is to bring about the reaction of chlorofluorocarbons with iodine crystals instead of ozone. If this can be accomplished this will reduce the depletion of the ozone layer.

05.05.38 Identification and Manipulation of Lignin Degrading Genes in Switchgrass

Rajah, Singh

Langston University

The production of biofuels is important in replacing non reusable sources of energy. Corn produces a large amount of the bioethanol used for energy in the United States today. Using another source for bioethanol will allow more corn to be used as animal feed and food. Switchgrass, a livestock feed, can produce cellulosic ethanol that can be used for biofuel production. Cellulosic ethanol comes from the process of breaking down cellulose in the cell wall to glucose and then converting it to ethanol via fermentation. Lignin, another component of the cell wall, hinders the access to cellulose degrading enzymes. Hence reducing the lignin levels will facilitate efficient degradation of cellulose. A webtool called Ligpred, based on machine learning system was developed to identify lignin degrading genes. This tool was used to identify eight putative lignin degrading genes in a switchgrass EST collection containing million reads. Five of the eight genes were cloned from switchgrass cDNA using polymerase chain reaction. From these clones the recombinant proteins will be expressed and purified. In vitro assay will be used to verify the lignin degrading activity of these recombinant proteins. The genes that confirm lignin degrading activity will be overexpressed in switchgrass using an inducible promoter. This inducible promoter would allow the expression of the lignin degrading genes only when the plants are harvested and sent to the biofuel processing industry.

05.05.39 Green Energy: Blends Of Biodiesel And Ethanol

Joseph-Michael, Fields

Langston University

Everyday billions of people around the world are using various forms of energy. Unfortunately many of these forms of energy are not renewable. This means that sooner or later we will run out of these resources. One of the most common forms of energy used is petroleum (oil). Therefore scientists have been working to find alternative sources of energy that could also be renewable. One of the possible answers to this question could be biodiesel. Still, there are improvements to be made to the longevity and effectiveness of biodiesel to allow it to be even more potent. The goal of this experiment is to see if a blend of ethanol and biodiesel is more efficient in cold weather temperatures and have equal or superior fuel properties to non-renewable blends. It is suggested that adding ethanol to biodiesel will compensate for the increase in viscosity at low temperatures and low heats of combustion for biodiesel. This experiment is important because research has already proven that ethanol-biodiesel-diesel (EB-Diesel) micro emulsions are stable well below sub-zero degree temperatures and have shown equal or superior fuel properties to regular diesel.

05.05.40 Effect of Global Warming on Sea Level Rise

Ariana, McCoy

Langston University

Thermal expansion is the increase in volume(or decrease of density) of oceanic water. It happens when water temperature is increased. Scientist believe that glaciers contribute very little to the actual rise in sea level. In fact they say the mass of frozen water, above and below water, is identical to the mass of the displaced water. They move on to say thermal expansion and the melting of glaciers combined would have a bigger effect on sea level rise. A known property of water is that it expands due to heating. Furthermore, the thermal conductivity of water is 0.58 W/m-K compared to air being 0.024. These results ensure the likelihood that water absorb heat from air. However, present knowledge lack supporting details as the actual rate of expansion due to increased temperatures. Our purpose is to study the rate of water expansion (change in density) with temperature. We will make density measurements in comparison to time and temperature.

05.05.41 Compound X: Treating Type II diabetes Denzel Pugh¹, Bing Zhu², Rong Ma², Chem. Dept., Langston University, Langston, OK, 73050, Integrative Physio., UNT Health Science Center, Fort Worth, TX 76107

Denzel, Pugh

Langston University

Chronic kidney disease (CKD) affects over 31 million American people and no therapeutic means can cure this disease at present. Diabetes and hypertension are two major factors causing CKD. The aim of this study is to generate an animal model of type II diabetes, a leading cause to CKD. The study started with sixty male Sprague-Dawley rats at an age of ~6 weeks. All HFD rats were injected with streptozotocin (STZ) at 35 mg/kg via tail vein 5 weeks after high fat diet. Body weight, blood glucose level, plasma insulin, triglyceride, cholesterol, 24 h urine output and urine protein concentration were monitored for all rats. The major findings include: 1) the levels of blood glucose, plasma triglycerides, and urinary albumin excretion were significantly elevated from the 5th week after STZ injection in HFD/STZ rats; 2) a significant increase in the level of plasma insulin occurred in the rats with 5 week HFD (before STZ injection) and kept throughout the entire study; 3) a significant increase in the plasma cholesterol level did not occur until 19 weeks after HFD. These results suggest that HFD plus STZ rats manifest type II diabetic phenotypes and could be used as an animal model for diabetes research. Funded by the Department of Health and Human Services, National Institute of Health, National Heart, Lung and Blood Institute, SMART grant 5R25HL00779618 To Dr. Thomas Yorio

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

06. Computer Science

05.06.01 Artificial Neural Networks: A Study of XOR

Patrick, Harrington , Curtis Roberts

Northeastern State University

The human brain is capable of solving complex problems that are enormously difficult for a computer to solve. The concept for Artificial Neural Networks, or ANN, first arose in an attempt to emulate the brain and its remarkable problem solving capabilities within a computer. The purpose of this project was to learn as much about Artificial Neural Networks as possible within the given timeframe by implementing an Artificial Neural Network of my own. The Artificial Neural Network was then setup to properly compute the XOR function.

05.06.02 The Controversial Picture of Michael Jackson: Fear Vs. Trust

Taylor, Fisher

Cameron University

Each year, controversial photos are published causing a huge uproar from the public. I chose a picture of Michael Jackson dangling his 9-month-old son over a third floor balcony of a hotel in Germany that was published in 2002. I chose this photo because the moment I saw it, it bothered me. I did not agree with the action being shown in the photo, nor did I agree with the photojournalist taking the picture. I believe that the photographer should have been getting help, not taking a picture of what could have resulted in a very tragic even for one of history's biggest pop stars. I interviewed 10 students here at Cameron University in order to get multiple perspectives on the photograph. Most of the people interviewed said that they would have taken the photo and there was nothing wrong with this picture. A few people disagreed with that for multiple reasons; the main one being that a man was holding a baby over a balcony. Over half of the students thought that it was right to publish the photo on CNN news and ABC news and that there were no ethical issues being violated here. I personally disagree with the feedback I received. I think taken a photo like this was wrong and that one should be getting help when they see something so horrific. Taking a picture should not be what comes to mind when you see something like this.

05.06.03 Fast Comprehensive Planner for Fully Observable Nondeterministic Problems

Andres, Calderon Jaramillo , Jicheng Fu

University of Central Oklahoma

Research of artificial intelligence planning aims to design planning algorithms (i.e., planners), which target at finding a plan for a problem to take a system from an initial state to the goal state. In this project, we propose an algorithm that uses an existing classical planner to efficiently find strong and strong cyclic plans for nondeterministic problems in fully observable domains. Additionally, we equip our planner with heuristics that inform the search for a plan along relevant directions. Our experiments suggest that our algorithm significantly outperforms state-of-the-art planners in commonly used benchmark domains.

05.06.04 A Computer Science Approach To Mobile Apps Development

Rad, Alrifai

Northeastern State University

Mobile devices are progressively replacing personal computers for many types of users, leading to a growing demand for mobile applications (apps) development. However, apps development requires rigorous programming and strong software development knowledge. Hence, apps development can be connected to other topics in computer science. To better relate mobile applications development to other topics from computer science and adapt to the continuous evolution in the mobile development environment, apps development content is organized as a model consisting of five modules. Throughout these modules, mobile apps development is treated as an integral part of the computer science curriculum.

05.06.05 Mining Stock Market Data

Rad, Alrifai , Maurice Gatlin

Northeastern State University

The purpose of this project is to use data mining algorithms to predicate stock market movements based on data analysis. The approach uses pattern-matching for interpreting the behavior of historical stock data of an individual company. The approach then applies a set of rules, chosen by the RIPPER algorithm to select the “best” curve segments to use in making a prediction. The “best” curves were determined by looking at 5282 curve segments from the stock price data of 5 companies, and marking the ones that yielded predicted price changes that were closest to the actual price change. The RIPPER algorithm was used in identifying the rules for selecting the “best” curves. It came up with 7 rules that were accurate 58% of the time on the test data.

05.06.06 Using CMMI to Improve Computer Science Capstone Projects

Rad, Alrifai , Allan Eastham

Northeastern State University

The potential applicability of CMMI practices to student capstone projects, as well as the benefits thereof, were determined through surveys of both faculty and students, current and former, as to their experiences with the capstone course.

05.06.07 Android RSS Aggregator

Rad, Alrifai , Chris Garrett

Northeastern State University

The purpose of my application is to create a quick and easy way of collecting and organizing RSS feeds, allowing users to quickly find and view the content of the feeds. The user first creates a group such as news, sports, or technology. Next they add feeds to the group. Once the application has retrieved the links from the RSS feed, the user will be able to click a link to visit the article via web browser (see figure 2). The application updates on a frequency the user sets so that the links are always fresh. This application was developed on and for the open Android mobile platform using Java in conjunction to the native SQLite database engine for storage.

05.06.08 CS Job Finder

Rad, Alrifai , Jerry Capps

Northeastern State University

The CS Job Finder website is used to help students find Computer Science Jobs, Contacts to speak to, and Employers that have listed jobs on the site. Employers can list their jobs and make changes to them such as whether the job is currently open (active) or filled (inactive). Contacts and Alumni can list their information for students and also search for jobs on this site. The Administrators for the site have the capability to make changes when needed to any information. They are who will add Employers and Contacts to the sites, and can also add jobs, students, and even other admin. Administrators can also remove any information from the site. C# was used with the Visual Studio IDE running the ASP.NET framework along with SQL Server 2012. The ultimate goal of all this so users can easily browse and view jobs related to the Computer Science field.

05.06.09 Kids: Let's Learn

Rad, Alrifai , Hue Xiong

Northeastern State University

Let's Learn for Kids seeks to engage preschoolers in learning, through the use of the software activities this game has to offer. This application is developed and incorporated into four learning categories that will entertain and educate children prior to entering school. It will introduce children to the basics of learning, including counting numbers, the alphabet, colors and shapes. For example, when the user select numbers to learn, they are given buttons to press, which will show the number selected with the number of objects and an audio telling what the number is. Let's Learn for Kids is developed in the Eclipse platform using the Java programming language.

05.06.10 Dynamic Charts

Rad, Alrifai , Daniel Cooper

Northeastern State University

More than ever, our world is being driven by information. Dynamic Charts' intent is to provide a tool that allows users to visualize that information through a dynamic chart. Though there are many excellent charting applications available, there are few that utilize Structured Query Language (SQL). The few that do, require users to have a solid grasp of SQL which, is the standard language used for accessing and manipulating the data we create everyday. Dynamic Charts aims to remove the need for users to know any SQL at all by providing a simple Graphical User Interface (GUI) that performs parameterized queries. The result of those queries are stored into a dataset that can be manipulated without altering any content in the database. Thereby, eliminating any concerns of data loss. Dynamic Charts will be a beneficial tool for any business or entity that relies on relational databases to store it's data. Additionally, it could free up resources spent on developing enterprise solutions that provide the same information in a structured form.

05.06.11 Using Machine Learning Techniques to Effectively Handle Collision in A Wheelchair Simulation System

Zhibin, Zhang , Jicheng Fu

University of Central Oklahoma

The commonly used method of detecting collision in computer graphic simulation is using either bounding rectangle collision detection or pixel collision detection. The bounding rectangle method can provide a relatively fast detection, but the accuracy is compromised to trade for the efficiency. The pixel collision detection can provide an accurate detection, but it is very slow. This project is aiming to discover a new effective and accurate method to detect collision in computer graphic simulation by using machine learning techniques.

05.06.12 Decision Simulation Games for Bicycle Safety

Son, Park

Cameron University

Thousands of bicycle accidents are treated in emergency rooms across the country every year. Bicycle simulators can improve safety for everyone. Making a decision simulation game for bicycle riding is essential for children and adult safety. The research shows that how children and adults cross intersections with oncoming automobiles in simulation game. Moreover, the literary research provided valuable evidence of immerse learning to the real-life situation. Making decision simulators for bicycle riding is necessary for children and adults safety because the training can provide valuable tools such as a virtual learning experiences, cognitive exercise and actual application of knowledge, which could help reduce bicycle accidents.

05.06.13 Towards a Mobile-Cloud System to Capture Wheelchair Data

John, Sluder , Jicheng Fu

University of Central Oklahoma

The use of mobile computing and cloud computing provides manageable control on data collections. Collecting information on power wheelchairs, using mobile computing, is gained by smooth controls on a smart phone. This can be obtained by developing a user interface on an Android application. The user interface guides the person, who is to collect the data, in a more flexible manner — such as text to speech. In data collection, text to speech is implemented to direct the user when to begin the motion of the wheelchair. This implementation will allow continuous transitions between different periods of data collections, in other words, this helps to reduce noise. In addition to this method, there are other procedures to implement in order to diminish noise. So the collection of data, throughout the series of wheelchair motions, are distributed to the cloud from the mobile phone. Cloud computing helps to store immense amount of information — the main reason for its use. During wheelchair tests, the smart phone, equipped with an accelerometer, as well as a gyroscope, records directions, positions, and speed. For cloud computing, Google App Engine is used. We will develop applications in the Google App Engine to control the flow of data and manage the information. The overall scope of data collection such as cloud computing, mobile computing, and user interfaces is only a component of a larger goal — using applications of artificial intelligence to aid wheelchair m

05.06.14 Development of a Smartphone App to Collect Wheelchair Maneuvering Data

Melicent, King , Jicheng Fu

University of Central Oklahoma

Power wheelchairs are a promising development for individuals with disabilities, allowing many users to attain a level of mobility, and thus independence, which can substantially contribute to quality of life. However, these individuals rely on their wheelchairs for a variety of reasons, and in a variety of situations. In order to optimize the benefits of this technology, more must be known about users' intentions and habits with regard to wheelchair driving. Since smartphones are now a nearly ubiquitous technology, an intuitive approach would involve setting up the user's own mobile device to collect data on wheelchair use, eliminating the cost of installing dedicated hardware for data collection. The smartphone's accelerometer is capable of taking precise measurements of the device's acceleration, which can be analyzed to draw conclusions about the speed and distance of the user's movements. This project uses an Android app to collect accelerometer data, and applies a trapezoidal area function to estimate the total distance traveled. Text-to-speech functionality is employed to convey verbal instructions to the user.

05.06.15 Using Grid Technology to Enhance Render Time for 3d Parallel Imaging and Animation.

Warren, Moseley , Hayden Harrington, Mary Phillips, Mike Morrison

Southwestern Oklahoma State University

Rendering 3d images and animation take an enormous amount of computational technology. In the past renders could take many hours using conventional Pcs. Grid Technology allows one to eliminate all that creative downtime by taking advantage of the power of network rendering. In this project we build a simple render farm of up to multiple nodes with up to hundreds on cpu cores. This frees one to continue working on your next piece while the tedious rendering is handled seamlessly in the background. The emphasis is on flexibility and building images in a farm can be utilized by every user an designer in an organization in your organization, so all of your creative workstations can remain productive.

05.06.16 Knowledge Management in a Malcolm Baldrige Framework for Small to Medium Business in Rural and Western Oklahoma

Warren, Moseley

Southwestern Oklahoma State University

Our society has become more and more knowledge intensive as opposed to capital intensive in the past decades. Large Corporations have embraced the implementation of Knowledge Management in the flow of every day activities. Knowledge is routinely treated as an asset. However, the cost of adding this activity is routinely prohibitive for small to medium businesses and has been set aside for the Fortune 500 companies. This research will address factors that directly approach the use of Knowledge Management Techniques and Award Winning Quality Measures to rural small and medium businesses.

05.06.17 Wheelchair Simulation 3D System for Young Children with Severe Motor Impairments

Wenxi, Zeng , Jicheng Fu, Sean Smith

University of Central Oklahoma

Secondary impairments have become a greater risk for young children with severe motor impairments. Lacking of mobility to safely control a joystick-driven wheelchair is the reason caused heightened risk. Although power wheelchair is widely used to remedy this defect, the steep learning curve and high price make it unapproachable for young children. However, research shows that wheelchair simulators can be an alternate way to practice wheelchair driving in a safer environment with lower cost than that in the traditional training settings. We once built a 2D version of wheelchair simulation system, but 2D gaming system is not realistic enough comparing with 3D game. Then, we started to use Unity 3D to build our wheelchair simulation system. Several stages were designed for specific training aims. For example, a straight road stage is used for improving the skill of driving straight; and a turning stage makes children recognize the correct routes and strengthen their mobility when they make a turn. The 3D game engine brings not only great graphics and animation mechanism, but also powerful physical ability. The system produces different sounds depending on the objects the wheelchair collides with, and prompts a message when the children drive too fast. Manipulation data, such as accelerations and timing statistics, are recorded for every single maneuver. A playback function is added to review children's training situation, too.

05.06.18 The Use of Design Patterns for Rapid Prototyping of 2D Video Games

Hong, Sung , Joel Darling

University of Central Oklahoma

There are many ways to create a barebones 2D game. There are a few concepts which almost overlap regardless of the type of the game. Using a few fairly common design patterns, we can successfully create a robust framework which can be used for rapidly creating 2D game prototypes. The design patterns which were used for this project are Template, Strategy, and Flyweight. The template design pattern can be used to create a common interface for all items which can be placed in the game world whether or not they are to be rendered on the screen. Using the template pattern, we can significantly reduce the amount of redundant code that will have to be programmed otherwise. Using the strategy pattern we can dynamically access the list of game objects and change the way each item should be handled. This allows us to perform tasks only associated with the child object without knowing exactly which child object is currently being updated within the list. We can use the flyweight design pattern to handle the creation of individual game tiles which are drawn in the game world. This significantly reduces overhead by limiting the amount of redundant game static (and some dynamic) objects by initializing a single object per unique in game item type before pushing it into the list of game objects. Utilizing those three design patterns, we have created a video game to verify the validity of the idea.

05.06.19 A Research and Training System for Young Children With Severe Motor Impairments

Sean, Smith , Jicheng Fu, Wenxi Zeng

University of Central Oklahoma

We are developing a 3D wheelchair simulation system using a game engine, which will allow children aged 2 to 5 years with severe motor impairments to practice the fundamental skills required to safely control a joystick-operated wheelchair. The physics of the simulation will mimic the real world so that the data we collect will be useful and relevant. State-of-the-art artificial intelligence techniques will be employed in this research. We will use the simulation system as a test bed to evaluate numerous algorithms, such as path finding algorithms, navigation algorithms, maneuvering control algorithms, etc. These algorithms can be used to help the young children safely control their wheelchairs. Since young children typically think in a linear manner when attempting to reach a goal, we will utilize this characteristic to develop heuristics that will help determine where the child intends to go. In sum, our research system will overcome the limitations associated with real wheelchairs meanwhile providing a safe, affordable, and exciting environment to train young children and test various artificial intelligence algorithms.

05.06.20 Optimizing the Network Structure for ANN in WEKA

Paul, Wiechmann , Jicheng Fu

University of Central Oklahoma

In this work, we attempt to find the optimal network structure of the artificial neural network (ANN) for predicting optimal power wheelchair tilt and recline settings for the prevention of pressure ulcers in patients with spinal cord injury. The network is trained using both the back propagation and particle swarm optimization (PSO) algorithms. An exhaustive method is used to test a range of structures. The optimal structure is determined to be the structure that generates the highest correlation coefficient. The program was implemented in Java using the open source packages WEKA and JSwarm for the ANN and PSO algorithms, respectively. Multithreading was used to improve performance.

05.06.21 Implement the PaaS (Platform as a Service) on Windows Azure Cloud and Deploy a PHP-MySQL Cloud-based Online Registration Web Application Using FTP

Ryan, Summit , Ming-Shan Su

Southeastern Oklahoma State University

“Cloud Computing is changing the way businesses and users interact with computers and mobile devices.” – Kris Jamsa, President/CTO of Jamsa Media Group and Author. The Cloud is coming and coming big, even though we still don't fully grasp its potential impact on our world. SaaS (Software as a Service), IaaS (Infrastructure as a Service), and PaaS (Platform as a Service) are the three major on demand services being provided over the Cloud. With Microsoft's awarded Windows Azure Educator Grant, each of our students was given an academic pass of worth \$1,200 market value to use the Windows Azure platform to try out various on demand cloud services. In one of the projects in our Distributed Networks course, each student was asked to implement the PaaS (Platform as a Service) on Windows Azure Cloud and deploy a PHP-MySQL cloud-based online registration web application using FTP. At the completion of the project, each student has learned the following: how to create a Windows Azure web site and a MySQL database using the Windows Azure Management Portal, how to set up a WIMP (Windows, IIS server, PHP, MySQL) platform, how to build and test a web application locally, how to get the MySQL and FTP connection information/strings, and how to publish the application to Windows Azure using FTP.

05.06.22 Using QR Codes in Mobile Apps

Rad, Alrifai , Mickey Barnett

Northeastern State University

Barcodes has been universally used to track and access various types of information. However, the readability of barcodes can be degraded due to the wear and tear of codes. A practical alternative to barcodes is QR codes which can be encoded in a manner that embraces error detection and correction, hence rendering the QR code tolerant to partial obstruction. Additionally, the QR codes can be scanned with a smart phone, thus increasing the number of devices that can be used to scan this type of data.

05.06.23 A Study of Background in a 10 Hour Exposure of NGC 4388 with the Swift BAT Telescope

Julien, Hill

Langston University

Swift is a spacecraft whose main mission is to study the origin of the Gamma-Ray Burst phenomena, but it can also be used to detect other astronomical objects that emit gamma-ray light. This is essential to detecting things such as NGC 4388, a Seyfert 2 galaxy containing a supermassive black hole. Unfortunately, there is a diffuse source of gamma-rays across the cosmos getting in the way of detection. So my goal was to utilize the data "images" collected and specific computations, including standard deviation, to understand and measure the background noise, thus allowing me to be able to detect an astronomical source. Compiling the Detector Plane Images into a final image led me to see a striped pattern created by systematic errors. Closer examination of a strip of data revealed a recording that was not likely a result of a statistical fluctuation, but rather an astronomical source. Ultimately, I was able to establish at a confidence level of about 99.999%, that the astronomical source was a real astronomical event and identified it as the Seyfert 2 galaxy, NGC 4388.

05.06.24 Baseline the Study for Skin Blood Flow Response to Wheelchair Tilt and Recline

Yuan, Zhou

University of Central Oklahoma

we will conduct a study to investigate the skin blood flow response to wheelchair tilt and recline settings. In the experiment, we will adjust wheelchair tilt and recline angles to collect skin blood flow data of healthy subjects. We will use the Laser Doppler flowmetry (LDF) (Periflux System 5001, Perimed, Sweden) to monitor skin blood flow. Prior to the experiment, the healthy subjects will need to sign the consent form and then fill out the demographic form for research participants. In the experiment, we will put the laser probe on the right ischial tuberosity to monitor the skin blood flow and use the laptop to record the data. The purpose of the experiment is to use healthy subjects' skin blood flow data as a baseline to compare with those in people with spinal cord injury.

05.06.25 The Use of Simulation and Gaming to Improve Literacy

Melissa, Merrifield

Cameron University

Children are growing up in a technologically saturated world. They use ICT tools (Internet, search engines, e-mail, Weblogs, and digital video) every day with ease. This research review was conducted to learn about the different cognitive simulations used to help young children with literacy. Educators are hesitant to integrate simulations and gaming into their curriculum because they have a negative perception of video games. The educators would like more information regarding gaming literacy and its positive effects on learning. Educators are trying to find ways to adopt gaming literacy into their curriculum. It is very important to provide a debriefing process to scaffold learning. The debriefing process in game-based learning provides information regarding which learners make a connection between game playing and real life situations. This research gives examples of different game designs, their goals and how educators could use the game design in their curriculum.

05.06.26 A Web-based Visualization of Heuristic-based Query Optimization

Gang, Qian , Tuan Nguyen

University of Central Oklahoma

Query optimization has been developed since the early '70s. Although there are many techniques in the area, the common goal is reducing the time of executing a query in a DBMS. Understanding how a query optimizer work is the first step for students who want to be involved in this area. The purpose of this presentation is to provide students a visualized way to practice or get into the fundamental issues of heuristics-based query optimization. For teachers, the web-based visualization will be a good teaching tool to demonstrate the process.

05.06.27 An In-Depth Study of the Ten Most Critical Web Application Security Risks

Donghan, Lee , Myung Park

University of Central Oklahoma

The Internet is one of the most important tool with which we live in modern society. However, many people do not realize that their online credit-card transactions are processed with a low-level. For example, Target has been hacked by attackers in recent years, having millions of credit-card information stolen. With this concern, security-aware software companies perform penetration testing before the actual deployment of their web applications. This work conducts an in-depth study of the top ten most critical web application vulnerabilities that were released by the OWASP (Open Web Application Security Project) in 2013. The top-10 list has barely changed over years. In other words, it would be beneficial if we study those vulnerabilities because they are constantly threatening web applications.

05.06.28 Establishing An HTTPS Connection Between An Android Device and A Web Server

Gang, Qian , Stan Gravchikov

University of Central Oklahoma

This presentation introduces how to establish an HTTPS connection between an Android device and a Web server to transfer data in a secured manner. We cover the use of certificates, which are small data files that bind a cryptographic key to the organization's identity. Certificates are utilized to secure transactions and data transfers. In our implementation, the client side is a Java-based Android app and the server side is a script program in PHP.

05.06.29 Future Web Application Pentesters: Equip Yourself with Top Learning Tools!

Sachet, Khanal , Myung Park

University of Central Oklahoma

Web applications are playing a very important role in the business-critical online world, so they must provide a very secure service to the clients. However, most web applications are deployed with some critical software vulnerabilities that may be exploited. In order to detect those vulnerabilities, developers have to rely on penetration testing before deployment. Web application penetration testing requires penetration testers to have an in-depth knowledge about different vulnerabilities, attack methods as well as defense strategies. There are many web applications that are deliberately designed to be vulnerable for training and educational purpose. Also, hundreds of free vulnerability assessment tools are readily available for penetration testing. In our work, we will discuss some of the most popular and useful penetration testing tools that will help future penetration testers enhance their knowledge and skills on web application security. We will specifically focus on the vulnerabilities listed in the OWASP top 10 vulnerabilities of 2010 and 2013, and provide all the practical testing methods involved while pitting Kali Linux machine against some of the most critical web security risks.

