Welcome to the 8th annual Oklahoma Research Day organized by the Regional Universities on the University of Central Oklahoma Campus.

The Oklahoma Research Day abstract submissions and poster presentations have been growing steadily in numbers and, also, increasing in quality. Our students, staff, faculty and administrators are to be commended for making this happen.

We, as individual institutions, could not be as effective as we are today but for our team work, cooperation, collaboration, and support from the Oklahoma State Regents for Higher Education, EPSCoR, INBRE and OCAST. Oklahoma Research Day has proved to be a model for others to follow to encourage and implement undergraduate research, creative and scholarly activities at predominantly undergraduate institutions.

This year, in addition, we have planned a panel discussion on “Institutionalizing Undergraduate Research, Creative and Scholarly Activities on Campuses” on Thursday, November 30, 2006. I do hope this will only be a beginning of several panels to follow on a larger scale.

I am personally proud and honored to have been a part of Oklahoma Research Day for the past 8 years. I have enjoyed organizing Research Day and I extend my thanks to Ms. Maryanne Maletz, Dr. Frank Waxman, Dr. Bill Radke and my Colleagues at Oklahoma Regional Universities. I can see Research Day growing more and the refreshing 'Breeze of Undergraduate Research' blowing into all institutions across this great nation. We will continue to lead the way. Thank you.

Be welcome. We are very glad to see you.

S. Narasinga Rao, OK Research Day Coordinator, Dean Emeritus, UCO, Jackson College of Graduate Studies & Research

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Oklahoma Research Day
Council on Research for Regional Universities and 
Campus Coordinators for Abstract & Banquet Registration

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Following are abstracts submitted under the sponsorship of the NIH-INBRE program or the OCAST internship program.

**INBRE—**IDEA Networks for Biomedical Research Excellence, a part of the National Center for Research Resources of the National Institutes of Health exists to foster health-related research and increase the competitiveness of investigators at institutions located in states with historically low aggregate success rates for grant awards from NIH.

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**OCAST—**The Oklahoma Center for the Advancement of Science and Technology serves higher education in Oklahoma:

- By *supporting* basic and applied research
- By *facilitating* technology transfer between research laboratories and firms and farms
- By *providing* seed-capital for new innovative firms and their products, and
- By *fostering* enhanced competitiveness in the national and international markets by small and medium-sized manufacturing firms in Oklahoma by stimulating productivity and modernization of such firms.

**OCAST Internship Program**

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### Abstract Submission by Discipline 2006

- **Math & Science**: 53%
- **Arts & Music**: 6%
- **Business**: 9%
- **Education**: 15%
- **Liberal Arts**: 17%
Dr. Susan H. Hixson has been a program director in the Division of Undergraduate Education at the National Science Foundation since 1992. She currently serves as Program Lead for the Science, Technology, Engineering, and Mathematics Talent Expansion Program (STEP) and for the Higher Education Centers for Learning and Teaching (HE-CLT), and as the chemistry lead within the division. In the past, she has served as Program Lead for the Undergraduate Faculty Enhancement (UFE) Program, the Systemic Changes across the Undergraduate Chemistry Curriculum Initiative (Chemistry Initiative), and the Adaptation and Implementation Track of the Course, Curriculum, and Laboratory Improvement Program (CCLI-A&I).

Prior to coming to the NSF, Dr. Hixson was a faculty member in chemistry at Mount Holyoke College for 20 years where she also served as Chair of the Program in Biochemistry for six years during that period. Her research program at Mount Holyoke focused on the photoaffinity labeling of enzymes with aryl azide reagents. She received her B.S. Chem. degree from the University of Michigan-Ann Arbor, her Ph.D. degree in biochemistry from the University of Wisconsin-Madison, and was an NIH Postdoctoral fellow at the University of Massachusetts-Amherst. She has served as a Visiting Scientist in the Department of Biochemistry and Molecular Biology at the University of Texas Health Science Center at Houston, and as a Visiting Professor in the Department of Biochemistry at the University of North Carolina at Chapel Hill.

Dr. Nancy Hensel has been executive officer of the Council on Undergraduate Research since July, 2004.

Prior to becoming CUR’s National Executive Officer, she had been President of the University of Maine at Presque Isle from 1999 to 2004. During her presidency, the University of Maine at Presque Isle adopted a theme of adventurous learning which encompassed intellectual, cultural, and outdoor adventures. She strongly advocated for the inclusion of undergraduate research in the curriculum and under her leadership the University Day undergraduate research symposium was begun.