05.06.30 The Implementation of KNN Algorithm in Wheelchair Maneuver Testing

Chuanwei, Chen

University of Central Oklahoma

In order to test the maneuvering condition of a wheelchair, we can use the K-nearest neighbor(KNN) algorithm. KNN is a simple, while effective machine-learning algorithm, which has been widely used in research. First of all, we measure the acceleration of the wheelchair when it is moving and stop. For both maneuvers, we select 9 sets of sample data. Each set contains 10 acceleration data instances, which are captured by an accelerometer. To use KNN, a sequence of input data is partitioned into groups, each of which contains 10 data items. In our study, we set K to 5, i.e., 5NN. For each group of data instances, we calculate its Euclidean distance from each of the sample data set (9 in each maneuver, i.e., stop or moving). Hence, we obtain 9 distances for each maneuver. We then select 5 data sets that have shorter distances than other sample data points. If the majority of the 5 data sets are related to the moving condition, we make a conclusion that the wheelchair is moving. Otherwise, it is a stop maneuver.

05.06.31 Data Auto-Segmentation for Power Wheelchair Maneuver Analysis

Tao, Liu , Gang Qian, Jicheng Fu

University of Central Oklahoma

Few research attempts to use smartphones to collect wheelchair maneuvering despite the prevalence of using smartphones in research. Part of the reasons is that accelerometers in the smartphone are sensitive to noises. In order to advance research in this under-investigated area, a smartphone (Samsung Galaxy SII) with cloud computing support was presented in our former works. However, it is not easy to automatically partition wheelchair maneuvering data to prepare training data for subsequent data mining usage due to the noises, which may cause significant bias in distance estimation. We installed ActiGraph GT3X+ sensors on both wheels to facilitate the distance estimation for training tasks. The rotation cycles of the tires could be acquired from GT3X+ accelerators and then the driving distance could also be calculated. Since the log file in this device is a continuous single file, we present a method to automatically partition maneuver segments. With these segments, the distance in each segment could be estimated more accurately and it could also help us understand the log files from smartphones. Our approach is proved to be accurate and effective for preparing training data for subsequent data mining study. In typical linear maneuvers, all segments were correctly identified and selected. And in hybrid maneuvers with linear and turning maneuvers, 83.33% segments are correct. Such automatic training data segmentation would be a great help in both efficiency and accuracy.

05.06.32 “The Modern Gyroscope: Using a Smart Phone to Improve the Quality of Living for People with Disabilities” Sean Gausman, Stephen Vincent, & Dr. Jicheng Fu (Advisor) University of Central Oklahoma

Stephen, Vincent

University of Central Oklahoma

One of the biggest motivations for developing new technologies is to enhance the quality of life for those in need. The National Health Interview reported that approximately 1.6 million Americans are confined to a wheelchair. Our research attempts to use cutting-edge smartphone technology to reduce the risk of pressure ulcers in these individuals. Methods: Our hypothesis builds upon previous research in increasing blood flow of the users, by having customized angle. With current smartphone technology, we have developed an application that will use the accelerometer and gyroscopes built into the phone and give the user a simple way to measure their desired angles. This was accomplished by buffering the raw data provided by the smartphone, and utilizing current object oriented programming methods. Results: By affixing the device to the user's wheelchair, the application can display, measure, and record the tilt and recline angles. The application was created and tested on the Android operating system. The phone could be installed in one of many possible ways. The application takes in count the three axis of three-space and calculates accordingly. A text to speech feature was added to help relay the current and desired angles to the user.

05.06.33 Global Grid Impact on Regional Universities in Oklahoma

Warren, Moseley

Southwestern Oklahoma State University

This poster covers the effort at Southwestern Oklahoma State to upgrade its computing power. Regional Universities in Oklahoma have limited resources in the area of High Performance Computing. This poster is about the use of Volunteering Computing at Southwestern Oklahoma State University for the purpose of allowing undergraduate research in areas that require intense computational demands. It allows students to share computing resources and to interact on a collaborative level with students at larger universities both locally and globally. Volunteer computing uses computers belonging to ordinary people, like you, to create a computing grid that can rival the most powerful supercomputers in the world. While you're not using your computer, someone else is using it for research. While not in use volunteer computing software uses your leftover computer power to solve calculations, perform simulations and otherwise contribute to some amazing projects.

05.06.34 Elucidation of Critical Skills Thinking with Visual Argumentation and Dialogue Mapping for Distributed Communities of Practice.

Warren, Moseley , j Stout, Ryan Wood

Southwestern Oklahoma State University

The situated nature of learning, remembering, and understanding is a central theme in impact of technology on today's communities of practice. Distributed electronic learning models embrace the basic concept of Legitimate Peripheral Participation as proposed in concept of Communities of Practice as proposed by Lave and Wenger. However the model Communities of Practice depend on makes visualization of the data associated with a product difficult. In this poster session we will explore new web services technology combined with visual argumentation and Dialogue Mapping to provide and electronic model of Learning that works well in Rural and Western Oklahoma. Sometimes in Rural Western Oklahoma you will find school districts that as little as 86 K to 12. Because of this rural nature, communities of practice are difficult to implement because the method requires solid distributed technological foundation. We present techniques that enhance the learning model for communities of practice in rural Western Oklahoma.

05.06.35 Service-Oriented Architecture Within UMB

Jodeci, Ross

Langston University

UMB Financial Corporation is an American financial services company based in Kansas City, Missouri. UMB was needed to utilize methodology that would allow efficient communication and understanding of tasks and projects between its disparate departments. When all departments are in communication, services are easier to get done and customers are satisfied which brings more customers to the bank. Service-oriented architecture, SOA, is a set of principles and methodologies for designing and developing software in the form of interoperable services that aid businesses. Some benefits of SOA include: flexibility between IT and business; reuse of existing services; provides a model for the integration of business partners', customers', and suppliers' services; cost reduction; customer satisfaction; reduces business risk by keeping the company within the guidelines of government regulations. The immediate object of this research project was to construct SOA to meet the need of UMB. We utilized IBM's WebSphere software to produce SOA. The approach also involved scrum agile software development methods based on iterative and incremental development, where requirements and solutions evolve through collaboration between self-organizing, cross-function teams. Removing impediments to the ability of the development team to deliver the sprint goal/deliverables was maintained by an assigned scrum master. SOA is still being implemented within the bank. October 6th is the d

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

07. Criminal Justice

05.07.01 An Exploratory Analysis of Trends in Crime Related to Nursing Homes in Oklahoma over the Past 30 Years

Talisha, Griffin

University of Central Oklahoma

With the increase in life expectancy our society is facing a critical issue of providing the care needed for the aging population. Major societal changes that have taken place since the late 70's have left members of American society with a problem that if looked upon by other cultures that problem would not exist as it does here. The tradition of taking care of the elders within the family has been present for decades amongst more traditional cultures. However, with the culture that persists today in America factors such as the availability of the family, the needed finances, and help are not present as they should be. Instead institutions have been set in place to provide that needed care. However, the problem is these institutions are not providing the quality- let alone humane- care these individuals need. This research will uncover trends in crimes in nursing homes throughout Oklahoma over the past 30 years. The crimes being studied include conventional and white collar crimes. In addition, this research will provide awareness of the need to address the corruption and lack of proper care given to elders in nursing homes throughout Oklahoma, along with solutions on how to solve these problems.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

08. Engineering

05.08.01 Aerial K9 UAV System

Nick, Rymer

Southwestern Oklahoma State University

First Responders need a reliable tool for use in assessing disaster areas and to assure the safety of personnel and equipment during operations. A UAV (Unmanned Autonomous Vehicle) surveillance system that is easy to operate and that can serve as their eyes and ears for improved situational awareness is the aim of this Aerial K9 project. The initial investigation will consist of evaluating a number of low cost sensor suites in order to obtain an understanding of the behaviors of the UAV when using autonomous programs. This sensor suite will include several sensors e.g. sonar, infrared, laser, etc. and be used to develop algorithms that can be used as a failsafe for fault tolerance. Utilizing an open sourced program called OpenCV (open source computer vision) and a camera together we propose to develop an object detection system. OpenCV is software that's developed to detect objects, faces, 3D map objects, and detect movements, just to name a few of its capabilities. Object recognition will be the basis for object avoidance and facial recognition that could be used as a safety feature to prevent unsafe flying near people.

05.08.02 Interaction and Dynamics of Bipolar Janus Particles in a Background Electric Field

Mohammad, Hossan , Matthew Benton

University of Central Oklahoma

Janus particles, named after ancient Roman god Janus, with two region of different physiochemical properties such as surface charge polarity demonstrate a multitude of interesting effect in a background electric field relevant to many engineering applications. In this research, we implement a robust in-house hybrid numerical scheme to study particle-particle interactions and dynamics for ellipsoidal bipolar Janus particles with and without an external electric field. An immersed interface method is employed to obtain the electric field in a fluid media with embedded bipolar particles and an immersed boundary method is used to predict hydrodynamic response. The bipolarity is imposed by providing surface charges of opposite polarity at the two ends of particles. We investigated the relation between electric field distribution, field-induced force, and particle configurations on assembly/disaggregation. The simulation results show that the particles always undergo electro-orientation process in order to align with the external electric field. The speed of this orientation process depends on the initial particle configurations, direction and strength of the background electric field. The results also show that in presence of an external electric field, the ellipsoidal bipolar particles form a chain parallel to field direction or stay apart depending on the inter-particle distance, as well as the relative strength and direction of external electric field. On the other hand, if th

05.08.03 Imaging Biological Tissues with Optical Coherent Tomography Based Elastography

Wei, Chen

University of Central Oklahoma

We present an optical coherent based technique to image elastic properties of the human thyroid. Based on the optimized kernel size for 2D normalized cross-correlation, the wavelet differentiation method was used to estimate the tissue strains. The influences of the dilation parameter of wavelet on calculations of axial strain had been investigated. Experimental results suggest that the dilation parameter of 8 was selected in strain calculation for best quality of axial strain images. The method based on wavelet differentiation shows great potential for optical coherence tomography elastography. In addition, elastic properties images of thyroid with suspected cysts were depicted to distinguish benign lesions qualitatively. Thus, elastic properties imaging based on optical coherence elastography shows great promise for the detailed characterization of lesions and preliminary diagnosis of human thyroid diseases.

05.08.04 Biological Mechanism of Nanotechnology and Near-Infrared Laser Irradiation

Wei, Chen

University of Central Oklahoma

Use of near-infrared laser irradiation and carbon nanotubes allows selective photothermal tumor cell destruction. Combined with immunological stimulation, using a novel adjuvant, we also observed the anti-tumor immune responses when treating animal tumors using the laser-nano treatment. The local application of laser-nano-immunotherapy appeared to result in a systemic curative effect. In our mechanistic study, we found that the laser-nano-immuno treatment can activate antigen-presenting cells, such as dendritic cells (DCs). More importantly, the uptake and presentation of antigens by these antigen presenting cells were significantly enhanced, as shown by the strong binding of tumor cells and DCs as well as the proliferation of T cells caused by the DCs after the DCs had been incubated with laser-nano-immuno treated tumors. These cellular observations provide evidence that a systemic anti-tumor immune response was induced by the combination of laser and nanotechnology.

05.08.05 Suppression of Microglial-Induced Neuroinflammation in LPS-Activated Microglia by Low-Power Laser Irradiation (LPLI)

Wei, Chen

University of Central Oklahoma

Microglial activation plays an important role in neurodegenerative diseases. Once activated, microglia have macrophage-like capabilities, which can be detrimental by producing proinflammatory and neurotoxic factors including cytokines, reactive oxygen species (ROS) and nitric oxide that directly or indirectly cause neurodegeneration. The regulation of microglial-induced neuroinflammation is considered a useful strategy in searching for neuroprotective treatments. In this study, we showed that low power laser irradiation (LPLI) (20 J/cm²) could suppress microglial-induced neuroinflammation in LPS-activated microglia. We found that LPLI-mediated neuroprotection was achieved by activating tyrosine kinases Src, which led to MyD88 tyrosine phosphorylation, thus impairing MyD88-dependent proinflammatory signaling cascade. Our research may provide a feasible therapeutic approach to control the progression of neurodegenerative diseases.

05.08.06 Inflatable Artificial Gravity Habitat Dynamics

Geoffrey, Kibble

Oklahoma State University

Future envisioned missions to deep space elicit problems and challenges not fully investigated by the world's spaceflight organizations. One of the most prominent issues is prolonged exposure to weightlessness. The human body functions day-to-day with the resistance and force of gravity; in the absence of this phenomenon, bones/muscles swiftly atrophy. Another alarming effect, which has been acknowledged in recent years, is loss of vision due to prolonged spaceflight. Researchers hypothesize that lack of gravity increases pressure on the optic nerve, thus causing vision loss. An effective way to generate a force similar to gravity is to rotate a body to produce centrifugal force. For a small scale investigation of this concept, the Oklahoma State University Space Cowboys team has designed an inflatable beam-rotating experiment. The effects of various internal pressures on the beam's stiffness and rotational stability will be examined. Inflatable structures are lightweight, have a high ratio of deployed to packed volume, and could provide sufficient support for a rotating spacecraft that produces an artificial gravity force. The experiment is designed to allow the deployment pressure to be altered between test runs (parabolas). As spaceflight becomes more ambitious and missions of longer duration become both desirable and possible, spacecraft designs must provide crew members with an Earth-like gravity environment.

05.08.07 Geometry Optimization of Aerodynamic Add-On Devices

Abdellah, Ait Moussa , Assal Alaee, Jeremiah Baker, Justin FischerRohan Yadav

University of Central Oklahoma

The rising trend in fuel prices has led to growing concern about vehicle fuel economy, and viscous drag is one of the main factors. Improvement in fuel efficiency can be achieved at a relatively low cost by installing aerodynamics devices to streamline vehicles and reduce drag. We report here an efficient numerical technique to optimizing the geometry of such devices. The technique combines shape optimization, geometric modeling, and Finite element analysis (FEA). To assess the validity of our optimization algorithm, we compare our optimization results against known test cases similar to the configurations in hand. We use this method to examine how effective add-on devices in reducing drag on a simple model of a commercial truck.

05.08.08 Design of an Unmanned Aerial Vehicle (UAV)

Baha, Jassemnejad , Ben Lamb, Josh Bischoff, Juan OrozcoTyler Grellner

University of Central Oklahoma

Unmanned aerial vehicles (UAVs) are defined as aircraft that are capable of flight without the need of a human pilot on board. Rapid development and advancement in motor, sensor, and control technology have brought about an increased interest in UAVs and their potential fields of research and applications. Due to smaller more efficient inertial measurement units, these vehicles have recently become a test bed for control systems development using advanced filtering methodologies. In this project, we have researched, designed, and are currently building a quadcopter to provide a mobile platform for data collection. We present an overview of the management of this multidisciplinary project including its planning, construction, and implementation phases. This project will provide the Engineering and Physics department at UCO with a sustainable source of research and the opportunity for the department to be represented in UAV competitions worldwide.

05.08.09 Development of Improved Autonomous Control System for Power Efficient UAV

Baha, Jassemnejad , Juan Orozco

University of Central Oklahoma

Unmanned aerial vehicle (UAV) applications have increased in the past years at unprecedented rates. The significance of UAVs, as well as their performance, is largely based on the control system employed and its interaction with the subsystems of the vehicle. This research includes the development, testing, and implementation of a smart control system that merges techniques from prominent control algorithms in order to improve autonomy and increase power efficiency of UAVs

05.08.10 High-Efficiency Solar Panel Implementation in Unmanned Aerial Vehicles

Baha, Jassemnejad , Ben Lamb

University of Central Oklahoma

The capabilities of unmanned aerial vehicles (UAVs) directly correlate with the power provided to the system. The purpose of this research has been to investigate the usage of highly-efficient photovoltaic modules with UAVs to increase their effectiveness. An assessment of various applications of solar cell integration is currently being accomplished through circuit analysis, field tests, and data collection.

05.08.11 Determining Efficient Position Mapping and Navigation in Autonomous Aerial Vehicles

Baha, Jassemnejad , Josh Bischoff

University of Central Oklahoma

Since their inception in the early 1960's, unmanned aerial vehicles have been growing in popularity due to their ability to carry payloads such as sensors, communications, and even warfare equipment. These vehicles operate without an onboard pilot so they must be able to make the decisions to affect the position and heading of the vehicle autonomously. These flight systems operate fully independently using programmable algorithms to accomplish the tasks of navigation and flight mapping. Advances in sensor equipment have popularized the use of global positioning systems to pinpoint a position on the Earth with a very accurate level of precision. This sensor data can be captured dynamically and analyzed over time to figure out the exact position, velocity, and acceleration of the vehicle. A comparison is made between the current coordinates and the desired path of travel to determine how an aircraft should react in order to minimize deviation. This research implements test procedures to investigate the most effective algorithms for autonomous navigation using GPS coordinates in aerial vehicles.

05.08.12 Utilizing Newly Available Frequencies for Communication with an Unmanned Aerial Vehicle

Baha, Jassemnejad , Tyler Grellner

University of Central Oklahoma

The use of unmanned aerial vehicles (UAVs) has expanded greatly in recent years. In 2009, the United States completed a transition from analog to digital broadcast television. This opened up the possibility that frequencies, previously used for analog television, could be allocated for other purposes. The unused frequencies are called the white space of the TV band. This research investigates the practicality, as well as the potential advantages, of using white space frequencies in the communications system of a UAV.

05.08.13 Design of a Digital Transmission Impairment Set

Baha, Jassemnejad , Brandon Woodyard, Jack Rouse, Keely ThompsonMontell Wright, Stephen Frosch

University of Central Oklahoma

Transmission Impairment Measurement Sets (TIMS) are devices that are widely used in the communications industry to test the performance and reliability of analog and digital transmissions and transmission media. TIMS provide the communications industry with a useful tool to analyze impairments a line might be experiencing and the information needed to isolate and correct problems, such as noise and data quality. Current TIMS are stand-alone devices that lack ability to automate necessary tests. Transitioning from standard stand-alone devices to user-defined devices allows for automation of the testing processes and helps with improving efficiency, accuracy, flexibility, durability, and functionality. When a signal is transmitted through communications equipment, that signal can experience alterations through processes such as distortion, attenuation and digital logic levels being incorrectly assigned. The main objective of this project is to develop a user-defined virtual instrument that will advance functionality and improve the quality of the transmission impairment measurements. This is being accomplished by developing a software application that utilizes a graphical interface environment, NI LabVIEW®, and data acquisition hardware.

05.08.14 Automation and Control of a Switching System

Baha, Jassemnejad , Clinton Quisenberry, Igor Ilikj

University of Central Oklahoma

This project explores the prospect of utilizing National Instruments (NI) hardware and software in order to create an automated switching system. The switching system can be used by any communication system, where there is a need for switching between different communication devices. The proposed hardware from NI is the NI PXI-2800, the switch block, which functions in conjunction with NI matrix relay cards. This is accomplished by the addition relay matrix cards that control how many switching points the system has. Depending on the size of the demarcation point or switch matrix, the system can be custom designed. Different matrix cards have different number of relays or switching points, and up to six of them can be configured per switch block carrier. The system can be controlled via NI LabVIEW integration, used by a desktop computer. Past work on the project includes a fully functioning simulation, which uses NI Measurement and Automation Explorer (MAX) in order to simulate the hardware described. The simulation is able to replicate the functionality of the actual hardware that would be deployed, which includes the PXI chassis, the switch block, as well as the matrix relay cards. The simulation is able to switch between the simulated input devices by closing the relays on the simulated matrix relay cards. The control is with the user, who is able to control which devices are connected.

05.08.15 Stent Enhancement Using a Locally Adaptive Unsharp Masking Filter in Digital X-Ray Fluoroscopy

Dr. Yuhao, Jiang , Eranda Ekanayake

University of Central Oklahoma

Fluoroscopy images are quantum limited. Simply reducing exposure will increase the percent noise to unacceptable levels. Unsharp masking filter has a long history in image enhancement. It is a very popular and simple contrast enhancement method that is amenable to real-time implementation in high frame-rate fluoroscopy. In a typical unsharp masking processing, the background will be estimated and then subtracted from the original input image to create a foreground image mainly containing objects of interest. The object image will then be amplified by a gain factor and added back to the original input image. The background estimation has been critical in unsharp masking processing. We use oriented filter kernels followed by a non-linear operation in order to get a kernel best approximating the background surrounding an object of interest. We also apply a spatio-temporal channelized human observer model to characterize the response of the filters. We use computer generated synthetic images to conduct experiments. It is shown that the locally adaptive unsharp making filter is an effective filter for the improvement of stent visibility in the interventional fluoroscopy. Results are compared to conventional unsharp mask processing and indicate this new unsharp making filter is advantageous in term of both less noise boosting and improved contrast of the stent.

05.08.16 The Effects of Laser Immunotherapy on Tumor Microenvironments

Joseph, Acquaviva , Ethan Wood, Melville Vaughan, Wei Chen

University of Central Oklahoma

The microenvironment of tumors plays a central role in the progression of cancers. In particular, fibroblast cells can facilitate the malignant progression of tumors. Specifically, the expression of alpha-smooth muscle actin is a hallmark sign of malignant cancer progression. Any cancer therapy must directly address the effects of the treatment on fibroblast cells. Laser immunotherapy (LIT), an innovated treatment for metastatic cancer, utilizes laser irradiation, laser absorbing dye, and immunological stimulation. While LIT has shown promise in treating metastatic cancer patients, the effect on the tumor's microenvironment is not well established. To better understand the effects on the microenvironment, a series of studies were conducted. First, human fibroblast cells were plated on coverslips and irradiated at different wavelengths for a specific duration, as well as incubated with the immunostimulant glycated chitosan. Then, the coverslips were stained for proliferation and alpha-smooth muscle actin expression. Furthermore, to model a tumor stroma, collagen lattices were created and injected with fibroblast cells. The lattices were irradiated on the 4th day of incubation and released on the 5th day of incubation. The change in lattice diameter in each treatment group was determined and analyzed. Additionally, lattices were stained for proliferation and alpha-smooth muscle actin expression. These studies will determine if LIT induces alpha-smooth muscle actin expres

05.08.17 Nanotechnology and Phototherapy: A Novel Treatment Modality for Metastatic Cancers

Joseph, Acquaviva , Feifan Zhou, Wei Chen

University of Central Oklahoma

While conventional cancer therapies have proven effective in treating solid primary tumors, their efficacy dramatically decreases in treating metastatic cancers. To successfully treat metastatic cancers, a systemic treatment is required. Laser immunotherapy is an innovative systemic treatment which induces an effective immunological anti-tumor response. This treatment synergistically incorporates laser irradiation (phototherapy), immunological stimulation, and a laser absorbing dye. In clinical trials, laser immunotherapy has shown great promise in treating late-stage metastatic cancer patients. Recently, single-walled carbon nanotubes (SWNTs) were integrated with the immunological stimulant, glycated chitosan (GC), to create a novel compound – immunologically modified carbon nanotube (SWNT-GC). In cellular studies, SWNT-GC has proven capable of entering cancer cells, increasing thermal destruction of tumors, activating dendritic cells, increasing T-cell proliferation, and increasing T-cell infiltration of tumor sites. In animal studies, SWNT-GC and phototherapy proved effective in treating rats with cancer. Furthermore, when primary tumors were treated with SWNT-GC and phototherapy untreated tumors decreased in size. To determine the potency of this novel treatment, animal and cellular studies were conducted using a more aggressive cancer cell line.

05.08.18 The Tension-Generating Ability and Appearance of Myofibroblast Tension Phenotype by Precancerous Cells, Ker-CT-Ras

Jessica, Webb , Melville Vaughan, Morgan Black, Sonnie Gainer

University of Central Oklahoma

Recent research activity has focused on the tumor stroma. Tumor stroma are typically connective tissues containing fibroblasts and myofibroblasts. These cells are required for the wound healing processes of the body. There is evidence that myofibroblast presence in tumor stroma leads to poor prognosis. Mechanical tension, one of three key factors, enhances differentiation of myofibroblasts. Precancerous keratinocytes lead to two types of carcinomas. In vitro carcinomas can form through a pathway which involves the up-regulation of the ras protein. They take on properties of fibroblasts and metastasize, spreading into the dermis. Fibroblasts generate tension in the dermis during the wound healing process. Our experiment focuses on keratinocytes and their journey into the dermis. We used Grinnell's stress-relaxation collagen matrix model, a model that provides the necessary microenvironment for myofibroblasts. The model was originally used to investigate the properties of fibroblasts, cells native to the dermis. Our research has taken to using it in the research of invasive epithelial, precancerous cells called Ker-CT-Ras. Previously, we set up Ker-CT-Ras lattices void of fibroblasts. Now, data will be presented on the comparative tension-generating ability of fibroblast lattices (DP-147-H-Tert) and co-culture lattices of the two. Also, we will present preliminary data from a monolayer (coverslip) model to describe structural properties of the myofibroblast phenotype.

05.08.19 Computational Model for Understanding Ciliary Mechanics

Miciah, Guy , Gang Xu

University of Central Oklahoma

Cilia and flagella are nanoscale hair-like structures that bend actively to propel cells or move fluid and materials in airways and other passages. Cilia and flagella undergo large bending deformations that are driven by molecular dynein motors fueled by ATP reactions. The genetics and biology of cilia are under intensive study, but the mechanics of their function remain unclear. In this study we build two-dimensional (Fig. 1) and three-dimensional models of flagella using finite element analysis software. To study the mechanical properties of flagella we apply theoretical loads to these computational models and analyze the deflection and stress distribution throughout the virtual flagella. The data obtained from these models will contribute to future experiments done in the lab on live *Chlamydomonas reinhardtii* flagella. The overall goal of this research is to answer two overarching questions: (1) "what are the structural basics of the mechanical properties of flagella?" and (2) "how the structural mechanics of flagella affect their active bending?" As mentioned above the study of the mechanical properties of flagella is an area that is still relatively untouched but I believe we can change this with our modeling and our experiments.

05.08.20 Development of a Virtual Frequency Shift Keying Modem

Baha, Jassemnejad , Thiago Omena

University of Central Oklahoma

The need for a more accurate and efficient method to transmit data over long distances has increased drastically since the introduction of the Internet. The employment of a Virtual Frequency Shift Keying (FSK) modem can significantly improve the performance, durability, and cost of stand-alone FSK modems used in the communications field. The purpose of this research has been to investigate and analyze the development of a software-based FSK modem using a graphical programming environment, NI LabVIEW, and data acquisition hardware.

05.08.21 Statistical Analysis of Chemical Accidents

Stephen, James , Qingsheng Wang

Oklahoma State University

Numerous incidents have occurred in the process industries and caused hundreds of fatalities and injuries. The US Chemical Safety Board (CSB) has conducted incident investigations as one element of the Process Safety Management (PSM) program and provided final reports for over 75 incidents. This paper is to look into all those final reports and summarize the findings. The type of accidents is identified as vapor explosion, dust explosion, reactive chemical explosion, and toxic chemical release. The main type of accidents is found to be vapor explosion that resulted in about 40% of all the types of accidents. Through the comprehensive analysis of PSM violations, the results show that mechanical integrity, process safety information, and process hazard analysis are the top three types of violations while about 20% of the PSM violations are due to mechanical integrity. The results also show that about 80% of these incidents are somehow due to human error. Detailed human error analysis for all these incidents is performed and the results show that lack of training is the main contribution to incidents. Recommendations are given to each type of incident that occurred based on the analysis results. This research is supported by the National Science Foundation (NSF) through OK-LSAMP to develop learning from incidents and therefore to improve process safety.

05.08.22 Data Acquisition System for Fluid Dynamics Research

Lillian, Seay

University of Central Oklahoma

The proposed project will be designed to examine the flow in microjunctions using cutting-edge energy generation techniques. Using these techniques, we will have an alternative view of how a fluid behaves during microfluidic flow. This will give other researchers a better understanding of the energy losses in any microfluidic system. My project is in the process of updating the current data acquisition system used to calculate the energy losses during microfluidic flow. The system is being updated by using a different microcontroller to incorporate more pressure sensors and flow meters. The microcontroller used in the new data acquisition system is sufficient because it can output more data than the one used currently. The updated data acquisition system will expand the ability to record more data from a variety of spots in the microchannel. With more data output, we will get an explicit image of the local details of energy loss in a system.

05.08.23 Probing Mechanical Stresses in Human Fibroblast Collagen Lattices

Lauren, Tlennin , Cory Anderson, Gang Xu, Khiet TranMelville Vaughan

University of Central Oklahoma

The objective of this research project is to probe and quantify the mechanical tension generated in an in vitro dermal equivalent model for studying wound healing. Structurally supported by circular plastic mesh rings, the dermal equivalent is made of the collagen lattices co-cultured with human fibroblasts. After incubation, we probed the mechanical stresses in these dermal equivalents by removing a small circle of tissue with a biopsy punch and observing the following expansions of the wound. The results indicated that there exist considerable tensions in these dermal equivalent lattices. In addition, we studied the effect of a transforming growth factor, TGF- β , on the tension generation of the dermal equivalents. Understanding the biomechanics of these models will be an important step in studying mechanisms of wound healing and related cancer progression.

05.08.24 A Controller of Laser Irradiation for the Treatment of Metastatic Cancer

Joseph, Acquaviva , Jacob Prichard, Nhung Ngo, Paul Faryna

University of Central Oklahoma

Laser immunotherapy developed by Dr. Wei R. Chen and collaborators has successfully treated late-stage metastatic cancer patients. This innovative treatment incorporates a laser absorbing dye, laser irradiation, and an immunoadjuvant. While this therapy has shown great promise, the optimization of the treatment has not yet been achieved. Studies have suggested that laser irradiation is paramount for a successful patient outcome. Therefore, our group has developed a system to control laser irradiation during treatment. This system utilizes thermistors to precisely determine the temperature at the treatment site. These thermistors are inserted at specific locations in the tumor and have a 0.1°C accuracy within the 25-115 °C temperature range. An electronic system is used to process and record the temperature measurements. These measurements are used in the Pennes's Bioheat Equation to determine the laser modulation needed to achieve an optimal temperature distribution. Additionally, using LABVIEW, a user-interface was created to displays critical information for the successful treatment of the patient. This user-interface will reveal the current temperatures at the treatment site, the optimal temperatures at the treatment site, and the required laser modulation to achieve an optimal temperature distribution.

05.08.25 Design and Construction of Fatigue Test Setup to Evaluate Fiber Coated Hip Implant

Zhaoong, Meng , Kate Foran, Paul Snow

University of Central Oklahoma

The hip is an important multifunctional joint subject to position change, bending, and extreme force, causing wear on the joint. Imperfection of the hip implant device causes pain and swelling at or near the hip joint, change in walking ability, and popping in the hip joint. An electrospun micro/nanofiber coated hip implant decreases the spread of toxic particles from the implant material, causes higher adhesion which increases the strength of the implant while decreasing the risk of hip implant breakage and/or failure. The goal is developing an efficient bond interface between the implant and the cement by applying micro/nanofibers to the surface of the implant through an electrospinning process, utilizing biocompatible fibers. Experimental and numerical setups are designed to imitate the forces experienced on the hip through a cyclic fatigue test simulating walking. An uncoated cylindrical model was simulated and tested under static structural analysis. The fatigue test setup for cylindrical and implant models was designed and constructed. For future study, a biocompatible electrospun aligned fiber (300 μ m-9nm) will be synthesized and produced, using a PCL/collagen mixture. Under physiological walking conditions, aluminum implants with and without the electrospun fibers will be tested to determine fatigue life and then compared to the numerical simulations.

05.08.26 Alternative Monomer Effects on the Exothermic Temperature of PMMA

Zhaoong, Meng

University of Central Oklahoma

Poly Methyl Methacrylate (PMMA) bone cement produce exothermic reaction during its polymerization process, which damage the surrounding bone tissue. Nanoparticles additives can be incorporated with the PMMA cement to reduce the exothermic reaction. Previous study of "Exothermic Temperature Measurements of Novel PMMA Bone Cements" found that adding of nanoparticles decreased the curing temperature of the bone cement. Higher weight percentage of nanoparticles added in PMMA resulted in lower exothermic temperature. The system which consisted of 4-channel thermocouple (InstruNet Inc.), data acquisition device, data acquisition software and laptop, was established in the previous study. The purpose of this project is to measure temperature changes in PMMA cement samples having alternative monomers during curing. CobaltTM HV bone cement (CBC), a commercial orthopedic bone cement, was used as PMMA bone cement. Selected 2%, 6%, and 10% (w/w) of monomers (3MPMA, GMA) were mixed with MMA monomer and then added into the PMMA beads maintaining the solid: liquid ratio of 2:1. The study found that addition of 3MPMA to monomer decreased the maximum curing temperatures of specimens, but the addition of GMA to monomer decreased the curing time of the specimens.

05.08.27 Wind Tunnel Measurements of Aerodynamic Drag on Road Vehicles

Nick, Chalifoux , Abdellah Ait Moussa, Jeremiah BakerMicah Guy

University of Central Oklahoma

The rising trend in fuel prices has led to major concerns about vehicular aerodynamics. Bluff bodied vehicles such as trucks and sport utility vehicles have a geometry that is prohibitive to fuel economy; with an increase in drag there is a consequential rise in the fuel consumption. Several methods were suggested to reduce aerodynamic drag; one is through the use of add-on devices. In another research, we devised a numerical scheme to simulate the air flow around these vehicles, and optimize the geometry of add-on devices for maximum reduction in drag. In this research, we devise the set up and devices needed for experimental measurements. Comparison between simulations and experimental results is also included.

05.08.28 Home Automation System

Amy, Gueye , Charlotte Chea

University of Central Oklahoma

1) Objective: To investigate the algorithms of speech recognition by programming and to stimulate the designed system in MATLAB and LABVIEW converting an ordinary home to a smart home. 2) Thesis: Home Automation System provides a higher security home, promotes energy saving and improves the living conditions of people with disabilities. 3) Methodology: a) Filtering: To filter out noise from the speech signals. b) Speech segmentation: To figure out the algorithms to segment speech signals. c) Speech Discrimination: To produce MATLAB programs that are able to distinguish different words. d) Decision Making: To execute the right commands for the input signals. e) Accuracy: To achieve at least a 70% accuracy in turning on or off the right home device. 4) Summary: The written MATLAB programs will be burnt to a device called NI myRIO for practical usage. Eight devices were chosen as target devices for this project. The deliverable of this project is to turn on or off those eight devices correctly. The system should have the ability to distinguish between the words 'ON', 'OFF', and the eight devices' name. The eight devices are: 'TV', 'RADIO', 'LIGHT', 'CURTAIN', 'DOOR', 'AC', 'FAN', and 'GAME'.

05.08.29 Quantitative Assessment of a Second-Order Bio-heat Transfer Model for Thermography-Derived Perfusion Imaging

Vasumathi, Chalasani , Daqing Piao

Oklahoma State University

Assessing perfusion is important to management of soft tissue injury. Previous studies have demonstrated that information indicating cutaneous perfusion can be derived from dynamic thermography imagery by applying bio-heat transfer models. These previous methods for thermography-derived perfusion imaging, however, have been largely based upon a first-order bio-heat transfer model that over-simplifies thereby missing higher-order information. In this study we develop a second-order bio-heat transfer model for deriving perfusion information from thermography imagery. A simulation study is undertaken for quantitative assessment of the improvement of the thermography-derived perfusion by the second-order model versus the first-order model. A series of thermography data are generated in correspondence to a set of bi-polar perfusion maps, and noise levels of 0.1%, 1%, 2%, 5% & 10% are added to the simulated thermography maps for being processed using the first-order and second-order bio-heat transfer models, respectively. The contrast-to-noise ratio analysis out of the synthetic measurements demonstrates that a second-order bio-heat transfer model is substantially more accurate in the estimation of the perfusion level and more robust to noise than a first-order bio-heat transfer model. The improvement in thermography-derived perfusion by using a second-order bio-heat transfer model is also shown when in-vivo thermography imagery is processed.

05.08.30 Determination of Loss Coefficients and Entrance Lengths using the Entropy Generation Method

Brock, Ring , Evan Lemley

University of Central Oklahoma

Two important fluid dynamics concepts are entrance length and loss coefficient. The entrance length is the downstream distance required for flow to reach a state that is unaffected by a change in the bounding geometry. In most scenarios, the entrance length is approximated using the fluid parameters, characteristic length of the tube, and the average fluid velocity. This approximation yields a result that must be overcompensated due to minor variations that can occur in experiments. The loss coefficient is a parameter that allows easy calculations for the energy losses through junctions. This parameter is typically impossible to determine analytically, requiring empirical data to deduce a value. Historically, this has been done by taking pressure and flow rate measurements upstream and downstream from the junction, effectively treating the junction as a "black box." This research aims to use a Particle Image Velocimetry (PIV) system to use the velocity profile to determine these values. The velocity profile gives all of the information about the fluids motion. This data can be used to look inside the junction and observe how the energy is being lost.

05.08.31 Design and Implementation of a Multi-Dimensional Staging and Flow Measurement System for Particle Image Velocimetry-based Fluid Dynamics Research

Brock, Ring , Brody Tucker, Evan Lemley, Rodney Worthen

University of Central Oklahoma

Flow through junctions has been studied in detail for turbulent flow. This is largely due to turbulence being the more common condition in macro sized junctions. However, in micro scale applications this is not the case. Laminar flow tends to occur much more frequently than turbulence in the smaller sized networks due to the high pressure differentials required to force fluid at a rapid rate. Loss coefficients under the turbulent condition tend to remain constant for a particular geometry with respect to the Reynolds number, whereas, laminar flow tends to result in loss coefficients that are highly dependent on Reynolds number. By matching the Reynolds number, larger scale experiments can be done using a Particle Image Velocimetry (PIV) system. This project aims to provide initial research into the energy losses in junctions under laminar flow. These losses are calculated using differential pressure sensors as well as a PIV system used to determine the entropy generation rate. The junction studied is a tee with varying rounding on the edges and a square cross section. The results are the loss coefficient versus the Reynolds number for each tee junction. Many textbooks have a catalog of loss coefficients for different types of junctions. The issue is these parameters are only good for the turbulent condition. This project will help catalog the outcome of laminar flow through a tee junction with a square cross section.

05.08.32 Automation and Remote Control of an Astronomical Observatory in Northwest Oklahoma

Baha, Jassemnejad , Scott St John

University of Central Oklahoma

The objective of this research project is to investigate measures for automating and remotely accessing the observatory telescope and associated enclosures in Northwest Oklahoma. The telescope can be controlled over the internet via commercially available observatory software, using wireless internet present on site. Orientation sensors give feedback on the positions of the domed enclosure and the telescope to an automated controller, which then relays commands to the motor controlling the dome. The dome can then follow the movement of the telescope with no input required by the user. In the event of a lost signal, the dome will be designed to close itself and power down. A digital camera relays the view of the telescope back to the user at the other end of the connection. By controlling the length of the exposure, vivid images of faint, deep-sky objects can be made.

05.08.33 Modular Optical Tweezers as a Tool for Cancer Research

Baha, Jassemnejad , Brian Reed, Cody Bahavar, Gang XuWei Chen

University of Central Oklahoma

The goal of this project is to use optical tweezers (OT) to study the effect of laser illumination on individual tumor cells. Since its inception, trapping and manipulation of single cells or microscopic dielectric particles with a focused laser beam has provided a powerful tool in the field of molecular and cellular biophysics. We have developed an OT system that is completely modular; that is, the OT apparatus is entirely composed of breadboard components. This innovative approach to OT construction is utilized here to trap individual metastatic mammary tumor cells. Different than the laser immunotherapy for the tissue level treatment, for the first time we examined the effect of focused laser illumination on the cytoskeletal structure of single tumor cells as indicated by changes in the thermal fluctuations of the cell body in the trap. The results will provide important information on the biophysical mechanisms of the laser immunotherapy.

05.08.34 Single fiber reflectance spectroscopy measurements need to be normalized using geometry-specific methods

Nigar, Sultana , Daqing Piao

Oklahoma State University

Single-fiber reflectance spectroscopy (SfRS) is used for minimally-invasive probing of some biological tissues. In order to extract tissue optical properties, it is necessary to normalize tissue spectrum against spectra from two reference materials. The materials that are used for reference include diffuse reflectance standards, 20% bulk intralipid, water & air. However, there is no clear consensus regarding which combination of reference materials provides the most accurate and convenient normalization. As SfRS measurements depend upon the probing geometry, such as infinite or semi-infinite geometry, it is important to use normalization method specific to the respective measurement geometry. This study demonstrates simple analytical modeling for evaluating outcomes of using different reference materials for normalization. We compare normalization of experimental interstitial SfRS using different combinations of two reference materials as reported in literature: 1)two reflectance standards of high & low reflectivity, where semi-infinite geometry is implied; 2)reflectance standard & water, in which there is a mixture of semi-infinite and infinite geometries; 3)20% intralipid & water, to which infinite medium geometry applies; 4)air & water, where infinite medium geometry applies. It is demonstrated that SfRS normalization of biologically relevant medium (μs^{-1} of 1.0mm^{-1} or less) can introduce significant systematic bias if normalization is not geometry-specific.

05.08.35 Wireless Patient Vitals Monitor

Samuel, Diaz , Dr. Yuhao Jiang, Eranda Ekanayake, Nitesh BasnetSagun Mishra

University of Central Oklahoma

The purpose of our project is to research and design; prototype, and assemble a wireless patient vitals monitor. Our product will be cheaper than products currently available on the market with cost efficient parts and sensors. To start the development of our product, we decided to utilize the Arduino chipset microcontroller. We intend to use wireless transmission to increase patient comfort and mobility. To focus our research, we concentrated our efforts to three body vitals; heart rate, respiration rate and surface body temperature. We have built an electrocardiogram monitor to measure the heart rate of a patient. To measure the respiration rate, we have incorporated pressure sensors along a fabric that would be worn around the chest which would indicate the rate of breathing. Our temperature measurement would be provided by a digital temperature sensor that would be in contact with the patient's skin. We will transmit our collected data using Bluetooth transmission to a computer base station. Our data will then be processed using LabVIEW to display the collected data in an appealing graphical user interface. Key words: Bluetooth, Pressure sensor, Electrocardiogram, Temperature sensor, Arduino Uno, Wireless monitor, LabView

05.08.36 Biomechanical Characterization of Algal Motility in Response to Medium Viscosity

Kara, Clark , Daniel Fijalka, Davis Kuriakose, Gang XuJordan Johnson, McKayla Mashburn, Steven Karpowicz

University of Central Oklahoma

The goal of this project is to use engineering methods to correlate cellular motility and gene expression of the green biflagellate alga *Chlamydomonas reinhardtii* in response to altered physical stimulation, specifically medium viscosity. The ultimate objective is to improve our understanding of the biophysical mechanisms for cilia-related diseases. Algal cells were cultured in mediums with various viscosities resulting from different concentrations of methylcellulose. The motion of individual cells was recorded with a high speed digital camera under a microscope. Videos were analyzed using a custom MATLAB tracking program to trace movement of the cell center in space and time. The average swimming velocity of each cell was calculated by dividing the total distance traveled by the total time. This method was used to track and compare the average swimming velocities between cells under different viscous mediums. Our data suggest that the flagella-driven cellular motility decreases with elevated medium viscosity. This specific motility change will be correlated to changes in gene expression in order to provide better understanding of the coupling between the mechanics and the genetics of the flagella and cilia.

05.08.37 Design and Construction of a Micropipette Manipulation System for Cellular Biophysics Research

Nikolas, Wagner , Gang Xu

University of Central Oklahoma

The purpose of this project is to design and create a micropipette aspiration and manipulation system that will allow us to manipulate single cells and measure their micromechanical properties. The micropipette manipulation system is one of the major techniques in the research areas of molecular and cellular biophysics and biomechanics. Based on the principles of fluid mechanics, this technique can be used to apply or measure small pico-Newton forces on cells and molecules during, for example, cell-cell adhesion. Our system consists mainly of a custom-made glass micropipette in connection with a hydraulic reservoir. A spherical object that snugly fits inside the micropipette, either a cell or a microsphere, can serve as the force transducer. When a hydraulic pressure is imposed across the force transducer by adjusting the relative height between the micropipette and the reservoir, a small viscous drag can be achieved on the force transducer which then applies directly on the object in contact with the force transducer. In this presentation, we will discuss more details in the principles, design, and construction of a completed micropipette system, as well as its applications in our ongoing cell biomechanics research.

05.08.38 Effects of laser immunotherapy with cyclophosphamide for the treatment of metastatic cancer

Cody, Bahavar , Aamr Hasanjee, Joseph Acquaviva, Sheyla RabeiWei Chen

University of Central Oklahoma

Laser immunotherapy (LIT) is an innovative cancer modality that uses laser irradiation and immunological stimulation to treat late-stage, metastatic cancers. The current mode of operation in LIT is through interstitial laser irradiation. Although LIT is still in development, recent clinical trials have shown that it can be used to successfully treat patients with late-stage breast cancer and melanoma. Cyclophosphamide is a chemotherapy drug that suppresses T-regulatory cells. In this study, tumor-bearing rats will be treated by LIT using an 805-nm laser with a power of 1 to 3 W and various doses of cyclophosphamide. Glycated chitosan will be used as an immunological stimulant. The goal is to observe the effects of differing doses of cyclophosphamide in addition to LIT on the survival of the tumor-bearing rats.

05.08.39 Design of an Experimental Apparatus to Examine Inlet Geometries and Flow Characteristics of Developing Flow in Rectangular Channels

Aric, Gillispie , Brock Ring, Brody Tucker, Evan LemleyGrant Armstrong

University of Central Oklahoma

Compared to the amount of research that has been done on fully developed flow, there has not been as much on flow before it is fully developed (developing flow). Of the research that has been completed, there is even less that has been done on channels having a rectangular geometry. To better understand the flow characteristics of the combination of these two under researched flow problems, we will be utilizing particle image velocimetry (PIV), a method of actually visualizing how the fluids are moving through a channel, to first observe the fluids at the inlet of the channel, then to analyze the developing fluid up to that point when it becomes fully developed. There are of course, mathematical formulas and computations that can be done to calculate what is theoretically happening in these channels, but as is often the case, there are discrepancies between known calculations and what an experiment actually yields. This research will be very useful to future experiments done on developed flow, because there will be an experimental result to support or deny a known analytical model for determining when flow is actually fully developed. This will ensure that experimental apparatuses are manufactured to a necessary length to perform the desired experiment. Furthermore, this research will lead directly into a study of entropy generation in rectangular channels, which will be very useful as rectangular micro channels becomes common place in electronics and bio-medical sciences.

05.08.40 Energy Losses of Fluids as a Function of Entropy Generation

James, Stewart , Brock Ring, Evan Lemley

University of Central Oklahoma

Energy losses of fluids is a topic of interest in the field of fluids engineering. By altering the channel aspect ratio (height to width ratio) and the junction shape (square or curved), experimental flow data can be compared with previously obtained experimental values, computer simulation, and theoretical values to maximize flow system optimization. Data will be obtained through a combination of pressure drop and volume flow rate and separately with particle image velocimetry (PIV) measurements. The focus of this project is to investigate the effects of junction shape on entropy generation rate. By determining the entropy generation rate of a system, the energy lost due to friction of a flowing fluid can be found. This energy loss can be described as a dimensionless quantity which will be referred to as the loss coefficient. Finding this loss coefficient is important because it is an invaluable part of improving the efficiency of any given system involving fluid flow. This particular type of research is a growing interest as modern day engineering requires more effective ways of delivering the needs of society. Currently, determining the loss coefficient in a junction is only an approximation as certain assumptions are required. On-going experiments use sharp square corners in the junction, data from rounded corners will be compared to previously obtained experimental data from square corners to investigate the effects of rounded corners on entropy generation rates.

05.08.41 Three directional Accelerometer with application

Quinten, Walker

Langston University

In this research I will demonstrate the use and the functionality of a three directional accelerometer, specifically of the capacitive type. I will also perform several analytical checks to test the accelerometers' effectiveness as well as its' ability to accurately sense a given direction. The primary focus of directions will be on x, y, and z axes to view the 3d orientation in space. I will introduce what an accelerometer and its primary purpose, furthermore, this work will cover the basic principles and concepts of three directional on how accelerometer operates. The results will be simulated and proven mathematically using matlab. This research will extend itself into an original application demonstrating a possible use of a three directional accelerometer; and the results will be given to determine the accuracy of the application as well.

05.08.42 Innovative Shear Stress Sensing Technique Using Liquid Crystal

Alaeddin, Abu-Abed

University of Central Oklahoma

In this presentation, the authors present a new technique in measuring shear stress forces using capacitive-based liquid crystal sensor. In this work, the authors have developed an alternative method which utilizes LC film embedded in an interdigital capacitive microstructure. This innovation will transduce the shear force, which deforms the LC profile, into a measurable capacitive quantity via tracking the LC deformation. This promising sensor has strong potential applications in bioengineering systems where monitoring the blood shear stress is critical such as carotid artery experiments. Some of the issues addressed in this work are the impact of the shear stress on the liquid crystal molecular ordering (order parameter) and the influence of electrode geometries and material properties on the measured capacitance.

05.08.43 Optimization of Data Acquisition for Micro Fluid Systems

Daniel, Atkinson

University of Central Oklahoma

In the field of micro fluids, data acquisition is an integral part of verification and validation of models and simulations. The data acquisition system (DAQ) must be able to process many sensor inputs for pressure and flow rate measurements effectively and efficiently for a junction or channel. This project redesigns the current system in use to achieve three goals. One, Modernization of the of the existing system to accommodate future additions. Two, the addition of flow meters to directly measure flow rate. Three, implementation of algorithms to better monitor the experiments being conducted and more quickly produce data.

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05. Mathematics and Science

09. Environmental Science

05.09.01 Enhanced Microbial Remediation of Nitrate and Perchlorate in a Simulated Aquifer Through Electrical Proton Reduction

Linzi, Thompson , Dr. Guy Sewell

East Central University

Nitrate and perchlorate are increasingly becoming environmental health hazards as they contaminate groundwater through runoff and fuel leakage. This ongoing research involves developing a new way of enhancing bio-degradation through the use of electrical proton reduction to increase dissolved hydrogen levels in a simulated aquifer. A bacterial enrichment was created from lake sediments where high levels of nitrate and perchlorate occur. This enrichment is being pumped continuously through a simulated aquifer of four columns, two containing sand and two containing soil, in order to allow for colonization. The ingoing and outgoing solutions of these columns are monitored for nitrate and perchlorate levels as a known concentration of each chemical is pumped through. Simultaneously, a negative potential charge is applied to an electrode within a column of each soil type. This negatively charged electrode should provide a dissolved hydrogen source, via proton reduction, and thus a bio-oxidizable energy source which could enhance degradation. From this data, the relationship between nitrate and perchlorate levels and the addition of hydrogen through proton reduction will be determined. This research is intended to provide a cost-effective method of treating these chemicals insitu. Solar panels with wires extended into groundwater could be set up to provide an energy source. This process could be implemented in areas worldwide where financial and electrical resources are limited.

05.09.02 Denning and Nesting Sites of *Neotoma cinerea* by Radio Telemetry

Mary, Jordan

Langston University

The bushy-tailed woodrat (*Neotoma cinerea*) is a medium-sized rodent found throughout the Pacific Northwest, North Dakota, northern New Mexico and the Sierra Nevada (Carey 1991). Bushy-tailed woodrats are very important animals in the forest food-chain. They are one of the most important species in the diet of the Northern Spotted Owl (*Strix occidentalis caurina*). (Wilson 2013). The Northern Spotted Owl is one of the most studied bird species (Zabel 2003) and in 1990, mainly due to habitat loss, was listed as a federally threatened species (Olson 2004). Although bushy-tailed woodrats serve important ecological roles, there is relatively little information about their life history traits or habitat needs. Recently, studies have begun to increase. Several bushy-tailed woodrats were caught in traps and radio-collared for tracking. Being an aboreal species, it can be assumed that most of the bushy-tailed woodrats' den locations will be in trees, particularly conifers. Much is to be learned about their dispersal and living patterns. The more known about bushy-tailed woodrats and other small forest prey, the more is known about the Northern Spotted Owl upon which many major forest plan decisions are based on.