Previously, she served as Provost and Vice President for Academic Affairs at the University of Maine at Farmington where she also served as Dean of the College of Education. She holds a doctorate degree in early childhood education from the University of Georgia, masters’ degrees in theater and early childhood education from San Francisco State University and a bachelor of arts degree in theater also from San Francisco State.
Oklahoma Research Day Sponsors

Thank You to the Following Sponsors

Oklahoma State Regents for Higher Education (OSRHE)
Oklahoma Experimental Program to Stimulate Competitive Research (EPSCoR)–National Science Foundation
Oklahoma Center for the Advancement of Science and Technology (OCAST)–National Institute of Health (NIH)
Oklahoma IDeA Network of Biomedical Research Excellence

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ARTS & MUSIC

Art & Design

01.01.01  THE CREATIVE PROCESS OF STUDENTS IN ART AND DESIGN CLASSROOMS. Rukmini Ravikumar, Charleen Weidell, Keith Webb, Design, University of Central Oklahoma, Edmond, OK.

Research has shown that the invisibility or subtlety of the processes involved in the development of creative solutions for the purpose of representation, interpretation, communication of specific messages or solving specific problems, often hurts the credibility of art and design professions. In order to successfully train students in visual problem solving methods and better educate the general public on art and design processes, it has become imperative to emphasize the process of solving a problem rather than the solution itself to heighten critical thinking in classrooms. In this paper, the process™ will refer to the all that occurs between the definition of a problem or an idea and the final creative solution. This paper discusses the teaching methods used by faculty (in art, illustration and graphic design) to spend more time on how and why a student arrived at a particular solution and steer away from decisions driven by aesthetics alone. The discussion of process in art and design classroom includes the art or design educator’s approach to discussing and addressing the challenges posed by technology, economy, public perceptions and the subjective nature of a creative problem. This study will benefit students, faculty and professionals in creative problem solving environments.

01.01.02  ISOLATION OF THE NAG PROMOTER IN CAENORHABDITIS ELEGANS. Michael Murrow, Amanda Husak, Carla Guthridge, Dennis Frisby, Biological Sciences, Cameron University, Lawton, OK.

The human NAG gene was originally described as one of three genes in a large genomic region of chromosome 2 that is co-amplified along with MYCN in high grade neuroblastoma tumors. NAG mRNA expression has been demonstrated in numerous cell types and multiple mRNA variants could arise through alternative splicing, but their functions remain unknown. A Caenorhabditis elegans NAG homologue (F20G4.1) has been identified (subsequently referred to as CeNAG). Preliminary RNAi data indicate that knockdown of expression results in developmental and locomotion defects. We wish to utilize the powerful genetic tools available to the C. elegans researcher to investigate the functional role of CeNAG. The first step in our analysis is to determine the tissue-specific and tem-portal expression patterns. A PCR-based approach, described by Oliver Hobert, was used to construct a CeNAG-gfp reporter fusion. A PCR product spanning the putative CeNAG promoter region was generated, and then fused to a PCR product that contains the gfp reporter gene. The final PCR-generated CeNAG-gfp reporter fusion is 2774 bp. Microinjection of this fusion into C. elegans to generate transformants is underway.

Supported by NIH DK59

01.01.03  TECHNOLOGY IN INTERIOR DESIGN FIRMS: TEN YEARS OF CHANGE. Melinda Lyon, Design, University of Central Oklahoma, Edmond, OK.

The purpose of this study was to determine the expectations that employers have for interior design graduates regarding their technology competencies and to determine how the design knowledge of interior designers using different forms of technology has changed over the past 10 years as a result of the amplified use of technology. Data were collected by conducting 30 minute interviews with 30 participants. Fifteen participants were Directors of Interior Design whose firms were chosen at random from Interior Design Magazine’s Top 100 Giants (Davidson, 2004). The remaining 15 participants were Interior Designers from the same firms who had been recommended by the directors and who had been employed with the firm for at least two years but not more than six years. The interviews were coded and resulting data were analyzed using the Grounded Theory method (Strauss & Corbin, 1998) to determine the patterns of expectations of employers and the changes occurring in the field of interior design as a result of the increased use of technology. The results will benefit educators in understanding the expectations for students entering into the interior design profession and will help the profession understand the implications that the increase in technology has had and will continue to have on the profession.

Music

01.02.01  LOUIS-FRANCOIS DAUPRAT AND THE CADENZA TRADITION. Ted Honea, Shannon Garrett, School of Music, University of Central Oklahoma, Edmond, OK.

Dauprat’s method for horn (1824) has long been known as one of the great instrumental methods in the history of music. Its historical and continued practical value does not rest on small points of performance practice but on the scope of its coverage and the intelligence of its author. For all its brevity, Dauprat’s discussion of improvisatory passages in particular proves to be im-
important in the history of the literature on the subject. This research project examined Dauprat’s instructions in the context of the eighteenth-century literature on the subject and determined that his treatment makes four major contributions. It demonstrates a continuity in the literary tradition that extends over more than a century and geographically over most of western Europe. Dauprat’s remarks on the degradation of current practice stand as evidence for a change in musical training that results from a change in aesthetics. The practical examples of improvisation that Dauprat provides in themselves constitute excellent evidence for the technique of improvisation current at that time. Finally, Dauprat’s distinction between the point d’arret and the point de repos elaborates on obscure passages in previous literature on the subject.