05.09.03 A Novel and Economical Approach to Remote Sensing of Hydroperiods in Montane Desert Aquatic Systems

Jeremy, Massengill , Paul Stone

University of Central Oklahoma

In montane desert systems, aquatic habitats exist along a size gradient ranging from small temporary pools to large intermittent tanks structured by a hypervariable system of stochastic events, environmental factors, and biotic interactions. Our study area in the Peloncillo Mountains of southwestern New Mexico is characterized by an intertwining network of canyons, seasonal monsoons and periodic drought. Understanding the biology of aquatic organisms in this system requires an understanding of the distribution and hydroperiod of aquatic habitats. We have 'snapshot' observations of water levels from periodic sampling trips over the past 20 years, but the ability to measure water levels continuously would be valuable. Existing technology requires deployment of expensive equipment which would be vulnerable to vandals if left unattended. A more economic approach is the use of temperature signals to detect changes in the hydroperiod of aquatic habitats. Temperature loggers (n=8) were set throughout the study area. At each location, one logger was placed in an area that is known to form an ephemeral pool when water is present and one logger was placed in the surrounding landscape that will not be submerged. By observing the average rate of change in the temperature signal between loggers, we measured the duration of the monsoons, winter rains and summer drought, and documented two drying events and a major flooding event that would have previously been undetected.

05.09.04 Bioremediation of Chlordane by Indigenous Actinomycetes Bacteria

Jocelyn, Bidlack , Paul Olson

University of Central Oklahoma

Chlordane (Octachloro-4, 7-methanohydroindane) is a complex organochloride used extensively as a broad-range insecticide through the 1980's. Although application is now prohibited, chlordane is regarded as a significant environmental problem because of its persistence in the environment, high toxicity, and tendency to bioaccumulate. Actinomycetes bacteria are promising remediation agents capable of degrading a diverse assortment of recalcitrant compounds. In this study, Actinomycetes strains were isolated from a chlordane-contaminated site and evaluated for the capacity to degrade chlordane. Isolated strains were identified to genus by morphological and biochemical characteristics and identified to species by 16s rDNA sequence analysis. Strains were subjected to a mixture of a-chlordane and g-chlordane to assess their ability to degrade the isomeric compounds either as a sole carbon source or by co-metabolism. Organic extractions were conducted over the course of 192 hours to ascertain the rate of degradation of a-chlordane and g-chlordane for each strain. Extracts were analyzed by gas chromatography mass spectrometry to determine the extent of degradation over time and the identity of the metabolic degradation products. This study functioned to document the remediative capacity of these strains thereby aiding in the concerted effort to develop cost-effective and environmentally benign approaches for the remediation of persistent contaminants in the environment.

05.09.05 Non-Occupational Noise Assessment Of Ear Pod Auditory Noise Exposure Among Southeastern Oklahoma State University Students

Chris, Bradshaw

Southeastern Oklahoma State University

This study examined auditory non-occupational noise, more specifically, sound levels experienced by students with digital audio players through inner ear style headphones referred to hereafter as ear pods. Growing popularity of digital audio players, such as iPods, mp3 players, and cell phones with play back capabilities, has become increasingly more common among young college student population. College level adults are spending more time connected to these devices, and this study seeks to determine how long and how loud they listen to music. Accompanying this trend are the sleek and fashionable ear buds which are proving to pose irreparable hearing loss as a more focused, amplified sound is forced into the inner ear. This study also asked the students of SOSU if they presently experience symptoms of hearing damage that might otherwise go unnoticed. The purpose of this study was to determine the sound level and length of time students utilized ear pod/head phone listening devices. The second aspect of the study was to determine any symptoms of hearing damage that might otherwise go unnoticed. Specifically, this study sought to accomplish the following: To determine the amount of time and type of music students spend listening through ear pod/head phone listening devices. To determine the average volume students adjusted the listening devices to during use. To determine if students

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5. Mathematics and Science

10. Forensic Science

05.10.01 Stability of Synthetic Cannabinoids in Biological Specimens: Analytical Analysis through Liquid Chromatography tandem Mass Spectrometry

Chelsea, Fort , Thomas Jourdan

University of Central Oklahoma

Synthetic cannabinoids have been a serious problem for law enforcement officials and forensic scientists since their emergence on the retail market where they are packaged as sold as "Spice". These drugs are designed to mimic the effects of marijuana, while giving the user the sensation and peace of mind of a "legal high." The chemical structure and nature of these drugs is highly variable, unpredictable, and often dangerous to the person using a generally at the time "legal" drug. Little is also known about how blood samples secured in cases involving suspected synthetic cannabinoid abuse may degrade under particular storage temperature regimes or for typical prioritized forensic laboratory turnaround times. The particular cannabinoids to be screened will include XLR11, UR144, ADB-Pinaca, and AB-Fubinaca. Since synthetic cannabinoids are newly DEA Schedule I controlled compounds, methods will need to be validated for as to quantitating these four compounds using liquid chromatography tandem mass spectrometry (LC-MS/MS). Validated protocols have been developed in the OCME laboratory based on the current Scientific Working Group guidelines for toxicology labs (SWGTOX). Spiked blood samples will be tested initially on day 0, and then on a specified daily, weekly, and monthly basis for three months. Storage temperature (refrigerator 2°C, room 23°C, and elevated temperature 35°C+) and time since collection will be measured.

05.10.02 Enzymatic Means to Rehabilitate Degraded DNA

Nicole, Sambol , James Creecy

University of Central Oklahoma

A challenge in the field of forensic DNA analysis is the amplification and interpretation of degraded and low-copy number (LCN) DNA obtained from amounts of limited biological evidence. It has been well established that DNA profiles obtained from degraded samples are often of limited value due to the frequent occurrence of preferential amplification during polymerase chain reaction (PCR). The by-products of preferential PCR amplification are often observed as inter- and intra-locus peak imbalance, allelic dropout, and/or locus dropout. Inspired by advances in next-generation sequencing techniques, we propose a methodology for simultaneously normalizing the abundance of PCR products across all short tandem repeat (STR) loci using the DNA exonuclease, duplex-specific nuclease (DSN). DSN is an enzyme isolated from the hepatopancreas of Red King (Kamchatka) crab that possesses a strong affinity for digesting double stranded DNA (dsDNA). Degraded DNA known to display peak imbalance and allele dropout was amplified using AmpFISTR® Identifiler® Plus for 28 cycles. Following amplification, samples were denatured at 99.9 °C for 5 min and incubated with one unit of DSN at 62 °C in a 28 µl volume for 1 min. Nuclease activity was terminated through the addition of equal volume of 10 mM EDTA and 95 °C incubation for 2 min. The findings obtained support the potential use of DSN treatment as a method for normalizing STR profiles.

05.10.03 A Validation Study of the Bloodstain Classification Decision Map

Kacey, Brown , Craig Gravel, Mark McCoy, Tracy MorrisWayne Lord

University of Central Oklahoma

Currently, there is no globally-accepted set of standards to back up a conclusion for a bloodstain classification at a crime scene. This study seeks to assess the Bloodstain Classification Decision Map, created by Bevel Gardner and Associates as a teaching tool, through a validation study involving current law enforcement and crime scene personnel. This could be especially beneficial to the discipline in courts of law, providing a basis to support expert testimony, along with helping crime scene personnel classify bloodstains in the field, to better determine the potential valuable of evidence. The researcher will photograph 15 types of bloodstains that were created by an expert in the discipline of bloodstain pattern analysis. Fifty participants in law enforcement and crime scene investigation will be sent 14 bloodstains to classify. Twenty-five will be given the Bloodstain Classification Decision Map along with their stains, and will be told to follow it as an aid to their bloodstain identification. The other 25 will have no aid, and will be asked simply to use their knowledge base. All 50 participants will have taken at least 40 hours of bloodstain coursework from Bevel Gardner and Associates. Subsequent statistical analysis will be conducted, incorporating sensitivity, specificity and accuracy measures along with T-test calculations and comparisons of how participants with the Decision Map performed compared to those without looking for significant differences.

05.10.04 Comparison and Assessment of Field Test Kits for Commonly Seized Drugs of Abuse

Viena, Thomas , Heather Schafstall, Thomas Jourdan

University of Central Oklahoma

Attendees will learn the differences in various types of field test kits. The capability, advantages and disadvantages of these test kits will be demonstrated. Different kit types will be used to identify marijuana, bath salts and synthetic cannabinoids. This presentation will impact the law enforcement and forensic community by providing an unbiased comparison and analysis of presumptive field test kits; in order to make an educated decision about which kits best meet their needs. Comparisons and assessments included the ease of use, number of compounds presumptively identified by a kit, and accuracy of identification. Synthetic compounds are continuously changing with time and legislation. With these changes, law enforcement must identify which packages of synthetic cannabinoids are controlled and decide whether or not to seize the drug. Field test kits were used to determine if new synthetic cannabinoids are able to produce accurate results with present kits. Confirmatory identification for all samples analyzed were done using a gas-chromatograph/mass spectrometer. Three commercially-available marijuana test kits were compared for their thermal stability via intermittent testing during storage at temperatures of -20oF and 120oF for a period of six weeks. Kits containing Duquenois-Levine reagent showed stability under these temperature regimes. Synthetic compounds with similar base structures are observed to react positively with the reagent of the kits.

05.10.05 Practical Evidence Processing: Does Cyanoacrylate Fuming Hinder Firearms Analysis?

Elyse, Owens

University of Central Oklahoma

Cyanoacrylate fuming is a successful and efficient chemical process of revealing latent prints on non-porous objects found at crime scenes. In a crime laboratory setting, firearms may be processed for latent prints. While firearms are fumed, little research has been conducted to determine if this process hinders the firearm analysis information it may provide. The lack of research on this subject may lead to potential misinterpretations as to what precautions should be taken prior to the latent print examination, and may lead to the loss of potentially vital evidence. The purpose of this study is to discover whether cyanoacrylate fuming masks critical areas within firearms that may contribute to an identification. Comparing firearm components before and after the fuming process can provide valuable information that may prove useful when processing fingerprint evidence on firearms. This study may be beneficial for labs conducting both firearm and fingerprint analyses by demonstrating that covering critical areas in a firearm does or does not hinder evidence that may be gathered from the firearm analysis process. If examiners knew how the fuming process affects firearm information, appropriate corrective measures could be used to ensure the maximum amount of evidence is discovered.

05.10.06 A Comparative Study of CAD Zone and SceneVision 3D Software Programs for Creating 3D Models for Crime Scene Reconstruction

Robyn, Mihandoost

University of Central Oklahoma

CAD Zone and SceneVision 3D are both fairly new software programs that can use acquisitioned data from the Faro Focus 3D laser scanner to create 3D models of crime scenes for the purpose of crime scene reconstruction. These two software programs have yet to be compared with each other. This research study will involve scanning a mock crime scene using the Focus 3D. Using this scanned data, a comparative study of these two software programs will be undertaken. Analysis will be performed concerning the difficulty of using the software, the time it takes to create a model, the pricing of the software, and which software program creates the most useful and accurate 3D model. This comparative study will assist law enforcement agencies in evaluating the hardware and software which best suits their department, and will assist the manufacturers in improving their product.

05.10.07 Assessing DNA Quantity and Quality Using Real-Time PCR

Danielle, Rose

University of Central Oklahoma

Since DNA analysis techniques were first utilized for forensic science purposes, vast improvements have been made in the fields of forensic science and the analysis of biological evidence. With the introduction of the current methods of DNA analysis, it is now possible to identify the donor of a biological sample to the exclusion of all others. Short tandem repeat (STR) analysis, the current DNA analysis method, however, can be susceptible to severe DNA degradation to the point where a full DNA profile cannot be determined. Although there are several proposed methods to analyze degraded DNA samples, a technique to determine the extent to which a sample of DNA is degraded would be beneficial to the forensic science community by saving time and money, both of which are extremely limited in forensic laboratories. One method with which to do this would be through the use of DNA quantification methods, specifically real-time PCR. Several techniques to do this are available, but most lack the validation studies needed in order to be used for forensic purposes. A new methodology is proposed that will utilize real-time PCR to assess both the quantity and quality of DNA present in a biological sample.

05.10.08 Patterns of Cooling-off Periods in Serial Homicide Cases

Mia, Solomon , John Mabry

University of Central Oklahoma

Although the term is well defined, little information is available about patterns, length, or specificity with respect to the cooling-off period in serial homicide cases - specifically pertaining to the offenders' individually unique patterns. We hypothesize that there is a relationship between cooling-off period and other patterns of kill that might assist law enforcement in earlier identification of serial homicide offenders. To determine whether patterns can be predicted, we will assess the relationship between the length and patterns of the offender's cooling-off period to other well characterized patterns in serial homicide cases. The proposed research will examine the available published information about serial homicide offenders, victims, and cases in conjunction with data obtained from the serial killer information center database created by Dr. Robert Aamodt and his students' at Radford University. For the proposed study, a serial homicide offender will be operationally defined as one who kills three or more victims, during three or more separate events, at three or more locations (Campbell & DeNivi, 2004) and the cooling-off period will be defined as the time between when an offender stops killing, and returns to his or her traditional way of life between killings, whether for personal reasons or viability reasons (Douglass et al., 2006).

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11. Genetics

05.11.01 Construction of Peanut Premature Stage Whole Plant cDNA library

Ning, Wu , Kanyand Matand, Morgan James, Nicole Newman

Langston University

Peanut is a legume of economic importance and has been improved in past decades. However, the genomic mechanism behind peanut breeding is still unknown because of the lack of peanut genomic information. The objective of this study is to construct a peanut premature stage whole plant cDNA library, which will lay the foundation for premature peanut expressed gene discovery. Peanut premature tissues were collected by quick frozen in liquid nitrogen. The tissues were then processed for total RNA isolation and mRNA purification. A standard cDNA library was constructed. The result showed that pre-amplified peanut premature plant cDNA library contained 106 colony forming units with the average insert size about 1 Kb. The quality control test showed that the restriction analyzed library displayed significant smear bands across the electrophoresis image regions. The library was amplified at 37°C over night and the plasmid DNAs were then purified for future sequencing procedures. The constructed cDNA library can be used for following high-throughput DNA sequencing to study the gene expression profile in this peanut premature growing stage. Through the bioinformatics comparative study of peanut premature gene expression profile to other mature peanut plant gene expression profile, the major expressed genes that specifically related to this particular growing stage will be identified. It will provide valuable information for peanut genetic breeding and future peanut genomic studies.

05.11.02 Characterization of Developmental Gene Expression in a Dictyostelium Mutant Lacking ERK1 and RegA

Troy, King Jr. , David Schwebs, Jeffrey Hadwiger

Oklahoma State University

In this project, we wanted to observe if a mutant lacking the ERK1 and RegA gene has any changes in developmental gene expression because ERK1 and RegA play a central role in development signaling. Our goal is to compare mutant gene expression with wild-type gene expression at different stages of development. We hypothesize that developmental gene expression might be accelerated since this mutant develops faster than wild-type cells. We used reporter genes containing the lacZ gene to examine the timing and distribution of developmental gene expression. We examined the expression of these genes by staining for the expression of β -galactosidase. The expression of the prestalk specific reporter gene *ecmA::lacZ* (vector p91) in *erk1-regA-* cells was detected in the anterior region of developing aggregates and that distribution is similar to that observed for wild-type cells. The level of this gene expression was enhanced when *erk1-regA-* cells were developed in chimeric aggregates that contained an excess of wild-type cells suggesting that *erk1-regA-* cells are deficient in producing an extracellular signal that induces *ecmA* gene expression.

05.11.03 Genetic Analysis of Tetracycline Resistant Fecal Coliforms Isolated From Refuge Bison and Longhorn Cattle versus Agricultural Cattle

Joseph, Kheir , Dennis Frisby, Tahzeeba Frisby

Cameron University

Antibiotics are commonly used for a variety of therapeutic and non-therapeutic purposes. Although numerous studies have been conducted to address concerns about the spread of antibiotic resistance among bacteria associated with agriculture animals and human populations, little to no data is available regarding the spread of antibiotic resistance in bacteria associated with wild animal populations with presumably little selective pressure. The present study focuses on the prevalence of tetracycline resistant bacteria isolated from wild populations of American bison and Texas Longhorn cattle in the Wichita Mountains Wildlife Refuge in comparison to agricultural cattle. Samples were collected as swabs from freshly voided feces from each of the test animals and isolates were isolated on MacConkey or Eosin Methylene Blue agar as Gram-negative, lactose-fermenters. Each isolate was then tested for resistance to the tetracycline on LB supplemented with the antibiotic. Standard PCR was used to test each isolate for tetracycline resistant markers. The markers tested are *tetA*, *tetB* and *tetM*, while using 16S rRNA primer as a control. *TetB* was most abundant. The appearance of similar genetic markers within animals of differing environments with differing selective pressures suggests that it is possible that other factors, such as environmental contamination and vector transmitted mechanisms, play a role in the presence of similar ABR fecal coliforms across tested animals.

05.11.04 Dietary Restriction Suppresses Tumor Formation in a Drosophila Model of Cancer

Joseph, Ahlander , Carla Horton, Harsh Patel, Jacob Yerton

Northeastern State University

Cancer is the second leading cause of death, second only to heart disease. Diet and nutrition is thought to play an important role in cancer risk. The purpose of our experiment was to observe the effects of diet on tumor development in a Drosophila model of cancer. Caloric restriction dramatically reduced the cancer rate from 95% in the high calorie diet to 22% in the low calorie diet. In a second experiment, we altered protein to carbohydrate ratios while maintaining a constant caloric content. We discovered that a high protein, low carbohydrate diet produced a 100% cancer rate, while a low protein diet reduced cancer incidence to 50%. These results suggest that amino acid restriction, rather than simple caloric restriction, has the ability to reduce cancer formation in Drosophila. This model system can be used to discover the biological mechanisms behind the effects of diet on cancer progression.

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05. Mathematics and Science

12. Kinesiology

05.12.01 Physiological Differences Between Indoor and Outdoor Climbing

Brian, Myers

University of Central Oklahoma

It is estimated that there are over four million climbers in the U.S. alone (Smoot, 1993). As this number of climbers continues to increase the need for physiological knowledge increases. The primary aim of this study is to determine if there is a physiological difference between indoor top rope climbing (ITRC) compared to outdoor top rope climbing (OTRC). This study will focus on percent max oxygen consumption (VO₂), heart rate (HR) and rating of perceived exertion (RPE) while climbing indoors versus climbing outdoors and will show VO₂ and HR at separate heights of the climbs (0-60 ft and 60-95 ft). Intermediate rock climbers will be recruited. VO₂ max will be obtained by means of an upper body arm ergometer while wearing the Oxycon Mobile metabolic unit. After a 48 hour rest the participants will climb one specified indoor route, rest 48 hours and climb a specified outdoor route while wearing the mobile unit. It is hypothesized that OTRC will elicit a greater VO₂ and HR than that of ITRC, VO₂ and HR will be higher at greater heights both indoors and outdoors and VO₂ and HR will be higher at greater heights outdoors compared to indoors. The knowledge from this study can give climbing coaches, trainers, and recreational climbers the knowledge they need to give guidelines and evaluate training methods. This research study is in its early stages with participants being recruited at this time. The results of this study will be determined in the Fall of 2014.

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13. Mathematics

05.13.01 The Senior's Dream

Stephanie, Duncan

East Central University

This research looks at what real value conditions for matrices make $[(A+B)]^{-1}=A^{-1}+B^{-1}$ true. We'll examine the 1x1 matrix, the conditions found in a general result, and the 2x2 matrix.

05.13.02 The Golden Ratio in Geometric Figures

Cady, Murphy

East Central University

This project presents four geometric figures in which the golden ratio can be discovered. With the findings of several mathematicians, we used geometric theorems and statements along with algebra to prove the golden ratio's appearance in specific geometric figures. The work presented here has great applications for future studies of the golden ratio in more abstract geometric figures and three-dimensional figures.

05.13.03 Locating Roots of A Certain Class of Polynomials

Akinola, Akinlawon , Ioannis Argyros

Cameron University

The issue of finding roots of polynomials has been one of great concern and value over the years of progressive research. This issue cuts across several disciplines including medicine and pharmaceuticals, engineering, economics and even business finance. In this presentation, a further analysis of the celebrated Newton type method to finding roots of polynomials will be shown.

05.13.04 How Far is a Chicken McNugget From Being Prime?

Staci, Gleen

Langston University

Numerical monoids have long been studied for their interesting (i.e., non-unique) factorization properties. While numerical monoids of embedding dimension 2 are relatively well-understood, the presence of a third minimal generator makes these monoids more difficult and interesting to study. We provide a complete analysis of $McN = (6, 9, 20)$, an embedding dimension 3 numerical monoid whose elements correspond to the amounts of Chicken McNuggets one can purchase using the traditional order sizes of 6, 9, and 20. Our analysis includes a closed formula for $\omega(x)$, the omega-primality of an element, which measures how far that element is from being prime in the monoid. Furthermore, we also develop formulas for the elasticity $\rho(x)$ and delta sets $\Delta(McN)$, quantities which measure non-uniqueness of factorization in McN .

05.13.05 A Mathematical Model of Circadian Rhythms in Drosophila

Alanna, Riederer , Brittany Bannish, Brittany Myers

University of Central Oklahoma

Periodically occurring events can be expressed by a system of differential equations. Circadian rhythms, daily rhythmic activity cycles, are an example of such an event. Experimental observations coupled with previous modeling efforts have explained much of the behavior of *Drosophila* circadian rhythms, but questions remain. We develop a more comprehensive model which includes two different *Drosophila* genes (PER and TIM), in an effort to better fit experimental data. We hypothesize that our biologically-motivated model will better capture the observed circadian rhythms. We will present model results and compare them to experimental data.

05.13.06 When is a Ride on Airport Pavement Too Rough For Humans?

David, Stapleton

University of Central Oklahoma

Models such as the Boeing Bump Model are in current use to determine when airport pavement is too rough on aircraft. In contrast, this paper considers when vibration is considered too uncomfortable by humans. Presentation of 37 real world taxiway and 37 real world runway rides on a B737-800 flight simulator using vertical vibrations provided a subjective 0-10 rating and an acceptable/not acceptable rating from 33 pilots for each ride in a data collection effort. The vertical profiles of each taxiway and runway were known and a numerical score for each was calculated in terms of four ISO standard estimators of ride roughness: weighted RMS, weighted MTVV, weighted VDV and DKup obtained by running the profiles through the flight simulator with certain modifications and enhancements. The results were • High correlations were found between the subjective pilot ratings and the four objective ISO measures of total acceleration experienced, with different trends for taxiways and runways, • Objective indicators of subjective human ratings of discomfort were deduced as functions of the ISO indices with confidence intervals for the fits, • Limits for cockpit vibration were obtained by identifying index values at which 5% of pilots would rate a taxiway or runway as unacceptable.

05.13.07 A Within-Host Mathematical Model of HIV Infection during Combination Therapies

Candace, Baker , Sean Lavery

University of Central Oklahoma

Mathematical models provide us with a quantitative description of the immune system and its interactions with viruses and other pathogens. We model HIV infection dynamics within a host to study the effects of drug treatments, specifically those that alter the ability of the virus to infect susceptible cells and to produce infectious viruses. The two drugs considered in the model are Reverse Transcriptase inhibitors and Protease inhibitors which block the ability of HIV to successfully infect a cell, and cause the production of non-infectious viral particles, respectively. Our current model is a 6 equation differential equations model that describes Helper T cell, Cytotoxic T cell, infectious and non-infectious HIV viral particle interaction within the host whilst the host is undergoing antiretroviral drug treatment. Changes in the efficacies of these drugs can cause large fluctuations in host cell and virus dynamics. We will expand the model to examine the effects of novel drug combinations and more detailed T-cell population structure on host and virus dynamics.

05.13.08 Dynamics of Laser-Initiated Immunotherapy of Cancer

Bryan, Dawkins , Sean Lavery, Wei Chen

University of Central Oklahoma

We will present a mathematical model composed of a system of ordinary differential equations describing the immune-mediated dynamics of cancer cell populations with exponential growth. The model will include laser-initiated cancer destruction by means of several classes of immune cells. The primary cells in the immune response for this treatment are Dendritic cells, Cytotoxic and Helper T cells, and B cells. Also included in the model are antibodies and tumor antigen, which play a central role in the success of the treatment. We will show successful treatment and the conditions under which this may occur. In addition, we will describe conditions under which failed treatment may occur. Whenever possible, the results of the model will be compared to experimental results of our collaborator to show the relative accuracy of the model. To expand the model, treatment of cancer cell populations with non-exponential growth will be discussed as well. We will show that the ultimate success of laser immunotherapy of cancer is highly related to immunoadjuvants represented by parameters of our model.

05.13.09 Modeling of Blood Clot Degradation Associated with TAFIa and tPA

Hyunjong, Kim , Brittany Bannish

University of Central Oklahoma

The objective of this research is to understand how TAFIa and tPA (molecules present in blood) affect the rate of blood clot degradation. We hypothesize that TAFIa and tPA have an effect on each other, and that greater tPA reduces TAFIa's activity. We use a mathematical model to run computational experiments (using the Fortran and MATLAB programs) to obtain results. We create graphs which depend on the TAFIa and tPA concentrations. The result is that for a fixed tPA concentration, a higher concentration of TAFIa slows the rate of blood clot degradation. On the other hand, tPA makes TAFIa's activity slower, so for a fixed TAFIa concentration, a higher concentration of tPA increases the rate of blood clot degradation.

05.13.10 Jacobi vs. Gauss-Seidel

Kendra, Parker

East Central University

This paper talks about two different numerical methods used to solve systems of linear equations, the Jacobi Method and the Gauss-Seidel Method. The methods are compared by looking at the solutions, how many iterations are needed to obtain the solutions, and the relative and the absolute error.

05.13.11 Modeling The Relationship Between uPA and PAI-1, and Tumor Cell Growth

Ara, Han , Brittany Bannish

University of Central Oklahoma

The plasminogen activators, tissue-type plasminogen activator (tPA) and urokinase (uPA), are expressed in tumor cells. uPA is most common with its receptor (uPAR) and is mostly involved in cellular functions. Also, PAI-1 which is one of the plasminogen activator inhibitors of fibrinolysis, the degradation of blood clots, plays a major role in tumor cell growth as well as in cancer. In other words, increased uPA and PAI-1 were associated with a worse prognosis. We build a mathematical model of the relationship between uPA and PAI-1, and tumor cell growth. The model equations are solved in Matlab, and clinically relevant results are discussed.

05.13.12 Application of Least Square Problem to 3D Intensity Modulated Radiation Therapy Planning Problems - Part I

Andrew, Bucki , Abebaw Tadesse, Laurence Smith, Staci GleenTayla Vaughn, Taylor Pleasant

Langston University

Brief overview of the application of Least Squares problem (LSP) as applied to 3D-Intensity Modulated Radiation Therapy Planning (IMRT) will be presented in this part.

05.13.13 Application of Least Square Problem to 3D Intensity Modulated Radiation Therapy Planning Problems - Part II

Abewaw, Tadesse , Andrew Bucki, Franklin Fondjo, Laurence SmithStaci Gleen, Tayla Vaughn, Taylor Pleasant

Langston University

In this part, MATLAB Implementation of the (LSP)-IMRT on the computational environment for Radiation Therapy Research (CERR) platform will be presented. Sample patient image data from CERR Archives will be used for demonstration purposes.

05.13.14 Counting Nonhomeomorphic Paintings of Noncut Points of Caterpillar Continua

Michael, McClendon , Jonathan Yarbrough, Mikasa Barnes

University of Central Oklahoma

A graph is a continuum that can be written as the union of finitely many arcs, any two of which are either disjoint or intersect in one or both of their endpoints. A tree is a graph containing no simple closed curves. A caterpillar continuum C is a non-degenerate connected tree containing an arc $A(C)$ such that $V(C) = \{x \mid x \text{ belongs to } C, \text{order}(x,C) > 2\}$ is a subset of $A(C)$ and the two endpoints of $A(C)$ are elements of $V(C)$. A painting of a caterpillar continuum is a partitioning of the noncut points into two sets, which we call black and white (or 0 and 1). Two noncut points are said to be adjacent noncut points if they are adjacent to the same point of order greater than 2. Two paintings are homeomorphic if there is a one-to-one correspondence between the noncut points in the black sets and the white sets that maps adjacent noncut points to adjacent noncut points. In the research performed, we count the number of nonhomeomorphic paintings of all of the caterpillars with n points of order greater than 2, for $n = 0, 1, 2, 3$ and 4, in an effort to determine the number of paintings for a general n .

05.13.15 Convincing Students That Old Dogs Can Learn New Tricks

Bradley, Paynter

University of Central Oklahoma

Non-math majors are often apprehensive about taking a math course. They bring with them significant baggage from earlier classes that has convinced them that they are no good at math and cannot learn. Following the work of C. S. Dweck, I have developed an idea to try and change this mindset in my Business Calculus students using my own poor basketball skills as an analogy. This poster will present some of the materials developed (including evidence of the aforementioned terrible basketball) and student reactions.

05.13.16 A Heuristic to Dynamically Determine the Minimum Graduation Time for Students

Bradley, Paynter , Kristina Sundy, Spencer Harris

University of Central Oklahoma

Minimizing the number of semesters a student must take in college before graduation can help students find a paying job faster, minimize per-semester fees associated with the college, and reduce transportation, housing, and food costs for the student. This type of problem is an optimization problem requiring the creation of a schedule to minimize a given resource (in this case, semesters taken). The problem is complicated by several constraints; for example, the dependencies courses have on each other. In this project, a complex degree program including many dependencies and several concurrent dependencies was examined. To find solutions to the problem, a heuristic has been developed based on the Program Evaluation and Review Technique (PERT) and the critical path method (CPM).

05.13.17 Determining the Optimal Placement of the Quarantine Specialist in the Board Game "Pandemic"

Bradley, Paynter , Dominic Romano, Kristina Sundy, Nicholas Hardwick-Hall Spencer Harris, Victoria Ford

University of Central Oklahoma

In the board game "Pandemic", players work cooperatively to treat and cure the global outbreak of four diseases. Each player has a unique role in the team and the optimal utilization of these roles is essential to success in the game. One possible role is that of the Quarantine Specialist. This player has the ability to prevent the spread of disease in the area of the board in which their player token is located. This research uses the technique of Integer Programming to find the optimal position on the board for the Quarantine Specialist for a given turn of the game. Constraints that need to be taken into account include the distance that the player can move in a single turn. As an objective, we minimize the expected number of new disease cases over the current round of the game. Extensive testing has verified the positive impact this technique has on the outcome of the game.

05.13.18 Proof Involving Biconditional Statements

Beautiful-Joy, Fields

Langston University

Biconditional statements are composed of two conditional statements. Statements can be verified, or proven, mathematically by different means. We were given a biconditional statement to prove; Let n belong to \mathbb{Z} . Prove that $2|n^4-3$ iff $4|n^2+3$. This statement was successfully verified by proof by cases and a proof by contrapositive.

05.13.19 A Biconditional Proof

Kichelle, Henderson

Langston University

Biconditional statements are composed of two conditional statements. Statements can be verified, or proven, mathematically by different means. We were given a biconditional statement to prove; Let x, y belong to all integers. Prove that $(x+1)y^2$ is even if and only if x is odd or y is even. This statement was successfully verified by proof by cases and a proof by contrapositive.

05.13.20 Explicit Formula Derivation of (a,b,c)–sequences using an Endomorphism Approach

Richard, Hwang , Andrew Bucki

Oklahoma School of Science and Mathematics

The purpose of this presentation is to derive a generic explicit formula for (a,b,c)–sequences. Calculating extremely large values of (a,b,c)–sequences is extremely difficult and cumbersome for computational purposes. Using special matrices we are able to increment three consecutive values of an (a,b,c) – sequence. We use linear algebra methods to reduce the total amount of steps required to calculate the nth term of the sequence. We also derive an explicit formula for the nth term of any (a,b,c,)–sequence. Additionally we explore manipulation of the behavior of (a,b,c)–sequences into special cases such as the Fibonacci Sequence.

05.13.21 Computational Thinking and Programming Approach in Teaching and Learning Processes

John, Kreidler , Andrew Bucki

Oklahoma School of Science and Mathematics

In this presentation, some ideas of the new educational program in Mathematics supporting STEM-C are presented. Elements of basic logic serve as illustrations of these ideas.

05.13.22 Richard Courant: "Gottingen is Here".

Charlotte, Simmons

University of Central Oklahoma

As many as 144 German-speaking mathematicians have been listed who were forced to leave their positions at German institutions following the 1933 Law for the Restoration of the Professional Civil Service. The "great migration of the 1930's" is said to have shifted the center of the mathematical world from Germany to the United States. Numbered among these emigrants is Richard Courant, who was "absolutely inexhaustible" and relentlessly pursued his dream of building an institute for advanced training in mathematics at New York University for nearly two decades. By 1958, the Courant Institute, which began as a suite of rooms in a girls' dormitory, was described as the "national capital of applied mathematical analysis." In this talk, we will discuss Courant's efforts to bring his experience in Gottingen to bear upon the state of science in America, as well as how he and other immigrants impacted mathematics in America during this important chapter in our history.

05.13.23 Effective Use of Online Video in Mathematics Education

Michael, Fulkerson , Kristina Stevenson

University of Central Oklahoma

Online learning of mathematics has exploded in popularity in recent years. While many math teachers would like to start making their own content available to their students online, it can be overwhelming to know where to start. In this poster, we discuss various methods for how to create online math videos as well as tips for making effective videos.

Abstracts from the 2014 Oklahoma Research Day

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05. Mathematics and Science

14. Optometry

05.14.01 Meibomian Gland Expression in Patients without Dry Eye Symptoms

Amy, Dang , Latricia Pack, Shabree Nichols

Northeastern State University

Purpose: Non-obvious obstructive Meibomian Gland Dysfunction (NOMGD) is the most common form of MGD and patients with it have no noticeable signs or symptoms. This pilot study analyzed meibum quality of subjects without dry eye symptoms or signs of MGD to determine if routine glandular expression is warranted in these patients. Methods: Subjects were > 18 years of age, had no dry eye complaints, and had not used eye drops including artificial tears within the last month. Subjects completed the Ocular Surface Disease Index (OSDI) questionnaire and underwent meibomian gland expression. Meibum expressed from the left lower eyelid of each subject was analyzed using a Laserex Super Q slit lamp with TelScreen video camera and graded using the scale developed by the International Workshop on MGD. Results: 40 subjects participated and results were separated into 4 categories: gender, age, number of glands expressed, and meibum quality. There were no statistically significant differences found for gender, age or number of glands expressed with chi-square statistical testing. Using binomial statistical testing, a trend of Grade 1 to Grade 2 quality was found with $p < 0.001$, showing statistical significance. The average meibum quality was 1.7125, demonstrating that most subjects in our study have cloudy meibum. Conclusion: The results of this study indicate that MGD is under-diagnosed. Early diagnosis and treatment of MGD could prevent subsequent damage to ocular structures.

05.14.02 Selective Laser Trabeculoplasty Long-Term Outcomes in Native American Glaucoma Patients

Trent, Ott , Drew Heide

Northeastern State University

Purpose. The purpose of this study is to examine the long-term efficacy of selective laser trabeculoplasty (SLT) treatment in the Native American population. The short-term efficacy has been previously studied but no long-term data has been collected and recorded. **Methods.** This is a retrospective, observational, longitudinal, cohort study that included 47 Native American patients selected from the Northeastern State University Oklahoma College of Optometry electronic medical health records. The intra-ocular pressure (IOP) prior to surgery, 2-4 weeks post-surgery, six months post surgery, three years post surgery, and most recent IOP readings after three years post surgery were recorded. **Results.** The mean IOP percentage decrease found in the Native American population three years post SLT treatment OD was $11.18 \pm 16.25\%$ ($p=0.00032$) and OS was $4.65 \pm 14.98\%$ ($p=0.014$). The mean IOP decrease in the three to six year range post SLT OD was $11.96 \pm 17.89\%$ ($p=0.00075$) and OS was $6.18 \pm 17.19\%$ ($p=0.02$). **Conclusions.** SLT treatment of the Native American population is shown to be effective long-term at decreasing IOP but there is decreased reliability due to it being a retrospective study.

05.14.03 Curriculum across Schools and Colleges of Optometry

Courtney, Bloodgood

Northeastern State University

ABSTRACT Purpose. The goal of this research project was to compare and contrast the curricula of the schools and colleges of optometry across the United States. **Methods.** Using the curriculum from each program, we created categories and assigned each course to the category which best represented it. With these categories, we analyzed the percentage that each category represents of the total credit hours for each school and college. **Results.** The total credit hours in each program range from 144 to 330.5 credit hours. The largest range for percentage of credit hours in a category was in Clinical Education, with a range of 30.4%, followed by Basic Biomedical Science, with a range of 15.55%. The smallest range was in Pediatrics, with a range of 2.32%, followed closely by Practice Management, with a range of 2.88%. All but four of the categories have a range of less than 7.5%. **Discussion.** Our analysis showed some variability between the programs. We found it interesting that the specialty categories hardly varied between programs in the percentage of credit hours spent in a category. It was also noted that the curricula appeared to be driven by the material covered on National Boards Part I, II, and III.

05.14.04 Vault and Curvature Change of Jupiter Scleral Lenses using OCT

Kelly, McLain , Thomas Salmon

Northeastern State University

Purpose. To measure vault as curvature changed in 15.6-mm Jupiter scleral contact lenses using the Cirrus HD-OCT and to measure central thickness with the OCT and center thickness gauge. Methods. All 20 participants were over 19 years old, did not have refractive surgery or corneal abnormalities. Vault measurements were taken with the OCT. Three different lens vaults were measured on the right eye of each participant. Thickness measurements were taken with a center thickness gauge and OCT. Results. Fitting 1D flatter than the suggested lens reduced the mean vault by 76.8 μm (SD 28.9 μm). Steepening 1D increased the mean vault by 43.2 μm (SD 24.4 μm). The change was not symmetric 1D on either side of the suggested lens by paired t-testing ($p = 0.002$). Paired t-testing of the two methods of measuring lens thickness revealed a significant difference of the means ($p = 0.0047$). Conclusion. The OCT did not consistently predict vault change with a 1D steeper or flatter change. The OCT may not be able to find a standard value for vault change with a 1D change in base curve. For lower power lenses the OCT and the thickness gauge gave similar thicknesses. Key Words: scleral contact lenses, contact lens fitting, optical coherence tomography

05.14.05 The Effect of Automated Auditory Cues on Humphrey Visual Field Performance

Jamie, Rodriguez

Northeastern State University

Purpose. The Humphrey Visual Field Analyzer (HVFA) plays an essential part in the diagnosis and management of patients with visual field loss due to retinal disease, neurological disease, and particularly glaucoma. The goal of this study was to determine if intermittent automated verbal cues played during a visual field test improves test reliability indices. Methods. Fifty-seven subjects were divided into two groups. Group 1 took a 24-2 Humphrey Visual Field with general directions given at the beginning of the test with no additional instruction. Group 2 took a 24-2 Humphrey Visual Field test with general directions given at the beginning of the test as well as an intermittent automated voice prompt instructing the patient to maintain fixation. Test components analyzed were: fixation losses, false positives, false negatives, and test duration. Results. The Mann-Whitney U test shows that there was no significant difference between the two groups reliability indices. Conclusion. Based on the Mann-Whitney U test, we cannot accept our hypothesis that reliability indices would improve with the accompaniment of automated verbal cues. Further research with a more diverse group of subjects, greater number of participants, and an automated voice prompt with shorter time intervals would be necessary for a more thorough experimental set-up.

05.14.06 The Effect of Elastic Modulus of Soft Contact Lenses on Goldmann Applanation Tonometry

Lauren, Claborn

Northeastern State University

Intraocular pressure (IOP) is an important measurement to consider in the diagnosis and treatment of ocular conditions. Aqueous humor is the fluid measured and it circulates from the ciliary body, through the pupil, into the anterior chamber, and out the trabecular meshwork through Schlemm's canal. Several factors affect IOP including temperature, smoking, drug and alcohol use, posture, exertion, eye movement, intraocular conditions, and systemic conditions. IOP can affect and be affected by corneal hysteresis, elasticity, and thickness. Measuring IOP over contact lenses is a technique that is gaining popularity in practices in an attempt to speed exam times and also for diseased eyes fit with bandage lenses. Measuring IOP over contact lenses induces some error in measurement. This study seeks to quantify the error induced when measuring IOP over silicon hydrogel contact lenses with the Goldmann tonometer. The affects of lens center thickness (CT), due to dioptric power difference, and elastic modulus on IOP measurement will be evaluated. A group of lenses with varying dioptric powers and elastic modulus will be tested against each other on eyes with known IOP. The results should show that thicker stiffer lenses give artificially higher IOP measurement than thinner softer lenses.

05.14.07 Studying the Effect of Binasal Occlusion on Visual Function Using the DEM

Anthony, Battese

Northeastern State University

Oklahoma Research Day 1/29/14 Studying the Effect of Binasal Occlusion on Visual Function Using the DEM Anthony Battese BS, David Hackett BS, Skylar Williams BS, Wes DeRosier OD, FAAO
Northeastern State University Oklahoma College of Optometry ABSTRACT Purpose. To investigate how BNO affects oculomotility skills and automaticity measured with the DEM. Then to compare the subject's standardized academic test scores to their DEM score with BNO. Methods. Sixty-five 3rd, 4th and 5th grade subjects were recruited to take the DEM test with three variations on their habitual spectacles: limbal binasal occlusion, canthal binasal occlusion, and superior occlusion (control). Plano spectacles were provided for subjects without corrective lenses. Scores were then compared to standardized test scores for correlation to school performance. Results. A general linear trend exists between the DEM test age based percentiles for horizontal adjusted time, total errors and calculated ratio for all three test groups and the standardized test scores of the subjects. The station with limbal occlusion was found to perform the DEM horizontal reading test slightly faster on average than the station with control occlusion while the station with canthal occlusion performed the test slightly slower than the control. The difference between the groups DEM horizontal adjusted reading times was not statistically significant. Conclusion. While BNO did not show statistically s

05.14.08 Comparison of the Pacific Acuity Test to the Gold Standard Teller Acuity Card

Leslie, Faulkner

Northeastern State University

ABSTRACT Purpose. To determine if there is a difference between the gold standard Teller Acuity Cards and a new form of preferential looking, Pacific Acuity Test, containing a facial stimulus as the target. Both tests are currently available to test infant visual acuity. **Methods.** We presented each acuity test, one at a time, in descending order to 24 infant subjects who ranged in age from 6-24 months (9 males, 15 females). Half were tested first with the Teller Acuity Cards while the other half was tested first with the Pacific Acuity Test to eliminate any erroneous results from fatigue or bias. An observer was seated directly opposite the subject and caregiver. As the cards were presented the observer noted the subject's direction of gaze. The results were recorded and accuracy was checked by the other researcher. **Results.** We found that there was a clinically significant difference between the Teller Acuity Cards and Pacific Acuity Test when compared by statistical analysis methods. The two tests were not clinically comparable using the Bland-Altman statistical method. **Conclusion.** We concluded that in a clinical setting it cannot be assumed that the Teller Acuity Cards and Pacific Acuity Test can be used interchangeably. The results between the tests were inconsistent. The difference in test design could have contributed to the inconsistent results.

05.14.09 Comparison of Vertical Cup-to-Disc Ratio and Optic Nerve Head Size Using Fundus Photography vs. Cirrus SD-OCT

Jason, Dobson , Derek Wills, Leland Carr

Northeastern State University

. To compare vertical cup-to-disc (VCD) ratio grading and optic nerve head size (ONH) grading between fundus photographs as judged by clinicians and the Cirrus Optical Coherence Tomographer (OCT). The secondary purpose was to gather repeatability statistics for the clinicians' evaluations of the vertical cup-to-disc ratio and optic nerve head size. The study was composed of 50 eyes from the Oklahoma College of Optometry. The fundus photos were presented to 10 clinicians for grading of the VCD ratio and ONH size. Pearson's continuous correlation was used to compare the results of the VCD while Spearman's Rho was used to compare ONH size grading. OCT compared to clinicians' VCD grading showed an excellent correlation (0.800) while ONH size grading showed a fair correlation (0.490). Intrauser ICC of VCD ratio measurements among all participants was excellent at 0.820 while interuser VCD ICC was 0.850. Intrauser ICC of optic nerve head size estimations among all participants was good at 0.700 and interuser ONH ICC was fair at 0.550. OCT correlated well with clinicians' assessments for VCD and ONH. However, OCT was larger (79% of the time) when grading the VCD (average of 0.09). There was no significant difference in OCT and clinicians' ONH size measurements. Clinicians were consistent when grading the same VCDs multiple times and even more consistent when compared with their peers. Intrauser and Interuser ONH repeatability was lower but sti

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05. Mathematics and Science

15. Pharmacy

05.15.01 The Effect of Human Papillomavirus on the Adolescent Male Population.

Frannie, Landrigan , Ryan Cooper, Toni Zumalt

Northwestern State University

Research and cause for human papillomavirus mostly has been focus on the female population. While research and end results have shown positive outcome for the female population, there is also a male population to think about. Therefore what is the effect of vaccination of the adolescent male population and would it be a benefit to implement these vaccines in the standard protocol? Human papillomavirus (HPV) is the most common sexually transmitted infection. There are over 40 types of HPV that can infect males and females. Health problems caused by HPV can range from genital warts and respiratory warts to many forms of cancers effecting both the male and female population. Usually HPV is carried without any signs and symptoms, therefore the infected person is not aware they are passing the virus. This research was selected to focus on forms of adolescent males from the ages 12-19. The basis was formed to see if vaccination occurred during this time frame if there was a significance outcome to lower infection rate and show a positive effect of the vaccine. The majority of all research pertaining to the vaccines indicated a highly positive outcome. These outcomes have shown to provide up to a 95% reduction in infection and cancers in adolescent males. These findings would indicate a base to start implementation of the human papillomavirus vaccine with all regulated standards. This will help reduce the effect of outbreaks and cancers on both spectrum of the population.

05.15.02 Prophage SF370.1 Is The Helper Phage Of Streptococcus Pyogenes Chromosomal Island SPYCIM1

Craig, Land

Redlands Community College

Streptococcus pyogenes is a pathogen causing a wide range of infections, from pharyngitis to rheumatic fever. Chromosomal island SpyCIM1 mediates a growth-dependent mutator phenotype in *S. pyogenes*. Lacking structural genes, SpyCIM1 relies upon a helper prophage to package its DNA into phage capsids. We demonstrated that pyrogenic exotoxin C (speC) carrying prophage SF370.1 is this helper phage. Strains CEM1Δ1, CEM1ΔΦ, OKM77, and OKM78 were used. Mitomycin C was used to induce prophages, which were purified by centrifugation. PCR and electron microscopy were used to identify the presence of SF370.1 or SpyCIM1 phage particles. Strains CEM1Δ1 and CEM1ΔΦ were used as hosts for phage reinfection. Electron microscopy and molecular analysis demonstrated that prophage SF370.1 must be present to package and release SpyCIM1. Strains with SF370.1 but lacking SpyCIM1 released only phages with 65nm heads while those with both released a mixed population of differing tail fibers. Strains lacking SF370.1 produced neither phage particles. Induced SF370.1 phages tagged with ermB were used to demonstrate rescue of SpyCIM1 packaging following its reintroduction. Optimum infection with SF370.1 occurred in early logarithmic growth. The presence of prophage SF370.1 in the *S. pyogenes* genome is required for the packaging and release of SpyCIM1. SpyCIM1 and related chromosomal islands are very frequent in *S. pyogenes*, and our studies are the first to demonstrate

05.15.03 Novel Cyclen Based Antimalarial Agent: In Vitro And In Vivo Studies

Prince, Amoyaw , Josiah Dittrich

Southwestern Oklahoma State University

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

16. Physics

05.16.01 Attenuation Coefficient of Sunflower Oil

Ashma, Shiwakoti , Karen Williams, Manju Maharjan, Shiela Pradhan

East Central University

Accurate and repeatable attenuation coefficient is useful to get more realistic phantoms. Phantoms are used to analyze ultrasound images. An ultrasound technique using sunflower oil, 1, 2, and 4 MHz transducers including the AI block was used. We obtained the attenuation coefficient for sunflower oil using the slope method. At constant temperature and velocity, adjusting the reflector for maximum amplitude, the amplitudes (A1 and A2) and the distance between them were collected using D-mode. The collected data was plotted as attenuation versus twice distance, which gave us the value of the attenuation coefficient from the slope. The value of the attenuation coefficient for the sunflower oil using 1, 2, and 4MHz transducers were found to be 0.0097, 0.007430, 0.005585 dB/mm MHz respectively. Our values of the attenuation coefficient were of the same magnitude as GAMPT reported. GAMPT found the attenuation coefficient to be 0.025 dB/mm MHz. The quality of the oil varies for different lot numbers and brands. Thus, we should not expect our results to match our correlation coefficient was 0.95 for 1MHz, 0.96 for 2MHz and 0.88 for 4MHz, which exactly indicate our method is robust.

05.16.02 Storage of Solar Energy in a Proton Exchange Membrane Fuel Cell

Saeed, Ahmad , Brent Chappell, Sammie Powell

Cameron University

We make a proton exchange membrane fuel cell (PEMFC) that can utilize excess solar energy stored in the form of hydrogen in order to produce electricity at a later time, for example at night time. We compare the hydrogen production from crystalline silicon based photovoltaic cells with the dye sensitized solar cells. The purpose of this research is to find an efficient combination of the hydrogen production from solar energy and a PEMFC.

05.16.03 Caffeine Determination in Energy Beverages

Nik, Razo

East Central University

An Ultraviolet-visible method was used to analyze and determine how much caffeine is in energy beverages. Using a UV-visible instrument would allow for simple determination, but there is background interference. The goal in this experiment is to use a UV-visible method and perform a second derivative of the spectra to eliminate background. Pure caffeine was diluted and used to calibrate the UV-1700 PharmaSpec spectrophotometer. Caffeine exhibits maximum absorbance at 272nm. A second derivative of the spectra permits elimination of the background. Plotting the difference between the maxima at 248nm and minima at 272nm versus concentration of caffeine results in a linear plot with $y=0.003625\text{mg}\cdot\text{cm}^{-1}$. To test this method, known amounts of pure caffeine were added to beverages such as tea, powerade, and Sprite. The amount of caffeine determined by this method resulted in an average percentage error of 2% for tea, 4% for powerade, and 2.9% for Sprite. The method in this work is used to analyze energy drinks for caffeine.

05.16.04 Solution Based Deposition of Antimony Doped Tin Oxide Films

John, Dale

East Central University

A solution based deposition method was used to prepare thin films of antimony doped tin oxide (ATO). The ATO was prepared by dissolving a one to three ratio of SbCl_3 and $\text{SnCl}_2 \cdot 2\text{H}_2\text{O}$ separately in 6M HCl. The two solutions without precipitate were then combined and lowered to a pH of 4 by adding ammonium hydroxide drop wise. The solution was then washed till a silver nitrate test of the wash water would no longer test positive for Cl. Films were then dried at 100°C for 24 hours. Once dry the films were annealed at 500°C for 3 hours. Typical film thickness is approximately 1 μm . The purpose of preparing these films was to examine the effects of thermal and electrical annealing followed by hydrogenation on the resistance of ATO. Thus far thermal annealing results in a film resistance 1.5M Ω . These results indicate that the solution based method can be used in producing electro-optical devices.