01.02.02 CHRISTIAN RUMMEL’S SUITES FOR MILITARY BAND. Ted Honea, David Hanan, Edward Hudson, School of Music, University of Central Oklahoma, Edmond, OK.

Christian Rummel’s two extant suites for military band offer invaluable insights into the practical literature of the early nineteenth-century military band, including evidence relevant to instrumentation, orchestration, the evolution of wind instruments, compositional procedures, and publishing practice. The suites, which Rummel called simply “Military Music,” are early examples of an important genre in the literature of the wind band. The two suites evince an evolution of orchestration that indicates Rummel’s sophisticated awareness of both the wind ensemble’s inherent weaknesses and also the larger context of developments in the contemporary orchestra. This project has undertaken the production of a critical edition of the musical text of Rummel’s two suites in order to make them available to modern scholars. The critical method of establishing the text has confronted several major issues. The texts are unique copies, so that collusion with other sources cannot resolve difficulties. The source text consists of individual parts without a score and so without the uniformity in detail that a score would typically present. The printed text seems to have been based on an inconsistent source. Evidence also indicates that two distinct engravers were involved in producing the printed text, which has created and complicated divergent readings among the parts. Early nineteenth-century practice was obscure in many points of notated performance instructions.

01.02.03 INTERNATIONAL RECORDING OF THE 6 SUITES FOR CELLO SOLO BWV 1007-1012 BY JOHANN-SEBASTIAN BACH FOR THE GERMAN LABEL XOLO. Tess Remy-Schumacher, Musik, University of Central Oklahoma, Edmond, OK.

The cello suites, written about 1720, belong to the composer’s Cothen period, that time during which he served as Capellmeister to the prince of Anhalt-Cothen. In this position he was essentially responsible for the court’s entire musical establishment. There is some dispute among scholars as to wether Bach composed the suites for the Cothen court’s outstanding cellist, Christian Bernhard Lienicke, or for its viola da gambist, Christian Ferdinand Abel. Whichever may be the case, it is clear that the musician must have possessed astounding ability. At that time the cello was most commonly utilized as a bass instrument, providing harmonic foundation, whereas Bach demands of the instrument a virtuosity that still taxes the modern performer in both technique and musicality.

This amazing virtuosity and musicality Bach poured into the simple form of the instrumental dance suite. The baroque suite was a group of stylized dance movements ordered in a standard succession. The kernel of the suite’s members seems to have evolved during the seventeenth century and to have regularized as embracing the allemande, courante, and sarabande. The enlarged baroque form of the suite expanded the original trio with an opening prelude and a closing gigue, which latter was preceded by an optional movement, often a minuet. This created a six-member form of prelude, allemande, courante, sarabande, optional movement, and gigue, known by the un-euphonious acronym of PACSOG. Bach maintains this succession, most often filling the optional position with a pair of minuets, bourrees, or gavottes. All the movements, save the preludes, are simple binary movements, heightening the paradoxical juxtaposition of simplicity and genius. (CD program notes (Excerpt) by Dr. TED HONEA).

01.02.04 UNIVERSITY OF CENTRAL OKLAHOMA FACULTY STRING QUARTET AND PIANO FACULTY TO PERFORM AND TEACH IN BANGKOK, THAILAND. Chindarat Charoenwongse, Doris Morris, Hong Zhu, Ralph Morris, Tess Remy-Schumacher, School of Music, University of Central Oklahoma, Edmond, OK.

The University of Central Oklahoma Faculty String Quartet and piano faculty Chindarat Charoenwongse will perform in Bangkok, Thailand in Summer 2007. The concert tour will include a performance to honor His Majesty the King of Thailand’s 80th Birthday with an official appointment from the Royal Thai Department of Arts to perform with the Thai National Symphony Orchestra. All five music faculty members will perform a chamber music concert and the UCO Faculty String Quartet members will perform with the Thai National Symphony Orchestra. To celebrate Wolf-
gang Amadeus Mozart’s 250th Anniversary of his birth, Doris and Ralph Morris will play Mozart’s Sinfonia Concertante for Violin and Viola in E-flat Major, K. 364; and Hong Zhu and Tess Remy-Schumacher will play Johannes Brahms’ Double Concerto for Violin and Cello. The chamber music concert program will consist of W.A. Mozart’s Piano Quartet in G Minor, K. 478; American Composer Paul Schoenfield’s Cafe Music for Piano Trio; and Antonin Dvorak’s String Quartet No. 6 in F Major, Op. 96 “American”.

Teaching Master-Classes at various universities and schools in the Bangkok metropolitan area, all five faculty members will share their music and experience with Thai high-school to graduate level students. Chindarat Charoenwongse will also serve as a judge to the first Chintakarn Music Institute Piano Competition to be held for young pianists in Bangkok. She will present a workshop on “Classical Era Performance Practice at the Piano” to piano teachers at Chintakarn Music Institute and other interested independent piano teachers.

This concert and teaching tour will represent our UCO’s goodwill and enhance our future musical and academic relationship with the Thai musicians, teachers, and students.

**01.02.05 PERFORMANCE OF SELECTED LITERATURE FOR TRUMPET.** Bailey Robert, Performing Arts, Northeastern State University, Tahlequah, OK.

On April 6, 2006, the following pieces were performed in recital on the NSU campus: Trumpet Concerto in A-Flat Major (1950) by Alexander Arutaniand Two Portraits (1995) for Fluegelhorn and piano by Joseph Turrin “Grover’s Corner” from Our Town by Aaron Copland The performer was assisted by Shane Ohlson, piano

**01.02.06 THE PERFORMANCE OF SELECTED LITERATURE FOR THE PIANO.** Chioldi Ronald, Performing Arts, Northeastern State University, Tahlequah, OK.

On November 14, 2005, the following pieces were performed on the NSU campus: Kreisleriana, Opus 16, by Robert Schumann; Preludes by Sergei Rachmaninoff: Prelude in G Major, Opus 32 No. 5 Prelude in A Minor, Opus 32 No. 8 Prelude in G# Minor, Opus 32 No.12 Prelude in B Minor, Opus 32 No. 10 Prelude in D Major, Opus 23 No. 4 and Le Tombeau de Couperin by Maurice Ravel

**01.02.07 PERFORMANCE OF SELECTED LITERATURE FOR THE VIOLIN.** Studebaker Mary, Performing Arts, Northeastern State University, Tahlequah, OK.

The following pieces were performed in recital on the NSU campus on March 26, 2006: Intrada by Jean-Antoine Desplanes, Sonata No. 5 in E minor by Jean-Marie LeClair, Sonata No. 3 in D by Jean-Marie LeClair, “Le Cygne” (The Swan) from Carnival of the Animals by Camille Saint-Saëns, Après un rÄ¬ve by Gabriel Fauré, “Méditation” from ThaÄ’s by Jules Massenet, and Scene de Ballet, Op. 100 by Charles de Beriot. Shane Ohlson was the accompanist.

**01.02.08 MASS IN B MINOR BY JS BACH.** Studebaker Donald, Performing Arts, Northeastern State University, Tahlequah, OK.

The Tulsa Oratorio Chorus under the direction of Donald Studebaker performed Bach’s Mass in B Minor on November 19, 2005 in Tulsa’s Performing Arts Center. Soloists were Denise Baker, Natalie Arduino, Kim Childs, and Patrick Jacobs.

**01.02.09 PERFORMANCE OF SELECTED LITERATURE FOR THE PIANO.** Ai Fujino, Performing Arts, Northeastern State University, Tahlequah, OK.

Sonata in C Major, K 330 by Wolfgang Amadeus Mozart, Nocturne in F# Minor, Opus 48 No. 2 by Frédéric Chopin Minstrels and “Les sons et les parfums tournent dans l’air du soir” from Preludes, Book I by Claude Debussy and Opus No. 4 Suggestions diabolique by Sergei Prokofiev.

**01.02.10 PERFORMANCE OF SELECTED LITERATURE FOR THE GUITAR.** Deacon Brent, Performing Arts, Northeastern State University, Tahlequah, OK.

This degree recital was performed on April 19, 2006 on the NSU campus in Tahlequah: Sarabande by Sylvius Leopold Weiss, Prelude No. 3 by Heitor Villa Lobos, The Girl with the Flaxen Hair by Claude Debussy (transcribed and arr. Jack Marshall), Theme, Op. 2 by Mauro Giuliani (1781 – 1828), Carcass do amor ausente by Baden Powell, selections from The Art of Playing the Guitar by Francesco Geminiani, arr. by Randy Wimer. Mr. Deacon is a student of Randy Wimer

**01.02.11 PERFORMANCE OF SELECTED LITERATURE FOR THE STRING BASS.** Schmidt Michael, Performing Arts, Northeastern State University, Tahlequah, OK.

This recital was presented on April 19, 2006 on the NSU campus in Tahlequah: Sonate by WS. Fesch, Chanson Triste by Serge Koussevitsky, Miyako by Wayne Shorter, and the Concerto in G Major by Domenico Dragonetti. Mr Schmidt was assisted by Tim Demoss, piano. Mr. Schmidt is a student of Robert Katz.
01.02.12 PERFORMANCE OF SELECTED LITERATURE FOR THE GUITAR. Bradley Spears, Performing Arts, Northeastern State University, Tahlequah, OK.