05.16.05 Charged Particles in Chaotic Magnetic Fields

Carolina, Vega

Oklahoma State University

As new questions arise as of how particles travel through space, new methods of answering these questions can be implemented. By using chaotic streamlines in the Arnold-Beltrami-Childress (ABC) flows, particles can be set in motion at any point on an imaginary $2\pi \times 2\pi \times 2\pi$ cube. Through computer codes written to track the different paths these particles can take, the paths can be observed. A chaotic magnetic field is recreated and introduced through a computer code as well as the magnetic field that has a determined start and end position. Histograms and Poincaré sections are created to record the information. The purpose of this experiment is to observe the charged particles on the chaotic magnetic field and on the constant magnetic field. Through tracking the distances the particle traveled during an allocated time the diffusion of particles in magnetic fields can be further understood, however, not completely. Furthermore these fields can widely occur in nature, in astrophysical environments, such as solar fares, solar corona, solar wind, and also in laboratory plasmas, thus, with further studies these fields can help understand them.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

17. Psychology

05.17.01 Parent Cultural Differences in the Defensive Self-Esteem/Child-Mortality Salience Connection

Jacob, Jardel , Jenel Cavazos

Cameron University

The objective of this research was to analyze the differences between Eastern and Western cultures as pertains to defensive self-esteem and child-mortality salience. The hypothesis was that U.S. parents would display a culturally characteristic individualistic response by increasing self-esteem to deal with the threat of child mortality, whereas Indian parents would display the opposite reaction, a culturally characteristic collectivist response, by decreasing self-esteem after confronted with the threat of child mortality. One-hundred and two parents recruited from Amazon Mechanical Turk completed an online study that included a writing prompt (child mortality salience or child dental pain; Ditzfeld & Cavazos, 2013), followed a series of questionnaires including state mood (PANAS; Watson, Clark, & Tellegen, 1988) and explicit self-esteem (Rosenberg, 1965). Results affirmed the hypothesis, showing the relation between increased self-esteem and thoughts of child mortality, albeit exclusively in parents from the U.S. Parents in the U.S. come to rely on the self when presented with particularly threatening thought of their child's morality, presumably due to the focus within Western culture on finding strength in self, consistent with individualistic norms. In contrast, Indian parents' self-esteem diminishes in response to the threat of child mortality, presumably by the threat of broken relational bonds decreasing feelings of self-worth, consistent with collectivist

05.17.02 Wielding I: Weighing Evidence

Valan, Buccella

University of Central Oklahoma

How do jurors make decisions? Jurors make decisions based on their perceptions of defendants, victims, witnesses, and evidence. Is this all they base their decisions on? I propose to test the hypothesis of embodied cognition, the idea that our bodies, interacting with the world around us, influence our minds, which includes physical weight. I intend to examine how the physical weight juror decision making as they evaluate a defendant. It has been shown that weight conveys importance. Participants will hold either a brick or a feather while they read 25 vignettes, the contents of which lean towards guilt or innocence, of different crimes; then they will make a verdict choice and a confidence rating. Jurors who hold heavy weight are expected to find more of the verdicts that the vignette corresponds to (guilty or not guilty) as well as be more confident in those verdict choices.

05.17.03 Personality and Situational Correlates of False Confessions

Kathryn, Schrantz , Alicia Limke, Mickie Vanhoy

University of Central Oklahoma

False confessions are confessions obtained from innocent suspects and often result in wrongful convictions and imprisonment. Personality correlates, such as the need to belong, unstable self-esteem, and insecure-anxious attachment style may predict false confessions and subsequent internalization. Situational correlates, such as social exclusion and interrogation tactics may also predict false confessions and internalization. This study proposed to examine the effects of these personality and situational correlates on false confessions. Of the 180 participants, 114 (63.3%) falsely confessed. Results indicated that individuals interrogated were more likely to falsely confess than those who were not interrogated. Social exclusion also predicted false confessions, indicating the exclusion increases the risks for falsely confessing. Furthermore, attachment anxiety predicted false confessions as well. Understanding these correlates of false confessions will further society's knowledge of false confessions and in doing so, may help prevent them from occurring and pervading the justice system.

05.17.04 Parenting Styles and the Effects on Personality

Katelyn, James , Dr. Sherril Stone

Northwestern State University

This study was conducted to determine whether the Baumrind parenting styles have different effects on their children's personalities. In this study a total of 75 adults, over the age of 16, were asked to complete the Parental Bonding Instrument (PBI), which measures the fundamental parental styles as they perceived in the first 16 years of their lives. Also, they were asked to complete the Big Five Inventory (BFI), which is a reflection of how they perceive themselves and rate each question on a Likert scale from one to five. Upon graphing the data, results showed that many participants up to the age of 16 lived in a two parent household. Few participants did not complete the PBI father form. The participants have been a mix of adopted and/or had parents that went through a divorce before they reached the age of 16.

05.17.05 Relating Early Television Viewing to Current Aggressive Behaviors: A Retrospective Recall Approach

Jeff, Seger , Richard Potts

Cameron University

The purpose of this study was to extend the lines of existing longitudinal research by using a retrospective recall methodology, developed by Potts, Belden, and Reese (2008) and refined by Potts and Seger (2013), to assess the relationship between early exposure to violent television content and current aggression. Three hundred sixty-one participants completed questionnaires of demographic information, current physical and verbal aggression, and socialization variables. Then, TV program schedules from the years 2000, 2005, and 2010 were presented to participants who indicated how often they watched each program. Programs that contained moderate to high amounts of violent content were identified and participants' ratings of those programs were summed to create TV violence exposure scores. After accounting for gender, parental discipline style, and parental SES, and general television exposure, there was a significant positive relationship between exposure to violent TV content in both 2000 and 2010 and participants' current physical aggression, but not in 2005. There was also a significant relationship between exposure to violent TV content in all three years and participants' current verbal aggression. This study was the first study to use retrospective TV viewing reports to replicate the longitudinal relationships between past exposure to violent TV content and both current physical and verbal aggression seen in past literature.

05.17.06 The Moderating Role of Actual-Desired Discrepancies in Priming Effects.

J. Adam, Randell , Darcy Reich

Cameron University

When primed information is attributed to the self, self-perceptions and behavior can be assimilated to that information. (Loersch & Payne, 2011). Discrepancies between one's desired and actual self-concepts along the primed dimension can moderate priming effects (Morrison, DeMarree, Wheeler, & Petty, 2010 as cited by Smeesters, Wheeler, & Kay, 2010). We examined how actual-ought and actual-ideal discrepancies moderate the effect of a frugality prime on purchasing preferences. One hundred eighty participants completed the experiment online with Qualtrics software and were recruited via the mTurk website. Results show that purchasing preferences were assimilated to the frugality prime when discrepancies were high, but the frugality prime had no effect on purchasing preferences when discrepancies were low. These results indicate that primed information is more influential when participants are discrepant from their desired standards along the primed dimension. Implications for consumer decisions and the role of regulatory focus in priming effects are discussed.

05.17.07 Temperature Perception and the Experience of Envy

Kristofer, Thompson , Robert Mather

University of Central Oklahoma

The implementation of physical temperature as a coping strategy is based in the physical discomfort that particular emotions arouse. Social environments often induce such emotions, consequently influencing perceptions of physical temperature. Envy is a common emotional response that can impede relationships and cognitive processes. Evidence supports the division of this emotion into two discrete forms, termed benign and malicious envy. While malicious envy parallels the classical conceptualization of envy proper, benign envy is of a considerably less antagonistic nature. In the current study, participants who recalled experiences of benign envy reported higher room temperatures on average than those who recalled experiences of malicious envy, consistent with previous research demonstrating that experiences of malicious envy are associated with cold feelings toward the envied individual. The feeling of "cold" in this context is presumed to be metaphorical, but links have been made between metaphors involving temperature-related words and feelings of physical temperature. Benign envy may therefore feel less physically cold as the result of interpersonal, emotional warmth with the envied individual.

05.17.08 Ethnic and American Identity as Predictors for Self-Esteem Across Ethnicities

Alicia, Woodrum , Kelin Stratton, Rachel Clinton

Northeastern State University

Phinney, Cantu, and Kurtz (1996) analyzed ethnic and American identity as predictors for self-esteem in White, African-American, and Latino adolescents. Findings revealed that in all three groups, ethnic identity was a significant predictor of self-esteem. The current study seeks to replicate the original study with an extension of the addition of a Native American sample, an often overlooked segment of the population. Participants responded to the Rosenberg (1965) self-esteem scale, Phinney's (1992) multigroup ethnic identity measure, a single question identifying how strongly they consider themselves Americans, and demographic questions through an online survey. Preliminary multiple regression results indicate that when data is analyzed across all ethnic groups, ethnic and American identity significantly predict self-esteem. These preliminary results also indicate differences between the groups. Our results fail to replicate the findings of Phinney et al. (1996) that found ethnic and American identity significantly predict self-esteem in Caucasian participants. Our results also demonstrate a new finding, that ethnic and American identity significantly predicts self-esteem in Native Americans. Implications of the data provide insight into potential negative effects on self-esteem as tribal cultures weaken.

05.17.09 The Practice of Mindfulness

Son, Park

Cameron University

Many people live their life in the past or worry about the future. The major problem of having fears can lead to increased anxiety and stress, which is harmful to one's health. Mindfulness training has been used for thousands of years for people's physical and mental health. Practicing mindfulness began in Asia as part of Buddhist religion over 2,500 years ago. Today, practicing mindfulness is utilized in medical treatment throughout Western countries. The objective of this research is to discuss how mindfulness training can be an important tool. The hypothesis of this research is that practicing mindfulness can help one improve both mental and physical health such as treating eating disorder, increasing concentration and relieving stress and anxiety. In the primary research, the researcher surveyed students in the Multimedia Department at Cameron University to measure the different degree of the awareness of participants with and without mindfulness training. An interview with the psychologist also helped to provided details on benefits of mindfulness training for everyday life. The Cameron library database further supplied secondary research to support the benefits of mindfulness training. This research shows that practicing mindfulness can have lasting benefits to one's mental and physical well-being. By practicing mindfulness, one can have a greater awareness of present moment and get help in treating eating disorders, increasing attention and relieving stress.

05.17.10 A Replication, Evaluation, and Criticism of Unconscious Thought Theory

Keia, Atkinson , Robert Mather

University of Central Oklahoma

Unconscious Thought Theory (UTT) was developed as a novel take on complex decision-making that aligned with folk wisdom advising people to "sleep on it" when tasked with an important choice (Dijksterhuis & Nordgren, 2006). Following the publication of the original work, a number of replications and nonreplications have been published attempting to pin down the phenomena, with varying degrees of success. In the current study... To correct methodological shortcomings in other work, participants rated the importance of a number of attributes that were then attached to a number of choice alternatives. Results to be presented.

05.17.11 Intelligence and Religiosity: Clearing the Muddy Waters

Kathryn, Schrantz , Alisa Huskey, Caleb Lack

University of Central Oklahoma

The current study aimed to address the relationship between religiosity and intelligence. Undergraduates were given an intelligence test and then completed measures of general religiosity and religious fundamentalism. It was predicted that there would be no relationship between intelligence and religiosity once religious fundamentalism was controlled for. Mean verbal IQ was 105.46 (SD = 13.51), mean performance IQ was 99.46 (SD = 14.41), and mean full-scale IQ was 102.82 (SD = 13.12). A multiple hierarchical regression was performed with full-scale IQ as the criterion. On Step 1, religious fundamentalism (M = 63.89, SD = 25.34) was entered as the only predictor, $R^2 = .25$, $F(1, 26) = 8.54$, $p = .007$. Religious fundamentalism significantly predicted full-scale IQ, such that as religious fundamentalism increased, IQ decreased, $\beta = -.50$, $p = .007$. On Step 2, strength of religious faith was entered. The overall model was significant, $R^2 = .25$, $F(2, 25) = 4.20$, $p = .027$, but strength of religious faith did not predict IQ, $\beta = -.11$, $p = .72$, R^2 change = .004. These results indicate that although religious fundamentalism negatively predicts intelligence, overall religiosity and intelligence have no significant relationship.

05.17.12 Pet Ownership and Personality Type

Concetta, Cline

Northwestern State University

Studies have shown that people choose the type of pet they will own (cat or dog) based on several reasons. Personality may influence what type of pet a person will choose. The current study examines the correlation between human personality Type A or B and pet preference (cat or dog). Results suggest that there is no correlation between pet preference and personality type. Discussion focuses on limitations and future direction for research.

05.17.13 Perception of Management: The Effects of Management on Employee Actions

Joey, Smith , Steven Byers

Northeastern State University

There are multiple reasons why a person may want to leave their current job. One of the issues that can be quickly identified is a problem with one's immediate supervisor. Some employees, like those with previous management experience, will understand the importance of management on their intentions to remain at a job or leave, but others may not. What associated variables can be found that are significant in someone not understanding the importance of positive social interactions and quality leadership in the workplace? In this study, a wide range of issues are analyzed in searching for significant connections to this issue; including ethnicity, previous work experience, and familial history. It is invaluable for society to have a clear understanding of this issue; this allows a connection between outside reasons for one's dissatisfaction with work and their decision to leave their current job. By knowing why someone does not understand the work environment and why they are dissatisfied allows positive changes to be made in the workplace. This presentation will provide an overview of data outcomes from northeast Oklahoma employees and their related job satisfaction.

05.17.14 Empathy and Law, Cross Study on How the Emotional Display and Gender of the Accused Can Effect Jury Verdict Decisions

Cody, Soden

East Central University

Empathy effects everything, how jurors perceive specific aspects of the court case may alter the decision making process. An experimental study among 400 college students from East Central University (ECU) aged (18+) and diverse of sex, ethnicity and/or racial groups. The research team studied participants' ideas and concerns regarding the defendant or the accused's emotional display as given in a court situation. The participants were presented with a copy of the typed manuscript from the court case. Each answer was taken down into as a Lichard scale response; seven possible responses were recorded: ranging from extremely agree, neutral, and extremely disagree. The research is currently ongoing and results are definitely expected. We expect to gather significant data on the subject. A pilot study was done with 60 participants and a significant t-score was recorded. We found so far that emotional display of the defendant does have a significant effect on jury making decisions. This study proves that there are multiple factors that affect jury making decision. Most of the research thus far has been done on the victim and how their emotional display effects the juries decisions. Similar to alcohol intoxication and its effect on juries, we can never truly know the impact of extralegal factors on the jury until we delve into every aspect of what the juror perceives.

05.17.15 Artificial Versus Real Animals in Nursing Homes

Ally, McBee

Northwestern State University

Animal-assisted therapy (AAT) is the use of animals as a therapeutic adjunct. AAT was first used at the York Retreat in 1792 by William Tuke. AAT was first suggested in the United States in 1919. Organizations such as Pet Partners train service animals to help people with disabilities gain a sense of independence. One-on-one AAT has been found to be effective on long-term care facility (LTCF) residents suffering from loneliness. Although AAT seems to be successful in LTCF, some staff and residents are still reluctant because of the possibility of zoonosis, injuries, and falls that animals could cause. Multiple studies have been conducted to determine whether robotic animals would make a suitable substitute for live animals. Based on these findings the current study examined the hypothesis that interactions with live pets will result in better moods in nursing home residents than interactions with artificial pets. Thirty residents received three visits each: 1) with the visitor alone, 2) with the visitor and a live cat, and 3) with the visitor and a robotic cat. After each visit, the resident was asked to complete the Brief Mood Introspection Scale (BMIS).

05.17.16 Wedded Bliss: Dual Incomes and Shared Finances

Amanda, Swope , April Phillips

Northeastern State University

This study looks at the relationship between joint or separate financial arrangements and relationship satisfaction. Unlike previous research this study focused exclusively on dual-income couples. It was predicted that among dual-income relationships, couples that use a shared financial management system will have higher levels of relationship satisfaction and trust. Furthermore, women earning income from full time employment should show higher levels of relationship satisfaction than those working part time or earning benefits. The survey study included 46 participants involved in dual income relationships (39 females and 7 males). Of these participants, 27 were co-cohabiting and 19 were married; 14 participants reported that they kept their money completely separate while 32 indicated that they pooled at least some of their money. The study was conducted using the "Family and Changing Gender Roles IV" scale (ISSP Research Group, 2012) and the Rusbult Investment Scale (Rusbult, 1998). The level of trust was measured with a 10 point Likert scale. Levels of trust for couples in this study showed an average of 8.61 (SD=1.66); with the average level of relationship satisfaction being 6.35 (SD=1.56). Results for this study did not support either hypothesis, showing no significant relationship between financial management systems and relationship satisfaction or trust. There was also no connection found between employment status for women and relationship satisfaction.

05.17.17 School Satisfaction, Global Functioning, and the Parent-Child Relationship.

James, Haws , Julie Owens, Veronika Karpenko

University of Central Oklahoma

Abstract Objectives. Academic performance in adolescents has been extensively researched (Su, Li, Lin, Xu, & Zhu, 2012). Little research has been done on adolescent's school satisfaction (Suldo, Riley, & Shaffer, 2006). The present study examined the relationship between school satisfaction and emotional problems, global functioning, and parent-child relationship. **Hypotheses.** Increased emotional problems, difficulties in parent-child relationship, lower family functioning, and global functional impairment will be related to lower school satisfaction. **Methodology.** 165 teenage clients (55% female) between the ages of 12 and 18 (M= 14.20, SD= 1.70) sought counseling services in two midwestern community mental health centers. At the beginning of therapy adolescents completed Multidimensional Student's Life Satisfaction Scale: Family and School Satisfaction Subscales Inventory of Parent Attachment. Parents completed Index of Parental Attitudes and Impairment Rating Scale. Parents and adolescents rated Ohio Scales: Problem Severity and Functioning subscales. **Summary.** Correlational analyses show that there was not significant relationship between school satisfaction and emotional problems, parent-child relationship, and family functioning. Higher levels of global functioning (as rated by parent and youth) were significantly related to higher satisfaction with school ($r=.18$, $p=.03$; $r=.27$, $p=.001$, respectively).

05.17.18 The Mirror Neuron System and Empathy

Jennifer, Hancock , Deon Hall, Justin Durham, Robert Mather

University of Central Oklahoma

Demonstrating empathy and perceiving the intent of others is necessary for interpersonal relationships and communication, making empathy a primary function of social interaction. The automatic process of empathy and imitation provides an effortless ability for individuals to understand the mental states of others. Mirroring, a typical behavior of social interaction, is a basic learning function of the human brain and relies on intricate neural networks including the mirror neuron system. Research connects the mirror neuron system, which is activated during the mirroring process, to the complex mechanisms involving interpersonal social expression including empathy and imitation. Mirror neurons activate during action recognition and execution, but studies have demonstrated the coding process possibly varies depending on perceived intent. The purpose of this project is to determine if empathy activates the mirror neuron system. The expected outcome is that empathy, measured by the Toronto Empathy Questionnaire and Short Dark Triad scale, will be positively associated with mirror neuron activation, measured by EEG recording. A lack of empathy has potential for pervasive ramifications concerning social interaction. Further implications could lead to a more comprehensive understanding of the link between mirror neurons, empathy, and an examination of dysfunction consequences and reduced emotion recognition.

05.17.19 Oxytocin as a Mitigator of Aggression

Stephanie, Menotti , Amelia Brewer, Lindsey Osterman

University of Central Oklahoma

Oxytocin is widely implicated in mammalian prosociality (e.g., cooperation, bonding, trust). We examined whether oxytocin might also mitigate aggression. We hypothesized that experimentally increasing oxytocin would decrease both the salience of aggressive words and retaliatory aggression. Participants first viewed either an oxytocin-inducing or control video, and then completed a frustrating "math task," which had ostensibly been made unreasonably difficult by a "partner." Then, they completed 100 word stems, some of which could have been completed with aggressive words (e.g., sm_ck, s_ash). Finally, participants were given an opportunity to aggress by setting the difficulty level of their partner's "math task." Participants in the oxytocin group completed fewer word stems aggressively ($F[2,98] = 26.01, p < .001$) and were less retaliatory ($F[2,98] = 3.82, p = .025$) compared to the control group. These results extend past research by suggesting that oxytocin regulates interpersonal behavior via antisocial channels as well as prosocial ones.

05.17.20 Effect of Exposure to Profanity on use of Profanity in Live Environments

Christopher, Stevens , Stephen Burgess

Southwestern Oklahoma State University

Introduction There are over 48 million X-Box Live and Play Station 100 accounts. Profanity is common in Live games. Exposure to profanity has been shown to increase aggressive thoughts, expectations, and feelings (Ivory & Kaestle, 2013). There has been little examination of the effect of profanity in this primarily unregulated environment. We conducted a naturalistic experiment where profanity and sex of player were manipulated to measure the effect of these variables on the profanity use of other players in the Live environment. Method 160 X-Box Live first person shooter games (e.g., Halo, Call of Duty) were played and recorded. Once in the game the researcher activated a recorded script which varied in profanity content (contained profanity, did not contain profanity) and the sex of the speaker (female or male). The game was audio recorded for later transcription and analysis. Results There was a significant main effect for profanity present in the recording such that when the recorded voice used profanity there were more games in which the other players used profanity. There was a significant main effect of sex of speaker such that when the recorded male voice was used there were more games in which the other players used profanity. Conclusions This study represents the first known report of the effect of sex of talker and presence of profanity on the profanity used by players in the Live video game environment.

05.17.21 Community Service Through Service-Learning Through Service-Learning Assessment

Barbara, Arnold

University of Central Oklahoma

The purpose or objective of this study was to assess the perceived self-efficacy of future participation in civic engagement, in particular community service in undergraduate nursing students after completion of a service-learning based course. The results of the survey will assist in curriculum design / development and provide feedback to support the Central Six as well as the transformative learning platform. The study hypothesized that service-learning will have a positive effect on the students' self-efficacy for community service after completion of the newly developed course. The study was descriptive quantitative, non-experimental design utilizing the survey methodology. Results are pending. A request that the study would be approved by the IRB for a longitudinal assessment is in process.

05.17.22 Primary Motor Cortex Stimulation Affects Visual Guidance and Attention Systems

Thomas, Taylor

University of Central Oklahoma

The position of someone's hands relative to a visible object may facilitate the perception of that object, possibly because objects near hands are like to be important. Although other research has described the effects of having hands visible or occluded on response time and accuracy in a dual haptic-visual task, no analysis has been made of the finer-grained structure of performance. Participants completed 1200 trials of the dual task in which they maintained a steady pattern of right-hand motion whilst simultaneously identifying letters presented on a computer monitor positioned above the desk via an articulating monitor arm such that participants' hands were either occluded or visible (between-participants). Responses on the visual task were recorded from the left hand. The visual task included a reticle that remained visible at the center of the screen while stimuli briefly appeared on the left or the right side of the reticle before being replaced with a mask. The staircase procedure was applied as needed to maintain a 75% detection rate. The data from the haptic task were analyzed with the procedure Wavelet Transform Modulus Maxima. WTMM is a way to measure the fractal dimension of a time series. It uses continuous wavelet transforms to detect singularities (undefined areas in the time series) and from that transformed data, estimates the multifractal spectrum, a measure of task complexity.

05.17.23 Sibling Influence on an Individual's Autonomy in 1st, 1.5, and 2nd Generation Keralities Compared to European Americans.

Eunice, Melakayil

University of Central Oklahoma

Family structures within European Americans differ from those found in East Asian Indian families, in which European American families are usually nuclear, egalitarian, and individualistic. For Indians, with collective values, the concepts of privacy, personal space, and individualism are diametrically opposed to that of European Americans. Indian families promote interdependence in which most, if not all, decisions are made by the family as a whole. Many Indian immigrants struggle to reconcile the opposing values of their Indian culture with that of their host country. Generally, the younger immigrants, specifically the 1.5 and 2nd generation immigrants, want to be independent as they become more assimilated into the culture of their host country, but they do not at the same time want to disappoint their families. However, the older immigrants from the 1st generation usually cling tightly to their Indian values and fear the impact the host country's culture will have on their family structure. In any family, one of the most significant relationships is the sibling relationship. The sibling relationship provides qualities that promote the development of an individual's pro-social behaviors such as helping, sharing, and displaying empathy. However, very little research has been done to examine how much influence siblings have on one and another; specifically concerning the development of an individual's autonomy. The goal of the current study is to e

05.17.24 Mirror Neurons: A Potential key to Unlocking Child Behavior

Karie, Cragg

Northeastern State University

OBJECTIVE & METHODOLOGY: This study examines and critiques past research findings to suggest potential considerations for future research on cognitive development in children, and explores how a closer look at the mirror neuron system (MNS) could help us to understand why children are so inevitably affected by those they spend the most time observing. **THESIS:** This poster examines how children's malleable brains may physically adapt to what they are consistently exposed to over prolonged periods of time, such as violent or precarious behaviors from those they view most often. Children learn best through visually observing others. The reason for this "monkey see, monkey do" influence may be due to a network of mirror-like neurons in the brain. These "mirror neurons" are activated by viewing others performing motor tasks (Rizzolatti, et al., 1996). The more familiarity one has with an observed task, (e.g. dancing, playing a sport, or physical aggression toward others) the stronger the mirror neuron activity in one's brain during observation (Calvo-Merino et al., 2005). **SUMMARY:** When a particular set of neurons becomes accustomed to mirroring particular behaviors, both our brain structure and our behavior is affected (Del Giudice, Manera, & Keysers, 2009). The MNS may help us to decode the complexities of child behavior. Future considerations for MNS research in children will be discussed.

05.17.25 The Influence of a Biological Explanation of Psychopathy in the Courtroom

Sean, McMillan

University of Central Oklahoma

This is an altered replication of Aspinwall, Brown, and Tabery (2012). They found that judges gave shorter sentences to a psychopathic defendant after receiving a biological explanation of psychopathy. This project's purpose is to see how a biological explanation and brain scan imaging of psychopathy can influence a juror's verdict. Fifty UCO general psychology students will read a hypothetical law case involving a psychopathic defendant and then fill out questionnaires. Questionnaires will measure psychopathy (a psychopathic juror may be more lenient to the defendant) and ask what their sentencing would be, why they chose it, and what factored into it. In the control condition, participants will only read testimony that discusses the defendant's psychopathy diagnosis. In one experimental condition, jurors will read testimony on the diagnosis and on a biological explanation of psychopathy. In another experimental condition, participants will read testimony on a diagnosis, view brain scans of a normal brain and the defendant's brain, and read testimony explaining the scans' biological differences. It is expected that jurors will provide shorter sentences for a defendant when given testimony on a psychopathy diagnosis as well as a biological explanation for it. It is predicted that the brain scans combined with the diagnosis and biological explanation will result in the shortest sentences of all. This is currently a proposal project.