This recital was presented on December 1, 2005 on the NSU campus in Tahlequah: Cuatro diferencias sobre Guardame las vacas by Luis de NarvÁ¬ez, Fantasía by Alonso de Mudarra, II Sonata by Mauro Giuliani, Julia Florida (barcarola) by AgustÁ¬n Barrios MangorÁ©, Prelude No. 2 in E Major by Heitor Villa-Lobos, and Valsa sem Nome by Baden Powell, and How Insensitive. Mr. Spears was assisted by Tracy Patterson. Mr. Spears is a student of Randy Wimer.

01.02.13 PERFORMANCE OF SELECTED LITERATURE FOR SAXOPHONE. Tracy Patterson, Performing Arts, Northeastern State University, Tahlequah, OK.

This recital was presented on December 1, 2005 on the NSU Campus in Tahlequah: Concerto by Pierre Max Dubois, Romance by William Grant Still, Sonata by Phil Woods, and How Insensitive. Mr. Patterson was assisted by Bradley Spears. Mr. Patterson is a student of Arthur White.

01.02.14 PERFORMANCE OF SELECTED LITERATURE FOR VOICE. Geoff Webb, Performing Arts, Northeastern State University, Tahlequah, OK.

This recital was performed on April 3, 2006 on the NSU campus in Tahlequah: Recitative & Aria: Thus saith the Lord/But who may abide Messiah by George Frederic Handel, Aria: Non piÁ¹ andrai Le nozze di Figaro by Wolfgang Amadeus Mozart, Der Wanderer, SchÄ¢fers Klage und Dabei, and An die Leyer by Franz Schubert, Bois Äpais by Jean-Baptiste Lully, Plaisir d'amour by Giovanni Martini, Love in the Dictionary by Celius Dougherty, When I have sung my songs to you by Ernest Charles, When I think upon the maidens by Michael Head, and The Duet: Verily, thou shalt be with me in paradise Seven Last Words of Christ by Theodore Dubois. Mr. Webb was assisted by Mark Geiger, Shane Ohlson and Judy Young.

01.02.15 PERFORMANCE OF SELECTED LITERATURE FOR VOICE. Mark Geiger, Performing Arts, Northeastern State University, Tahlequah, OK.

This recital was presented on April 3, 2006 on the NSU campus in Tahlequah: Prelude & Fugue in F Major, BWV 858 by Johann Sebastian Bach, Sonata in E Major, Opus 27 No. 1 by Ludwig van Beethoven, Berceuse, Opus 57 and Impromptu in A Major, Opus 29 by FrÈdéric Chopin, and Suite de danzas criollas by Alberto Ginastera. Ms Fujino is a student of Ronald Chioldi.

01.02.16 PERFORMANCE OF SELECTED WORKS BY JOHANN SEBASTIAN BACH. Mark Bighley, Performing Arts, Northeastern State University, Tahlequah, OK.

This performance was presented on December 20, 2005 at Bethany Lutheran Church in Tulsa, featuring the Bethany Bach Choir and Orchestra, Mark Bighley, conductor and organist. Works presented included cantatas 62, Nun komm, der Heiden Heiland and 57, Selig ist der Mann, as well as the Leipzig settings of Nun komm, der Heiden Heiland for organ.

01.02.17 PERFORMANCE OF SELECTED LITERATURE FOR TRUMPET. Robert Bailey, Department of Performing Arts, Northeastern State University, Tahlequah, OK.

This recital was presented on November 30, 2005 on the NSU Campus. Ms. Yoder was assisted by Judy Young. Vieni, vieni o mio diletto by Antonio Vivaldi, Un moto di gioja by Wolfgang Amadeus Mozart, Heidenröslein by Franz Schubert, Mondnacht and Widmung by Robert Schumann, Giunse alfin il momento from Le nozze di Figaro by W.A. Mozart, Into the Night by Clara Edwards, See how they Love Me by Ned Rorem, Sure on this Shining Night by Samuel Barber, Loveâ€™s Philosophy by Roger Quilter and O mio babbino caro from Gianni Schicchi by Giacomo Puccini. Ms. Yoder is a student of Robert Daniel.
This recital was presented November 21, 2005 on the NSU campus in Tahlequah. Dr. Bailey was assisted by Shane Ohlson, piano, Dixie Wathers, trap set, and Arthur White, electric guitar. Toot Suite by Claude Bolling, Vocalise-Etude by Arthur Honegger, Capriccioso by Paul Jeanjean, Solo de Trompette in Fa by Auguste Chapuis, Intrada for Trumpet (1958) by Otto Ketting, Nightsongs by Richard Peaslee, and Ballad by Bernard Fitzgerald.

01.02.20 PERFORMANCE OF MOZART’S LE NOZZE DI FIGARO. Amanda Mansheim, Music, Northeastern State University, Tahlequah, OK.

On April 22, 28, and 30th 2006 Amanda Mansheim performed the role of Barbarina in Tulsa Opera’s mainstage production of Le Nozze di Figaro. The performances were held in the Performing Arts Center in Tulsa, Oklahoma.

01.02.21 PERFORMANCE OF SELECTED LITERATURE FOR CHORUS. Donald Studebaker, Performing Arts, Northeastern State University, Tahlequah, OK.

This performance by the Tulsa Oratorio Chorus, Donald Studebaker, conductor, took place on March 4, 2006 at the Boston Avenue Methodist Church in Tulsa: Mass in g minor and Toward the Unknown Region by Ralph Vaughan Williams; Rejoice in the Lamb, Op. 30, Jubilate Deo, and Choral Dances from Gloriana, Op. 52, by Benjamin Britten.

01.02.22 PERFORMANCE OF THE GERMAN REQUIEM BY JOHANNES BRAHMS. Donald Studebaker, Performing Arts, Northeastern State University, Tahlequah, OK.

The Tulsa Oratorio Chorus conducted by Donald Studebaker performed Johannes Brahms’ Ein deutsches Requiem on May 6, 2006 in the Chapman Music Hall in the Tulsa Performing Arts Center. Lindsey McKee was soprano soloist, and Richard Sutliff was the bass soloist. The chorus was accompanied by the Tulsa Symphony Orchestra.

01.02.23 RECITAL AT THE 31ST ANNUAL UNIVERSITY OF OKLAHOMA CLARINET SYMPOSIUM. Amanda McCandless, Department of Music, Northeastern State University, Tahlequah, OK.

Dr. Amanda McCandless, Assistant Professor of Clarinet at Northeastern State University, presented a recital of clarinet works at the University of Oklahoma Clarinet Symposium on June 16, 2006. She was assisted by pianist Yi-Chun Sunny Kuo in the following program: Three Scenes for Clarinet (2000) by Shulamit Ran, Flammes (1978) by Janos Komives and Negy Magyar tanc (Four Hungarian Dances) by Rezso Kodak.

01.02.24 PROCESSES AND CRITERIA OF NATIONALY RECOGNIZED HIGH SCHOOL CHORAL DIRECTORS IN THE SELECTION OF PERFORMANCE LITERATURE. Tracy Hansaker, Performing Arts, Northeastern State University, Tahlequah, OK.

Music directors want to know what the most successful directors are doing to choose performance literature. What are they looking for as they look for their pieces? What are the criteria? What are the musical and extra-musical factors? High school directors whose groups have performed at the National American Choral Directors Association (ACDA) Conventions are our most accepted and nationally recognized experts for that level. What are their criteria and methods for selecting literature? For this study eleven high school choral directors whose choirs performed in the 1999, 2001, 2003, or 2005 conventions were interviewed by phone. The issues addressed in the interviews were philosophy on the selection of performance literature, knowledge development, sources for finding literature, criteria for selecting literature, selection of festival literature, methods for cataloging literature, and programming of concert literature. This study will serve as a benchmark and a standard by which other directors could measure and judge their own choral literature choices.

01.02.25 THE PERFORMANCE OF SELECTED LITERATURE FOR WIND ENSEMBLE. Jeff Bright, Performing Arts, Northeastern State University, Tahlequah, OK.

A performance of selected literature for wind ensemble was presented by the Northeastern State University Wind Ensemble on the campus of Northeastern State University on April 17th, 2006 in the Center for Performing Arts. The following selections were performed: English Folk Song Suite, Ralph Vaughan Williams; O magnum mysterium, Morton Lauridsen; Rejoice in the Lamb, Op. 30, Jubilate Deo, and Choral Dances from Gloriana, Op. 52, by Benjamin Britten.

01.02.26 THE PERFORMANCE OF SELECTED LITERATURE FOR THE CONCERT BAND. Jeff Bright, Performing Arts, Northeastern State University, Tahlequah, OK.

A performance of selected literature for concert band was presented by the Northeastern State University Concert Band on the campus of Northeastern State University on April 17th, 2006 in the Center for Performing Arts. The following selections were performed: Overture for Winds, Charles Carter; Greenwil-

01.02.27 OUTSTANDING BAND STUDENTS’ CAREER ATTITUDES. Jeff Bright, Performing Arts, Northeastern State University, Tahlequah, OK.

The purpose of this study was to investigate the career choice attitudes of outstanding band students. A chi-square analysis revealed that females who selected music education as a career were significantly less in number than expected. A univariate analysis of variance (ANOVA) also revealed significant differences between the two academic major groups (music education and other major) for high school grade point average with significantly higher GPAs for the group that did not major in music education. A one-way multivariate analysis of variance (MANOVA) was performed and revealed significant differences in career choice attitudes between the two academic majors. Finally, a discriminant analysis was performed to determine which attitudes could best predict an outstanding band student’s selection of academic major (music education or other). The discriminant analysis indicated six variables (attitudes) that correctly classified 82.9% of the originally grouped cases.