05.17.26 Sleep and Dreams

Brooke, Beckner

Northwestern State University

05.17.27 Extending the Self-Esteem/Child-Mortality Salience Connection to Parental Status and Sex

Leanne, Perales , Jenel Cavazos

Cameron University

In Western cultures, when confronted with child mortality, parents display an increase in negative mood and defensive self-esteem (Ditzfeld & Cavazos, 2013). Are the same effects present in reactions to mortality of a child in general, reactions of non-parents, and do they differ between genders? It was hypothesized that parents would react more negatively than non-parents to the threat of child mortality regardless of if the child is theirs. Also, that males would react to child death with equally intense negative moods as females. Participants in this study were randomly assigned a Prompt (mortality salience or dental pain) and Target (general child or their own child) and asked to complete a questionnaire with a writing prompt. Upon completion, they rated their state negative mood and explicit self-esteem. Results found parents' moods more negative than non-parents' after child mortality than after dental pain. Non-parents' mood did not differ between either condition. Self-esteem was higher after child mortality salience than child dental pain and parents showed higher self-esteem than non-parents across all conditions. Analyses showed no evidence of gender differences in regard to negative mood and self-esteem. The study found that while non-parents did not experience the same level of negative mood, they did report the same basic defensive self-esteem effect as parents. Also, whether or not the child was considered their own had no distinguishing influence on reactions.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

18. Statistics

05.18.01 Variables Influencing Future Traffic Fatalities in Oklahoma

Brendon, Balch , Kristen Highful, Tracy Morris

University of Central Oklahoma

This research is part of a program in the Department of Mathematics and Statistics at UCO called SCHOLAR (Statistical Consulting Help for Organizational Leaders and Academic Researchers). SCHOLAR consists of a team of UCO students and faculty who provide statistical consulting services to students, faculty, and staff at UCO, as well as industry and non-profit organizations in the community. One of the clients of SCHOLAR is the Oklahoma Highway Safety Office (OHSO). The OHSO gathers data and keeps records of vehicle accidents in the state and uses this information to help other state agencies, like the Oklahoma Department of Transportation and the Oklahoma Highway Patrol, to develop programs to address highway safety issues. The OHSO must also make future projections for the number of traffic fatalities and report this information to the National Highway Traffic Safety Administration. Currently, SCHOLAR students and faculty analyze data provided by the OHSO to determine trends in the number of traffic fatalities over time and to make projections for the future. The goal of this project is to find additional variables that could improve the accuracy of projections of the number of traffic fatalities in Oklahoma. Variables of particular interest include those related to the economy and the amount of road construction in the state, but we will also consider other variables.

05.18.02 A Statistical Analysis of the Influences on Historical Property Ownership in Oklahoma

Tracy, Morris , Ariel Webb, Jessica Sanders

University of Central Oklahoma

Project SCHOLAR (Student Consulting Help for Organizational Leaders and Academic Researchers) is a statistical consulting service composed of students at the University of Central Oklahoma. Faculty from the Department of Mathematics and Statistics oversee the work of the SCHOLAR students on multiple projects sent in by other researchers. The SCHOLAR students were asked to analyze data pertaining to the significant factors that lead to historical home or business ownership. A survey was given to a sample of historical property owners in Oklahoma, in which they were to list basic demographic information such as gender, age, marital status, and ethnicity, as well as whether or not they owned or inherited the property. The goal of this study is to determine what factors are related to historical property ownership and to examine the difference between residential and commercial properties, as well as differences between properties located in rural and urban areas. This study is important, as many of these historical properties require continuous preservation, and the results of this study can be used to further enhance the efforts of communities and preservation officers.

05.18.03 A Study in Determining Predictive Models of Future Success for Students Applying to the UCO Nursing Program

Benjamin, Suderman , Ariel Webb, Brendon Balch, Carl Slifer Tracy Morris, Zindaba Tembo

University of Central Oklahoma

The nursing program at the University of Central Oklahoma (UCO) has an abundance of students applying for limited enrollment slots. In highly competitive selection processes, prospective students and the nursing program, at large, benefit from the identification of those qualities exhibited by students that best indicate completion of the program and future success in nursing. Members of the Nursing Department conducted a study on enrolled nursing students in an attempt to discover the most important factors for predicting the likelihood of individual students completing the nursing program. The studied variables included TEAS scores and GPAs. The students were tracked for four years and were grouped according to whether or not they finished the nursing program. Using various statistical approaches including multiple and logistic regression we were looking for predictive models with a significant correlation with program completion. This work was completed by Project SCHOLAR (Statistical Consulting Help for Organizational Leaders and Academic Researchers) students. SCHOLAR is an interdisciplinary student statistical consulting service at UCO. SCHOLAR students work collaboratively under the supervision of faculty from the Department of Mathematics and Statistics on various projects submitted from other researchers on campus and organizations in the community.

Abstracts from the 2014 Oklahoma Research Day

Held at the University of Central Oklahoma

05. Mathematics and Science

19. Zoology

05.19.01 Anatomical and Morphometric Variations in the Arterial System of the Domestic Cat

Victor, Gonzalez Betancourt , Anna Smith, Robert Cramer, Sue Ball

Southwestern Oklahoma State University

Domestic cats are among the most widely used model organisms in comparative or mammalian anatomy courses, as well as in experimental research of both human and veterinary medicine. Understanding and documenting anatomical variations in these animals are therefore relevant. Based on the study of 56 preserved specimens, we report the anatomical architecture and frequency of occurrence of variations in the branching pattern of the brachiocephalic artery and the origin of the internal iliac arteries. We observed three distinct arrangements in the branching pattern of the brachiocephalic artery and noted that the portion of the abdominal aorta, between the external and internal iliac arteries, varied greatly among specimens. However, the frequency of occurrence of each variation type of the brachiocephalic artery was independent of the cat's gender and body size. Similarly, the length of the segment of the abdominal aorta, between the external and internal iliac arteries, was not significantly correlated with its width, nor with body size or gender. Such phenotypic variations might be associated with differences in breed or geographic origin. To our knowledge, this study is the first to report and quantify the occurrence of such variations in North American cats. Given the anatomical similarity between the cat and other felids, the results of this study can be applied to other species, including endangered species.

05.19.02 Defensive Coloration in Long-nosed Snakes

Anjeela, Shrestha , Aaron Place

Other

Mimicry is a defensive mechanism in which one organism resembles another as a form of protection. The model organism may be present in the same region as the mimic or live elsewhere. The northwest region of Oklahoma lacks a venomous coral snake. However, this region is home to the long-nosed snake (*Rhinocheilus lecontei*) which is a purported mimic of the western coral snake (*Micruroides euryxanthus*). We investigated the mimetic coloration of the long-nosed snake in northwest Oklahoma. Our purpose was to see if the color pattern of the long-nosed snake protects them from being depredated by birds and mammals. Predation occurred more often on brown snake models than on the long-nosed snake models. We discuss possible mechanisms for maintenance of the dorsal pigmentation pattern in long-nosed snakes.

05.19.03 Modelling the Potential Distribution of Henslow's Sparrow (Ammodramus Henslowii) by the 2050s and 2080s Using Maxent

Katrina, Hucks , Chris Butler

University of Central Oklahoma

Henslow's Sparrow is a declining North American grassland bird. Increasing temperatures, frequent fires, and habitat loss may hasten the decline. Henslow's Sparrow utilizes different geographic areas for breeding and wintering, so it is important to explore how these areas may be affected by a warming climate. We used Maxent, a maximum entropy approach, to predict the potential future distribution of Henslow's Sparrow under various climate change scenarios. An initial model was used to identify the most important ecogeographical variables for the species' distribution. We then used two IPCC 4 climate change scenarios to project the range into the 2050s and 2080s. We found that a combination of temperature seasonality, maximum temperature of the warmest month, mean temperature of the warmest quarter, annual precipitation, and elevation were the most important variables for the distribution of Henslow's Sparrow. Marginal declines were observed in all areas for the 2050s, except the A2 2050s winter scenario in which highly suitable area increased with increased amplitude of warming. Models from the 2080s predicted shifts in suitable breeding areas and additional highly suitable areas in the wintering range. Because there were relatively few changes in the potential distribution of Henslow's Sparrow, it may be a robust species that is unlikely to be strongly affected by climate change in the future. We suggest that management efforts should focus

05.19.04 Effects of Climate Change on Niche Apportionment Models

Nathan, Hillis , Chris Butler

University of Central Oklahoma

The organization of communities has long been of interest to ecologists. Recently, several competing niche apportionment models have been proposed. These models suggest that the relative abundance of species present in an area depends upon both the amount of resources and how many resources each species can control. These studies implicitly assume that communities are static. However, ongoing climate change may cause communities to change as well. This study will examine the effects of climate change on the Random Fraction, MacArthur Fraction and Dominance Preemption niche apportionment models in the prairies of the United States and Canada. Breeding Bird Surveys and Christmas Bird Counts from 1966 to the present will be used to create niche apportionment models. Trends in community composition along a latitudinal gradient will be assessed, as the latitudinal gradient will serve as a proxy for increasing temperatures.

05.19.05 Operant Conditioning in Anolis Lizards: Initial Shaping Procedure

Zoe, Austin

Oklahoma State University

Ectothermic vertebrates are becoming more commonly utilized subjects for learning and behavioral plasticity experiments. This study tests the learning potential of *Anolis carolinensis* and *A. sagrei* in an operant conditioning paradigm. A chamber was created with two removable compartments which through the select use of reward were reduced in size from 5x5x5cm to 2x2x5cm. The compartments were baited with a live food reward, either wax worms, *Galleria mellonella*, or meal worms, *Tenebrio molitor*. When the compartments had been reduced to 2x2x5cm, the food reward was phased out and an infrared (IR) proximity detector and a colored LED light, a discriminative stimulus, was added to each compartment. The lizards crawl into the compartment, triggering the IR proximity detector and activating an interface which records the time stamp of the IR detector activation and triggers a live insect food hopper within the operant chamber. None of the 15 *A. sagrei* would perform the required task to retrieve the food reward. Within *A. carolinensis*, wild caught females more readily performed the novel task when compared to both lab reared males and females, both in terms of latency to respond and number of rewards received.

05.19.06 Macroinvertebrate Assemblages And Water Quality Analysis Of Spring Systems Associated With The Pontotoc Ridge Nature Preserve, Oklahoma

David, Bass , Kambridge Brown

University of Central Oklahoma

Pontotoc Ridge Nature Preserve is located in southeastern Pontotoc County, Oklahoma. The preserve consists of 2,900 acres of assorted vegetation and has several springs that drain from the Arbuckle-Simpson Aquifer. Three springs, two located within the Nature Preserve and one on adjacent property, were investigated during this study. Aquatic macroinvertebrates and physiochemical data were collected on a seasonal basis beginning January 2011 and ending January 2012. Physiochemical data collected were within the standards that support aquatic life. A total of 127,049 individuals, representing 115 taxa, were collected during this study. Non-hexapods were the dominant groups of macroinvertebrates, while hexapods were more diverse in terms of taxa. Smith Spring had the highest species richness, followed by Canyon Spring, with Cave Spring being the lowest. Cave Spring was also the least populated, followed by Smith Spring, with Canyon Spring being the most populated. The April 2011 collection contained both the largest number of individuals, 34,368, as well as the highest number of taxa, 74. Similarities for combined collections between springs were fairly similar, with average values never below 0.425. Similarities between upper and lower collection sites were less, with average values no greater than 0.349. Species diversity values were generally below 2.0, with the averages being no greater than 1.785.

05.19.07 An Assessment of the Native Fishes of the Lower Pecos River, Texas

Cody, Morris , Tim Patton

Southeastern Oklahoma State University

The Pecos River has numerous impacts that have negatively affected the native fish community. However, the downstream-most 90 km, commonly referred to as the Lower Pecos River (LPR), is a spring-fed and canyon-bound section that appears relatively pristine. We conducted three sampling expeditions that consisted of week-long float trips during 2011-2013, seining systematically along the way. Our objectives were to (1) contribute data to an assessment of a larger section of the Pecos River, (2) provide an assessment of the current fish community in the LPR, and (3) provide a preliminary assessment of fish-habitat relations that may help explain the composition of the current fish community in the LPR. We made approximately 100 seine hauls at 23 sites and collected over 13,500 fish representing 22 species. We captured only two species that we believe to be introduced. At least six species of cyprinids that had been historically captured were absent from our samples. A qualitative assessment of reproductive guilds suggests that the absent cyprinid species are those that are characterized by buoyant and semi-buoyant eggs and broadcast spawning, while those cyprinids that utilize various other reproductive strategies remain present. Restricted flow and habitat fragmentation in the form of river sections that experience dewatering and altered water chemistry appear to be the greatest negative impacts on the native fish fauna of the Lower Pecos River.

05.19.08 Competitive Dominance in Five Dove Species

Daniel, Whalen , Chris Butler

University of Central Oklahoma

Oklahoma has only one native dove species, the Mourning Dove (*Zenaidura macroura*). Mourning Doves are declining, possibly due to competition from two introduced dove species, the Rock Pigeon (*Columba livia*) and the Eurasian Collared-Dove (*Streptopelia decaocto*), as well as from two species expanding north, the White-winged Dove (*Z. asiatica*) and the Inca Dove (*Columbina inca*). The goal of this project is to examine competitive dominance among these five dove species at bird feeders in Oklahoma. Data collection began in late January and preliminary data suggest that the Mourning Doves is less aggressive than Rock Pigeons and Eurasian Collared-Doves.

Participants in the 2014 Oklahoma Research Day
Held at the University of Central Oklahoma

A.M., Chicas-Mosier *Oklahoma State University*

05.03.35

Aaron, Gill *Cameron University*

04.01.05

Aaron, Williams *Southeastern Oklahoma State University*

03.05.02

Abbas, Johari *Cameron University*

04.01.46

Abby, McKisson *Southwestern Oklahoma State University*

05.02.12

Abdellah, Ait Moussa *University of Central Oklahoma*

05.08.07

Abebaw, Tadesse *Langston University*

05.13.13

Abigail, McGee *University of Central Oklahoma*

05.03.77

Adrienne, Martinez *University of Central Oklahoma*

02.01.34

Aesha, John *Northeastern State University*

04.09.11

Ahmed, Zendah *Northeastern State University*

05.03.59

Ahmet, Ozturk *Northeastern State University*

02.05.09

Akinola, Akinlawon *Cameron University*

05.13.03

Alaeddin, Abu-Abed *University of Central Oklahoma*

05.08.42

Alanna, Riederer *University of Central Oklahoma*

05.13.05

Alexia, Dickey *Northeastern State University*

05.03.74

Alfa, Abame *Southwestern Oklahoma State University*

05.03.101

Alicia, Woodrum *Northeastern State University*

05.17.08

Alisha, Shrum *Other*

02.04.02

Allen, Arnold *University of Central Oklahoma*

01.04.07

Allison, Arnold *Northwestern State University*

05.03.04

Ally, McBee *Northwestern State University*
05.17.15

Allyson, Watson *Northeastern State University*
02.06.04

Allyson, Watson *Northeastern State University*
02.06.03

Amanda, Horton *University of Central Oklahoma*
03.03.05

Amanda, Meyer *University of Central Oklahoma*
03.01.02

Amanda, Swope *Northeastern State University*
05.17.16

Amber, German *Langston University*
05.03.79

Amber, Huffman *East Central University*
04.02.11

Amber, Rymer *Southwestern Oklahoma State University*
05.03.36

Amelia, Brewer *University of Central Oklahoma*
02.06.07

Amina, Gilling *Northeastern State University*
05.03.15

Amria, Norman *East Central University*
04.02.09

Amy, Dang *Northeastern State University*
05.14.01

Amy, Gueye *University of Central Oklahoma*
05.08.28

Amy, Johnson *University of Central Oklahoma*
03.03.02

Amy, Johnson *University of Central Oklahoma*
03.03.01

Amy, Johnson *University of Central Oklahoma*
03.03.03

Amy, Quesada *Other*
02.04.07

Andrea, Velsor *Northeastern State University*
02.01.16

Andres, Calderon Jaramillo *University of Central Oklahoma*
05.06.03

Andrew, Bucki *Langston University*
05.13.12

Anjeela, Shrestha *Other*
05.19.02

Anke, Melvin *Cameron University*
03.04.04

Anthony, Battese *Northeastern State University*
05.14.07

Anthony, Reynolds *Southeastern Oklahoma State University*
02.01.28

Antonio, Ross *University of Central Oklahoma*
02.03.18

Apoorva, Rudraraju *Southwestern Oklahoma State University*
02.03.08

Apoorva, Rudraraju *Southwestern Oklahoma State University*
02.03.09

April, Adams *Northeastern State University*
02.06.05

Ara, Han *University of Central Oklahoma*
05.13.11

Ariana, McCoy *Langston University*
05.05.40

Aric, Gillispie *University of Central Oklahoma*
05.08.39

Arthur, Goetsch *Langston University*
05.02.05

Arthur, Goetsch *Langston University*
05.02.04

Arthur, Goetsch *Langston University*
05.02.03

Arthur, Goetsch *Langston University*
05.02.06

Arthur, Goetsch *Langston University*
05.02.01

Arthur, Goetsch *Langston University*
05.02.02

Arthur, Goetsch *Langston University*
05.02.07

Ashley, Lonetree *Oklahoma State University*
05.03.07

Ashley, Mbaneme *Southwestern Oklahoma State University*
04.08.16

Ashlie, Walker *Southwestern Oklahoma State University*
05.05.21

Ashlie, Walker *Southwestern Oklahoma State University*
05.04.04

Ashma, Shiwakoti *East Central University*
05.16.01

Audrey, Johnston *University of Central Oklahoma*
05.05.24

Austin, Kendrix *Cameron University*
01.01.03

Avinash, Deshmukh *Oklahoma School of Science and Mathematics*
05.05.36

B

Baha, Jassemnejad *University of Central Oklahoma*
05.08.14

Baha, Jassemnejad *University of Central Oklahoma*
05.08.32

Baha, Jassemnejad *University of Central Oklahoma*
05.08.13

Baha, Jassemnejad *University of Central Oklahoma*
05.08.08

Baha, Jassemnejad *University of Central Oklahoma*
05.08.11

Baha, Jassemnejad *University of Central Oklahoma*
05.08.20

Baha, Jassemnejad *University of Central Oklahoma*
05.08.09

Baha, Jassemnejad *University of Central Oklahoma*
05.08.10

Baha, Jassemnejad *University of Central Oklahoma*
05.08.33

Baha, Jassemnejad *University of Central Oklahoma*
05.08.12

Barbara, Arnold *University of Central Oklahoma*
05.17.21

Beautiful-Joy, Fields *Langston University*
05.13.18

Benjamin, Suderman *University of Central Oklahoma*
05.18.03

Bobby, Bezinque *Northeastern State University*
05.03.46

Brad, Watkins *University of Central Oklahoma*
04.05.01

Bradley, Johnson *Cameron University*
04.01.19

Bradley, Paynter *University of Central Oklahoma*
05.13.16

Bradley, Paynter *University of Central Oklahoma*
05.13.15

Bradley, Paynter *University of Central Oklahoma*
05.13.17

Brandon, Hamill *University of Central Oklahoma*
02.01.35

Brandon, McLean *University of Central Oklahoma*
01.03.14

brandy, Hollis *Southwestern Oklahoma State University*
04.08.06

Brendon, Balch *University of Central Oklahoma*
05.18.01

Brett, Sharp *University of Central Oklahoma*
04.08.09

Brian, Myers *University of Central Oklahoma*
05.12.01

Britani, Vann *Langston University*
05.05.26

Brittany, Harlow *Northeastern State University*
04.09.06

Brock, Ring *University of Central Oklahoma*
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Brock, Ring *University of Central Oklahoma*
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Brock, Wynn *University of Central Oklahoma*
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Brooke, Beckner *Northwestern State University*
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Bruce, Hartley *East Central University*
04.01.39
Bryan, Dawkins *University of Central Oklahoma*
05.13.08

C

Cady, Murphy *East Central University*
05.13.02
Caitlin, McManigell *University of Central Oklahoma*
03.02.01
Caleb, Biles *East Central University*
05.03.10
Caleb, Hubbard *Other*
05.03.69
Candace, Baker *University of Central Oklahoma*
05.13.07
Carissa, Jetto *University of Central Oklahoma*
02.03.12
Carl, Aronson *Northeastern State University*
05.05.27
Carmen, Cowo *University of Central Oklahoma*
05.03.92
Carolina, Vega *Oklahoma State University*
05.16.05
Carson, Stringham *Cameron University*
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Casey, Brown *Cameron University*
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Casey, Wright *Northeastern State University*
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Catherine, Mosley *University of Central Oklahoma*
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Catherine, Webster *University of Central Oklahoma*
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Chad, King *University of Central Oklahoma*
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Charles, Crittall *East Central University*
05.05.23
Charles, Gallegos *Northeastern State University*
02.03.24
Charles, Gray *University of Central Oklahoma*
01.01.10
Charlotte, Simmons *University of Central Oklahoma*
05.13.22
Chas, Riden, M.Ed. *University of Central Oklahoma*
02.01.03
Chelsea, Fort *University of Central Oklahoma*
05.10.01
Cheryl, Caffee *University of Central Oklahoma*
04.07.03
Cheryl, Van Den Handel *Northeastern State University*
04.08.03
Chintamani, Jog *University of Central Oklahoma*
01.03.08

Chris, Bradshaw *Southeastern Oklahoma State University*
 05.09.05
Christian, Madera *Southeastern Oklahoma State University*
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Christina, Buchanan *University of Central Oklahoma*
 04.09.02
Christina, Nalsen *Cameron University*
 04.01.15
Christine, Pappas *East Central University*
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Christopher, Rudick *Northeastern State University*
 04.01.44
Christopher, Stevens *Southwestern Oklahoma State University*
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Christopher, Stiles *University of Central Oklahoma*
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Chuanwei, Chen *University of Central Oklahoma*
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Ciara, Kelley *Cameron University*
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Clarence, Von Bergen *Southeastern Oklahoma State University*
 01.06.01
Clark, Ovrebo *University of Central Oklahoma*
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Cody, Bahavar *University of Central Oklahoma*
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Cody, Braun *University of Central Oklahoma*
 05.03.82
Cody, Morris *Southeastern Oklahoma State University*
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Cody, Soden *East Central University*
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Cody, Woods *University of Central Oklahoma*
 01.03.15
Cody, Woods *University of Central Oklahoma*
 04.08.08
Colton, Nohelty *East Central University*
 01.05.06
Colton, Palmer *Northwestern State University*
 02.04.04
Concetta, Cline *Northwestern State University*
 05.17.12
Corey, Bower *Other*
 05.03.111
Cori-Jo, Black *University of Central Oklahoma*
 02.02.01
Courtney, Beattie *Southwestern Oklahoma State University*
 04.08.12
Courtney, Bloodgood *Northeastern State University*
 05.14.03
Craig, Land *Redlands Community College*
 05.15.02
Cuong, Doan *University of Central Oklahoma*
 01.06.03
Cynthia, Estrada *Southeastern Oklahoma State University*
 03.05.03

D

Dan, Brown *Southwestern Oklahoma State University*
 04.08.11
Dane, Swinford *Cameron University*
 05.05.32
Daniel, Atkinson *University of Central Oklahoma*
 05.08.43

Daniel, McInnes *East Central University*
05.05.22

Daniel, Tinervia *Northeastern State University*
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Daniel, Whalen *University of Central Oklahoma*
05.19.08

Danielle, Perlingiere *University of Central Oklahoma*
05.03.25

Danielle, Rose *University of Central Oklahoma*
05.10.07

Danielle, Wright *Langston University*
05.05.37

Dario, Bellettini *Southeastern Oklahoma State University*
04.01.51

Davi, Peetoom *Southwestern Oklahoma State University*
04.08.21

David, Bass *University of Central Oklahoma*
05.19.06

David, Chatman *Cameron University*
03.04.05

David, Stapleton *University of Central Oklahoma*
05.13.06

Deborah, Bowman *Langston University*
05.03.41

Debra, McClure *University of Central Oklahoma*
01.07.09

Dell, McLain *Southeastern Oklahoma State University*
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Dell, McLain *Southeastern Oklahoma State University*
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Dell, McLain *Southeastern Oklahoma State University*
03.06.04

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Dell, McLain *Southeastern Oklahoma State University*
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04.01.35

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04.01.34

Dell, McLain *Southeastern Oklahoma State University*
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Dell, McLain *Southeastern Oklahoma State University*
04.01.32

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04.01.29

Dell, McLain *Southeastern Oklahoma State University*
04.01.30

Dell, McLain *Southeastern Oklahoma State University*
04.01.36

Dell, McLain *Southeastern Oklahoma State University*
03.06.12

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Dell, McLain *Southeastern Oklahoma State University*
03.06.11

Dell, McLain *Southeastern Oklahoma State University*
03.06.15

Dell, McLain *Southeastern Oklahoma State University*
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03.06.06

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Dena, Jennings *Cameron University*
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Denzel, Pugh *Langston University*
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Deon, Hall *University of Central Oklahoma*
[02.01.12](#)
Derrick, Meyers *University of Central Oklahoma*
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Devin, Usher *University of Central Oklahoma*
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DiAnn, McDown *University of Central Oklahoma*
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Dohwon, Kim *University of Central Oklahoma*
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Donghan, Lee *University of Central Oklahoma*
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Donna, Kearns *University of Central Oklahoma*
[02.01.23](#)
Donna, Longhorn *University of Central Oklahoma*
[02.01.37](#)
Doreen, Yang *Northeastern State University*
[05.03.56](#)
Dr. Yuhao, Jiang *University of Central Oklahoma*
[05.08.15](#)
Drew, Hunter *Other*
[02.04.01](#)
Duong, Dang *University of Central Oklahoma*
[01.06.07](#)
Dwight, Myers *East Central University*
[05.05.15](#)
Dwight, Myers *East Central University*
[05.05.14](#)

E

Ed, Cunliff *University of Central Oklahoma*
[02.01.05](#)
Edward, Walker *University of Central Oklahoma*
[01.01.13](#)
Edward, Walker *University of Central Oklahoma*
[01.01.11](#)

Edward, Walker *University of Central Oklahoma*
[01.01.12](#)
Ekanem, Ekpenyong *Cameron University*
[04.01.13](#)
Elizabeth, Jansing *Southwestern Oklahoma State University*
[05.03.57](#)
Elizabeth, Maier *University of Central Oklahoma*
[04.09.01](#)
Elizabeth, Maier *University of Central Oklahoma*
[04.09.08](#)
Elyse, Owens *University of Central Oklahoma*
[05.10.05](#)
Emily, Lundblad *Oklahoma Christian University*
[01.07.10](#)
Eric, Paul *Southwestern Oklahoma State University*
[05.03.71](#)
Essance, Moore *University of Central Oklahoma*
[04.09.10](#)
Eugene, Deloach *Langston University*
[05.03.02](#)
Eun Kyung, Shin *University of Central Oklahoma*
[05.03.76](#)
Eunice, Melakayil *University of Central Oklahoma*
[05.17.23](#)
Evann, Comeaux *Langston University*
[05.05.13](#)
Fabian, Hernandez *University of Central Oklahoma*
[04.09.13](#)

F

Forrest, Paige *University of Central Oklahoma*
[04.07.02](#)
Frannie, Landrigan *Northwestern State University*
[05.15.01](#)

G

Gabriela, Escobar *University of Central Oklahoma*
[02.01.26](#)
Gabrielle, Williams *Langston University*
[05.05.34](#)
Gang, Qian *University of Central Oklahoma*
[05.06.26](#)
Gang, Qian *University of Central Oklahoma*
[05.06.28](#)
Geoff, Willis *University of Central Oklahoma*
[01.05.01](#)
Geoffrey, Kibble *Oklahoma State University*
[05.08.06](#)
Glee, Bertram *University of Central Oklahoma*
[02.02.03](#)
Gnanambal, Naidoo *Langston University*
[05.03.96](#)
Grant, Aguirre *University of Central Oklahoma*
[01.07.12](#)

H

Haleigh, Larkin *University of Central Oklahoma*
[02.03.19](#)
Halil, Kaya *Northeastern State University*
[01.04.05](#)
Halil, Kaya *Northeastern State University*
[01.04.04](#)
Hari, Kotturi *University of Central Oklahoma*
[05.03.18](#)

Heather, Collins *Other*

[05.03.05](#)

Heba, Hammami *Northeastern State University*

[05.03.39](#)

Holly, McIntyre *Northeastern State University*

[05.03.22](#)

Hong, Sung *University of Central Oklahoma*

[05.06.18](#)

Hsin-I Sydney, Yueh *Northeastern State University*

[04.01.16](#)

Hunter, Bailey *Southwestern Oklahoma State University*

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Huong, Nguyen *University of Central Oklahoma*

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Hyunjong, Kim *University of Central Oklahoma*

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I

I-Lin, Huang *Langston University*

[01.05.05](#)

Irene, Lopez *Southwestern Oklahoma State University*

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Isaac, Smith *Cameron University*

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J

J Michael, Johnson *University of Central Oklahoma*

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J. Adam, Randell *Cameron University*

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Jacob, Jardel *Cameron University*

[05.17.01](#)

Jacqueline, Alworden *Northeastern State University*

[04.01.17](#)

Jacqueline, Watson *Northeastern State University*

[04.08.02](#)

Jamal, Parker *Cameron University*

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Jamal, Parker *Cameron University*

[04.01.09](#)

James, Dechter *University of Central Oklahoma*

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James, Haws *University of Central Oklahoma*

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James, Lindroth *Northeastern State University*

[02.01.08](#)

James, Rae *Northeastern State University*

[04.01.41](#)

James, Stewart *University of Central Oklahoma*

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Jamie, Aweau *University of Central Oklahoma*

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Jamie, Rodriguez *Northeastern State University*

[05.14.05](#)

Jamin, Brown *Southwestern Oklahoma State University*

[05.03.108](#)

Jana, Washington *Northwestern State University*

[05.03.08](#)

Jason, Dobson *Northeastern State University*

[05.14.09](#)

Jaysa, Hutchings *East Central University*

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Jeanetta, Sims *University of Central Oklahoma*

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Jeanetta, Sims *University of Central Oklahoma*
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Jeanetta, Sims *University of Central Oklahoma*
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JeAnna, Redd *University of Central Oklahoma*
[05.03.94](#)

Jeff, Miller *Southwestern Oklahoma State University*
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Jeff, Seger *Cameron University*
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Jefferson, Sutton *Redlands Community College*
[05.02.09](#)

Jeffrey, Slattery *Northeastern State University*
[01.06.05](#)

Jeffrey, Tibbits *University of Central Oklahoma*
[05.03.19](#)

Jenine, Kern *University of Central Oklahoma*
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Jenna, Owens *East Central University*
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Jennifer, Chen *University of Central Oklahoma*
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Jennifer, Coscia *Northeastern State University*
[02.01.20](#)

Jennifer, Fessler *University of Central Oklahoma*
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Jennifer, Hancock *University of Central Oklahoma*
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Jennifer, Landers *Cameron University*
[04.01.03](#)

Jennifer, McCann *Northeastern State University*
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Jennifer, McCann *Northeastern State University*
[02.01.31](#)

Jeremy, Massengill *University of Central Oklahoma*
[05.09.03](#)

Jeri, Walker *Southeastern Oklahoma State University*
[03.05.01](#)

Jessica, Gesell *Cameron University*
[05.05.35](#)

Jessica, Goetzinger *Southwestern Oklahoma State University*
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Jessica, Gray *Southeastern Oklahoma State University*
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Jessica, Sheetz-Nguyen *University of Central Oklahoma*
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Jessica, Webb *University of Central Oklahoma*
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Jieun, Chang *Southeastern Oklahoma State University*
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Jiles, Pourier *Northeastern State University*
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Jim, Bidlack *University of Central Oklahoma*
[05.03.44](#)

Jim, Bidlack *University of Central Oklahoma*
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Jim, Bidlack *University of Central Oklahoma*
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Jing, Herwig *University of Central Oklahoma*
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Joanni, Sailor *Cameron University*
04.09.04

Jocelyn, Bidlack *University of Central Oklahoma*
05.09.04

Jodeci, Ross *Langston University*
05.06.35

Joey, Smith *Northeastern State University*
05.17.13

John, Barthell *University of Central Oklahoma*
05.03.86

John, Barthell *University of Central Oklahoma*
05.03.83

John, Bowen *University of Central Oklahoma*
05.05.03

John, Bowen *University of Central Oklahoma*
05.05.01

John, Bowen *University of Central Oklahoma*
05.05.02

John, Dale *East Central University*
05.16.04

John, Gutierrez *University of Central Oklahoma*
01.03.17

John, Hitz *University of Central Oklahoma*
04.02.04

John, Kreidler *Oklahoma School of Science and Mathematics*
05.13.21

John, Sluder *University of Central Oklahoma*
05.06.13

John, Ulrich *East Central University*
04.08.01

Jonathan, Nahmias *Northeastern State University*
05.03.33

Jonathan, Watson *Cameron University*
03.04.03

Jose, Batty *University of Central Oklahoma*
03.05.05

Joselina, Cheng *University of Central Oklahoma*
01.05.03

Joseph, Acquaviva *University of Central Oklahoma*
05.08.24

Joseph, Acquaviva *University of Central Oklahoma*
05.08.17

Joseph, Acquaviva *University of Central Oklahoma*
05.08.16

Joseph, Ahlander *Northeastern State University*
05.11.04

Joseph, Kheir *Cameron University*
05.11.03

Joseph, Peters *Northeastern State University*
05.03.17

Joseph, Plummer *Southwestern Oklahoma State University*
04.08.10

Joseph-Michael, Fields *Langston University*
05.05.39

Joshua, King *University of Central Oklahoma*
01.02.05

Joshua, York *University of Central Oklahoma*
05.03.70

Joy, Morrow *Northeastern State University*
04.02.05

Julia, Kwok *Northeastern State University*
01.02.04

Julie, Hamilton *University of Central Oklahoma*
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Julien, Hill *Langston University*
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Justice, Graham *Southeastern Oklahoma State University*
[03.06.19](#)

K

Kacey, Brown *University of Central Oklahoma*
[05.10.03](#)
Kaitlin, Hostetler *Other*
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Kaitlyn, Stockton *Cameron University*
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Kameron, Lindsay *Langston University*
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Kanika, Bhargava *University of Central Oklahoma*
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Kara, Clark *University of Central Oklahoma*
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Karie, Cragg *Northeastern State University*
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Karin, Hickenbotham *University of Central Oklahoma*
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Karlie, Parker *Other*
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Karri, Wheat *East Central University*
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Katelyn, Green *University of Central Oklahoma*
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Katelyn, James *Northwestern State University*
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Kathleen, Hardgrove *Southeastern Oklahoma State University*
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Kathleen, Olson *Oklahoma State University*
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Kathryn, Schrantz *University of Central Oklahoma*
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Katrina, Hucks *University of Central Oklahoma*
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Kay, Daigle *Southeastern Oklahoma State University*
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Kayleigh, James *University of Central Oklahoma*
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Kaylin, Cullum *East Central University*
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Keana, Dixon *University of Central Oklahoma*
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Keia, Atkinson *University of Central Oklahoma*
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Kelly, Cowan *University of Central Oklahoma*
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Kelly, McLain *Northeastern State University*
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Kellyn, Pollard *Langston University*
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Kelsey, Perry *Northeastern State University*
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Kendra, Parker *East Central University*
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Kenneth, Austion *Cameron University*
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kevin, yang *University of Central Oklahoma*
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Kichelle, Henderson *Langston University*
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Kiersten, Durning *University of Central Oklahoma*
02.01.17
Kim, Pham *University of Central Oklahoma*
01.06.04
Kimberly, Pahsetopah *Northeastern State University*
05.03.38
Kj, Abraham *Langston University*
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Kj, Abraham *Langston University*
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Krista, Brooks *Southwestern Oklahoma State University*
02.03.16
Kristal, Soderstrom *Northeastern State University*
02.01.22
Kristen, Bliss *University of Central Oklahoma*
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Kristi, Ryan *Southeastern Oklahoma State University*
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Kristofer, Thompson *University of Central Oklahoma*
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Kristopher, Copeland *Northeastern State University*
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Kristopher, Copeland *Northeastern State University*
04.01.21
Krysti, Waller *Southeastern Oklahoma State University*
03.06.17
Kuan Yen, Siew *University of Central Oklahoma*
02.03.06

L

Lakelen, Crain *Northeastern State University*
05.03.26
Lalit, Manral *University of Central Oklahoma*
01.06.02
Lan, Pham *University of Central Oklahoma*
01.06.06
Lanie, Gabbard *University of Central Oklahoma*
03.03.08
Laura, Alsobrook *University of Central Oklahoma*
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Laura, Gregory *University of Central Oklahoma*
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Laura, Kimmel *University of Central Oklahoma*
05.03.62
Lauren, Blatzheim *Southwestern Oklahoma State University*
05.03.03
Lauren, Claborn *Northeastern State University*
05.14.06
Lauren, Tlennin *University of Central Oklahoma*
05.08.23
Lauren, Tull *Northeastern State University*
05.03.85
Leah, Neumann *East Central University*
03.01.03
Leanne, Perales *Cameron University*
05.17.27
Len, Bogner *University of Central Oklahoma*
02.01.02
Leslie, Faulkner *Northeastern State University*
05.14.08

Lilian, Chooback *University of Central Oklahoma*
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Lilian, Chooback *University of Central Oklahoma*
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Lillian, Seay *University of Central Oklahoma*
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Linda, Sealey-Holtz *University of Central Oklahoma*
02.06.02
Lindsay, Davis *Langston University*
05.05.12
Lindsay, Jones *University of Central Oklahoma*
05.03.06
Lindsay, Stone *University of Central Oklahoma*
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Linzi, Thompson *East Central University*
05.09.01
Lora, Miller *Cameron University*
04.01.43
Lori, Gwyn *Southwestern Oklahoma State University*
05.05.20
Louis, Furmanski *University of Central Oklahoma*
04.08.04
Luis, Montes *University of Central Oklahoma*
05.05.04
Lyndsey, Weeks *Northeastern State University*
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M

Madeline, Mahoney *University of Central Oklahoma*
05.03.60
Mahmood, Khattab *Northeastern State University*
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Mandi, Foutch *Southwestern Oklahoma State University*
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Manoshi, Samaraweera *University of Central Oklahoma*
01.07.11
Margaret, Eagler *Northeastern State University*
02.02.06
Maria Teresa, Moinette *University of Central Oklahoma*
04.04.02
Mark, Cox *Northeastern State University*
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Mark, Giese *Northeastern State University*
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Mark, Giese *Northeastern State University*
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Mark, Giese *Northeastern State University*
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Mark, Giese *Northeastern State University*
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Mark, Giese *Northeastern State University*
02.05.05
Mark, Maddy *University of Central Oklahoma*
02.06.01
Marshall, Flowers *Southwestern Oklahoma State University*
04.08.07
Marty, Ludlum *University of Central Oklahoma*
01.02.01
Mary Grace, Schurter *Northwestern State University*
02.03.15
Mary, Jordan *Langston University*
05.09.02
Mary, Nix *University of Central Oklahoma*
02.05.13

Mary, Sheets *University of Central Oklahoma*
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Mary, Sheets *University of Central Oklahoma*
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Mary, Sheets *University of Central Oklahoma*
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Mary, Sheets *University of Central Oklahoma*
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Mary, Sheets *University of Central Oklahoma*
[01.01.08](#)

Maryfer, Abreu Roman *Oklahoma Christian University*
[01.07.08](#)

Mason, Howe *Southwestern Oklahoma State University*
[05.03.66](#)

Matthew, Bryson *University of Central Oklahoma*
[05.03.72](#)

Matthew, Roland *East Central University*
[01.07.15](#)

Mehdi, Drissi *Oklahoma School of Science and Mathematics*
[05.05.25](#)

Melicent, King *University of Central Oklahoma*
[05.06.14](#)

Melissa, Brewer *Southwestern Oklahoma State University*
[05.03.23](#)

Melissa, Merrifield *Cameron University*
[05.06.25](#)

Melville, Vaughan *University of Central Oklahoma*
[05.03.55](#)

Meredith, Lucus *Cameron University*
[04.01.11](#)

Mia, Solomon *University of Central Oklahoma*
[05.10.08](#)

MiC, Ahrasbrak *Langston University*
[05.02.08](#)

Michael, Fulkerson *University of Central Oklahoma*
[05.13.23](#)

Michael, McClendon *University of Central Oklahoma*
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Michael, Turner *Northeastern State University*
[01.06.08](#)

Michael, Williams *University of Oklahoma*
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Michael, Wright *University of Central Oklahoma*
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Michael, Wright *University of Central Oklahoma*
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Michelle, Hepner *University of Central Oklahoma*
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Michelle, McAdoo *Cameron University*
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Michelle, Miller *University of Central Oklahoma*
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Michelle, Waner *Oklahoma State University*
[05.03.52](#)

Miciah, Guy *University of Central Oklahoma*
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Mickayla, Fisher *University of Central Oklahoma*
[03.01.04](#)

Mihai, Nica *University of Central Oklahoma*
[01.03.04](#)

Mikaela, Emmells-Greene *Cameron University*
[04.01.04](#)

Mikaela, Emmells-Greene *Cameron University*
[04.01.18](#)
Mike, Nelson *University of Central Oklahoma*
[02.01.04](#)
Minh, Ha *University of Central Oklahoma*
[01.07.14](#)
Miranda, Reeves *University of Central Oklahoma*
[03.01.05](#)
Mohammad, Hossan *University of Central Oklahoma*
[05.08.02](#)
Mohammed, Shaban *Northeastern State University*
[05.03.87](#)
Molly, Brooks *Northwestern State University*
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Molly, Trimmer *East Central University*
[04.02.10](#)
Monica, Stalls *Northeastern State University*
[05.03.90](#)
Muatasem, Ubeidat *Southwestern Oklahoma State University*
[05.03.63](#)
Murray, Verbonitz *Northeastern State University*
[05.03.64](#)

N

Narasinga, Rao *University of Central Oklahoma*
[01.03.01](#)
Natasha, Kelso *Other*
[02.04.08](#)
Nathan, Hillis *University of Central Oklahoma*
[05.19.04](#)
Neil, Metz *University of Central Oklahoma*
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Nicholas, Petschel *University of Central Oklahoma*
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Nichole, Thompson *University of Central Oklahoma*
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Nick, Chalifoux *University of Central Oklahoma*
[05.08.27](#)
Nick, Rymer *Southwestern Oklahoma State University*
[05.08.01](#)
Nicole, Hartvigsen *Cameron University*
[04.01.12](#)
Nicole, Sambol *University of Central Oklahoma*
[05.10.02](#)
Nigar, Sultana *Oklahoma State University*
[05.08.34](#)
Nik, Razo *East Central University*
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Nikolas, Wagner *University of Central Oklahoma*
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Nile, McCullough *Southwestern Oklahoma State University*
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Ning, Wu *Langston University*
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Ning, Wu *Langston University*
[05.11.01](#)
Njemile, Miro *Langston University*
[05.05.33](#)
Noel, McDaniel *Southeastern Oklahoma State University*
[03.06.21](#)

O

Ofelia, Patrick *Northeastern State University*
[05.03.58](#)

P

Paritosh, Das *Cameron University*
[05.05.18](#)
Paritosh, Das *Cameron University*
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Patricia, Cooper *Northeastern State University*
[05.03.34](#)
Patrick, Harrel *University of Central Oklahoma*
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Patrick, Harrington *Northeastern State University*
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Patsy, Parker *Southwestern Oklahoma State University*
[02.01.15](#)
Patty, Smith *Tulsa Community College*
[05.03.75](#)
Paul, Wiechmann *University of Central Oklahoma*
[05.06.20](#)
Prince, Amoyaw *Southwestern Oklahoma State University*
[02.03.17](#)
Prince, Amoyaw *Southwestern Oklahoma State University*
[05.15.03](#)

Q

Quinten, Walker *Langston University*
[05.08.41](#)

R

Rachel, Winters *University of Central Oklahoma*
[02.01.10](#)
Rachel, Winters *University of Central Oklahoma*
[02.01.09](#)
Rad, Alrifai *Northeastern State University*
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Rad, Alrifai *Northeastern State University*
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Rad, Alrifai *Northeastern State University*
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Rad, Alrifai *Northeastern State University*
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Rad, Alrifai *Northeastern State University*
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Rajah, Singh *Langston University*
[05.05.38](#)
Rashi, Shukla *University of Central Oklahoma*
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Regenia, James *University of Central Oklahoma*
[02.06.06](#)
Renata, Simpson *Northwestern State University*
[02.04.06](#)
Renee, Jones *University of Central Oklahoma*
[02.01.33](#)
Rhiannon, Poolaw *Cameron University*
[04.02.01](#)
Richard, Alltizer *University of Central Oklahoma*
[01.01.02](#)
Richard, Alltizer *University of Central Oklahoma*
[01.01.01](#)

Richard, Hwang *Oklahoma School of Science and Mathematics*
05.13.20

Ricky, Yang *Northeastern State University*
05.03.68

Robert, Brennan *University of Central Oklahoma*
05.03.30

Robert, Glaubitz *University of Central Oklahoma*
03.05.04

Robyn, Mihandoost *University of Central Oklahoma*
05.10.06

Robyn, Pursley *Northeastern State University*
03.06.01

Roosevelt, Mathews *Cameron University*
05.05.30

Roosevelt, Mathews *Cameron University*
05.05.28

Rose, Welch *Cameron University*
05.03.93

Rui, Zhang *Northeastern State University*
05.03.48

Russell, Evans *University of Central Oklahoma*
05.05.05

Ruth, Gillespie *University of Central Oklahoma*
02.03.04

Ryan, Johnson *Langston University*
05.05.29

Ryan, Summit *Southeastern Oklahoma State University*
05.06.21

S

Sachet, Khanal *University of Central Oklahoma*
05.06.29

Sadie, Jones *Cameron University*
04.01.08

Saeed, Ahmad *Cameron University*
05.16.02

Sam, Smith *University of Central Oklahoma*
02.01.21

Samantha, Huffman *Northeastern State University*
05.03.47

Samuel, Diaz *University of Central Oklahoma*
05.08.35

Sapana, Kadel *Northwestern State University*
05.03.01

Sarah, Felder *Southeastern Oklahoma State University*
03.06.20

Sarah, Hamilton *Oklahoma State University*
05.03.37

Scott, Krapff *Cameron University*
04.01.45

Sean, Lavery *University of Central Oklahoma*
05.02.13

Sean, McMillan *University of Central Oklahoma*
05.17.25

Sean, Smith *University of Central Oklahoma*
05.06.19

Shafiq, Al-Rifai *Northeastern State University*
05.03.89

Shaina, George *University of Central Oklahoma*
02.03.03

Shaina, Riggs *Northeastern State University*
05.03.45

Shaman, Kidd *Northeastern State University*
05.03.80

Shanna, Riley *University of Central Oklahoma*
02.01.11

Shannon, Altom-Deckard *Northeastern State University*
02.01.19

Sharonda, Carson *University of Central Oklahoma*
05.03.91

Shaun, Calix *Cameron University*
02.02.05

Shawna, Ward *University of Central Oklahoma*
04.09.09

Shelby, Graves *University of Central Oklahoma*
02.03.05

Shelby, Stancil *Cameron University*
04.02.03

Sheri, Toal *Oklahoma State University*
05.03.106

Simon, Smith *University of Central Oklahoma*
02.03.11

Simon, Smith *University of Central Oklahoma*
02.03.13

Sivarama, Krishnan *University of Central Oklahoma*
01.04.02

Sklar, Williams *Cameron University*
04.01.06

Skylar, Snowden *University of Oklahoma*
05.05.16

Son, Park *Cameron University*
05.06.12

Son, Park *Cameron University*
05.17.09

Staci, Gleen *Langston University*
05.13.04

Stephanie, Duncan *East Central University*
05.13.01

Stephanie, Menotti *University of Central Oklahoma*
05.17.19

Stephanie, Smith *University of Central Oklahoma*
04.09.03

Stephen, Fields *East Central University*
05.03.49

Stephen, Fields *East Central University*
05.03.81

Stephen, Fields *East Central University*
05.03.51

Stephen, James *Oklahoma State University*
05.08.21

Stephen, Treadwell Jr. *University of Central Oklahoma*
03.03.07

Stephen, Vincent *University of Central Oklahoma*
05.06.32

Steve, Orwel *Cameron University*
04.01.14

Steven, McEwen *University of Central Oklahoma*
01.03.06

Sudan, Ghimire *East Central University*
01.04.03

Sugandha, Aggarwal *Other*
05.03.27

Sukyoung, Kwak *University of Central Oklahoma*
05.03.53

Susanne, Rassouli-Currier *University of Central Oklahoma*
01.03.09

Susanne, Rassouli-Currier *University of Central Oklahoma*
01.03.10

Sydney, Greenwood *Southeastern Oklahoma State University*
04.01.50

T

Tahzeeba, Frisby *Cameron University*
05.03.95

Talisha, Griffin *University of Central Oklahoma*
05.07.01

Tan, Le *University of Central Oklahoma*
03.04.01

TaNiqua, Ward *Oklahoma State University*
02.03.01

Tanner, Boyd *Southwestern Oklahoma State University*
04.08.15

Tanner, Risner *Southeastern Oklahoma State University*
03.06.22

Tanner, Ryan *Northeastern State University*
05.03.54

Tao, Liu *University of Central Oklahoma*
05.06.31

Tara, Gurung *East Central University*
05.03.09

Tarayn, McMillan *Cameron University*
04.01.07

Taylor, Dismuke *Langston University*
05.03.21

Taylor, Fisher *Cameron University*
05.06.02

Taylor, Glasco *East Central University*
05.03.14

Tegan, Boyd *University of Central Oklahoma*
05.03.99

Teresa, Barnes *Northeastern State University*
01.02.03

Teresa, Pac *University of Central Oklahoma*
03.01.01

Terry, Taylor *University of Central Oklahoma*
02.03.20

Terry, Taylor *University of Central Oklahoma*
02.01.27

Thanh, Tran *University of Central Oklahoma*
01.07.06

Thi, Nguyen *University of Central Oklahoma*
05.03.73

Thomas, Hancock *University of Central Oklahoma*
02.01.01

Thomas, Johnson *Northeastern State University*
04.01.01

Thomas, Salmon *Northeastern State University*
02.05.10

Thomas, Taylor *University of Central Oklahoma*
05.17.22

Tia, Bennett *Northeastern State University*
02.05.12

Tia, Bennett *Northeastern State University*
02.05.02

Tia, Bennett *Northeastern State University*
02.01.30

Tiffani, Wood *Northeastern State University*
05.03.103

Tiffany, Williams *Cameron University*
04.01.53

Toni, Trim *Northeastern State University*
04.05.03

Tookah, Sapper *University of Central Oklahoma*
[03.05.06](#)

Tracey, Romano *University of Central Oklahoma*
[02.01.36](#)

Tracy, Morris *University of Central Oklahoma*
[05.18.02](#)

Trent, Ott *Northeastern State University*
[05.14.02](#)

Trent, Pratt *Southeastern Oklahoma State University*
[03.06.18](#)

Trevor, Ellis *Southwestern Oklahoma State University*
[05.05.11](#)

Trevor, Sutton *East Central University*
[01.01.14](#)

Trimelle, Polk *Other*
[05.03.110](#)

Trimelle, Polk *Other*
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Troy, King Jr. *Oklahoma State University*
[05.11.02](#)

U

Uchechi, Amaeze *University of Central Oklahoma*
[01.05.04](#)

V

Valan, Buccella *University of Central Oklahoma*
[05.17.02](#)

Vasumathi, Chalasani *Oklahoma State University*
[05.08.29](#)

Victor, Gonzalez Betancourt *Southwestern Oklahoma State University*
[05.19.01](#)

Victor, Gonzalez Betancourt *Southwestern Oklahoma State University*
[05.03.13](#)

Victoria, Morris *University of Central Oklahoma*
[03.03.04](#)

Viena, Thomas *University of Central Oklahoma*
[05.10.04](#)

W

Wyll, Okda *Northeastern State University*
[05.03.61](#)

X

Xi, Chen *University of Central Oklahoma*
[02.03.23](#)

Y

Yanjun, Zhao *Cameron University*
[04.01.52](#)

Yaser, Dorri *University of Central Oklahoma*
[02.01.07](#)

Yetunde, Quadri *University of Central Oklahoma*
[02.01.18](#)

Yoonsin, Oh *Cameron University*
[02.05.03](#)

Yuan, Zhou *University of Central Oklahoma*
[05.06.24](#)

Yue, Guo *University of Central Oklahoma*
[04.07.06](#)

Yura, Kang *University of Central Oklahoma*
[01.07.13](#)

Yvonne, Daugherty *University of Central Oklahoma*
[05.05.07](#)

Z

Zac, Floyd *Northwestern State University*
[02.04.10](#)

Zach, Zaaza *Northeastern State University*
[05.03.12](#)

Zachary, Perkins *University of Central Oklahoma*
[01.03.13](#)

Zane, Swanson *University of Central Oklahoma*
[01.04.01](#)

Zella, Classen *Southwestern Oklahoma State University*
[05.04.02](#)

Zhaoong, Meng *University of Central Oklahoma*
[05.08.26](#)

Zhaoong, Meng *University of Central Oklahoma*
[05.08.25](#)

Zhibin, Zhang *University of Central Oklahoma*
[05.06.11](#)

Zhimin, Wang *East Central University*
[01.04.06](#)

Zinar, Simsek *Northeastern State University*
[05.03.97](#)

Zoe, Austin *Oklahoma State University*
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