01.02.28 SCREAM 2006: A SCREAM REUNION. Samuel Magrill, School of Music, University of Central Oklahoma, Edmond, OK.

Twenty years ago, in 1986, a consortium of schools in Southern California was created with the idea of hosting an annual festival of electro-acoustic music. The group was named SCREAM, or Southern California Resource for Electro-Acoustic Music. The original members of the consortium were Samuel Magrill at California State University, Long Beach (CSULB), Barry Schrader at California Institute of the Arts (Cal Arts), Rod Oakes at Harbor College, Mark Waldrep at California State University, Northridge (CSUN), Frederick Lesemann at the University of Southern California (USC) and Roger Bourland at the University of California at Los Angeles (UCLA). Samuel Magrill hosted the first festival, a series of three concerts, at California State University, Long Beach on Saturday, November 8, 1986. Twenty years later, Barry Schrader and Rod Oakes organized a reunion concert at Harbor College on Saturday, November 4, 2006. Dr. Magrill’s contribution was “Strands of Time,” a composition that was realized in the LA Harbor College Electronic Music Studio in the summer of 1990, utilizing a Yamaha DX7IIIFD with an installed E! board by Gray Matter Response and a Yamaha RX5 Drum Machine. The work was written for the 1990 SCREAM festival and can be heard on the CD “The Electric Collection: Music of Samuel Magrill, Volume 2: The Oklahoma Years (1989-1996).” The performance of “Strands of Time” at the SCREAM Reunion Concert was partially funded by a grant from the Jackson College of Graduate Studies and Research.

01.02.29 USING UNDERGRADUATE RESEARCH ASSISTANTS TO INCREASE RETENTION IN FRESHMAN MUSIC THEORY AND AURAL SKILLS CLASSES. Nathan Greenwood, Nikola Gjorcevski, School of Music, University of Central Oklahoma, Edmond, OK.

In the music world, Music Theory and Aural Skills pose the biggest problems for music majors. Around 25% of the students enrolled in the first section of Music Theory/Aural Skills do not continue on to the second section. For struggling students, unfortunately, the course’s pace cannot be slowed to accommodate their individual needs. The sheer amount of information to be covered in these classes can be overwhelming, resulting in low conceptual comprehension rates and/or exam performance. In an attempt to raise the percentage of students that progress onto the second section of Music Theory and Aural Skills, two undergraduate research assistants, Nathan Greenwood and Nikola Gjorcevski, have been appointed Music Theory and Aural Skills tutors in the College of Arts, Media and Design’s Computer Lab located in the Music Building. As tutors, the undergraduate research assistants are to be available for students as posted by a printed schedule. Tutors are to actively participate in theory classes and workshops.
02.01.02 TECHNOLOGY INCLUSION IN PUBLIC EDUCATION: RECOMMENDATIONS. Norbert Hernandez, Communication, Cameron University, Lawton, OK.

In a study titled “Educator Concerns about Computer Technology Implementation in a Southwestern Oklahoma School District,” several recommendations were suggested in regard to computer technology implementation. Funding, time, and professional development were the three areas of consideration deemed relevant to computer technology implementation. Recommendations included: Attention to the fidelity of implementation issue, attention to change theory, and attention to professional development that addressed educator concerns about computer technology implementation. These three recommended areas will be exhibited in the poster presentation.

02.01.03 AN INTRODUCTORY INVESTIGATION USING AN ULTRASONIC ECHOSCOPES. Karen Williams, Victor Jacome, Physics, East Central University, Ada, OK.

Basic ultrasound imaging techniques using an ultrasonic echoscope interfaced to a PC, a 1 MHz transducer, a 4 MHz transducer, and acrylic blocks were used to determine several physical properties. Properties of the echo waves such as velocity, frequency, period and amplitude were measured to obtain various physical measurements of the objects being imaged. Measurements of the thickness of a polyacrylic block and the depth of holes in a phantom block were made using both the T(time)-mode and the D(depth)-mode. The depth of drilled holes in the phantom were determined from images formed from B(brightness)-mode and M(motion)-mode. Frequency calculations were made from the period and compared to frequency values obtained using fast Fourier transform methods. Echo amplitudes were measured for two different thicknesses of acrylic to determine the coefficient of attenuation for acrylic. All values measured by ultrasound imaging agreed quite well with their accepted values. In addition, the scanning ranges of each transducer were easily determined. The lower frequency transducer was more accurate in measuring greater depths and the higher frequency transducer was more accurate in determining shallow depths. The frequency determinations contained the greatest amount of error and need the most attention in any future studies. Imaging moving liquids as well as other materials should be conducted to expand this study. Studies examining backscatter and the influence of temperature on the transducer should be conducted.

02.01.05 RESEARCH IN ACCOUNTING: AN UNDERGRADUATE FOCUS. Barbara Parrish, Accounting, University of Central Oklahoma, Edmond, OK.

Skills required for entry-level accountants include the ability to write well, utilize authoritative literature databases, distinguish finer points within the literature, and develop well-documented and organized responses. Since some states permit candidates to sit for the examination on the basis of a specified number of hours and with only the baccalaureate degree, these skills need to be honed at the undergraduate level. The undergraduate research course focuses on language skills as utilized to convey accounting information to a designated type of reader. Students explore multiple databases, both accounting and general. Accuracy of information, as well as skills in navigating specific databases, must be present. Students examine databases available in all aspects of accounting, in addition to topics of immediate importance. Accounting journals and financial publications also provide topical materials for consideration in the classroom. A number of papers, checked for mechanics and accuracy, allow students to develop skills and understanding in areas previously underdeveloped.

02.01.06 THE EFFECTS OF “ALWAYS WORTH IT” BUD LIGHT BEER COMMERCIALS ON CONSUMERS’ ATTITUDES. Sarah Hoover, Karen Ward, Communication, Southeastern OK State University, Durant, OK.

The purpose of this research is to identify consumers’ attitudes toward storylines in the 2006 Super Bowl “Bud Light” commercials. The rationale for studying this topic is to develop future advertising appeals. This research was influenced by studies that identified relationships between commercial presentation and effectiveness (e.g., Laskey, Fox, and Crask, 1994). For our research, a content analysis of commercials aired during the 2006 Super Bowl was conducted based on how the slogan was enacted through the characters’ behavior. This analysis was narrowed to Bud Light beer commercials that shared the slogan “Always Worth It.” We reviewed each commercial to identify a list of similarities in them and developed a list of five categories: (a) Going to great lengths to steal beer; (b) showing animal-like behavior to get beer; (c) hiding beer; (d) sports topics; and (e) gender roles. Next, we developed a survey based on these categories. We selected male college students to watch the commercials and take the survey. Results reveal that subjects believe possession or consumption of the product will give them dominance, and that obtaining dominance is worth any means. Results also reveal that the majority of the subjects believe men

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in the commercials were presented as more important than women and that the commercials were effective in selling beer.

02.01.07 A COMPARISON OF THE USER PERSPECTIVE APPROACH AND THE TRADITIONAL METHOD OF TEACHING THE FIRST ACCOUNTING COURSE. Wede Brownell, Barbara Parrish, Kathereine Terrell, Mary Sheets, Robert Terrell, College of Business, University of Central Oklahoma, Edmond, OK.

The user perspective approach of teaching the first accounting course emphasizes the conceptual framework as being critical to understanding what makes accounting information useful for economic decision-making. The educational and developmental psychology literature provide evidence that support the notion that meaningful learning and continuous learning take place when an individual understands the underpinnings of a discipline. According to the user perspective approach the accounting conceptual framework is the foundation for understanding the usefulness of accounting information and the basis for learning higher levels of accounting courses.

The purpose of this study is to compare the performance of students who took the user perspective approach first accounting course with that of students who took the traditional method (preparer perspective) to determine whether there is a difference between the two groups at the completion of the intermediate financial accounting one course. We expect the regression analysis results to reveal a significant difference between the two groups of students.

02.01.08 ACTIVITY-BASED COSTING IN OKLAHOMA FIRMS. 1 Wede Brownell, 2 Julia Grear, 1 College of Business, Accounting Department, University of Central Oklahoma, Edmond, OK. 2 School of Business, Langston University, Langston, OK.

Activity-Based Costing (ABC) has been characterized as being too complex and costly and as such only large firms have the resources to implement ABC. The purpose of this paper is to determine whether there is a relationship between the use of ABC and firm size in Oklahoma. ABC requires the commitment of top management, large amounts of resources, and qualified personnel for implementation. Small firms generally have limited resources and usually do not have the necessary expertise to implement ABC even though research suggests that ABC is more accurate in costing products or services than traditional, volume-based overhead allocation techniques. To maintain their competitive edge in the global markets, large firms are pressed into finding better means of costing products or services and ABC have become the tool to do just that.

02.01.09 A COMPARATIVE ANALYSIS OF INDIVIDUAL AND CORPORATE INCOME TAXES IN THE OKLAHOMA AND FEDERAL LEVEL. Orjola Jolldashi, Accounting, University of Central Oklahoma, Edmond, OK.

Federal government uses different types of taxes to generate the cash flow it needs to operate efficiently. U.S. government collects the majority of its revenues from income taxes of individuals and corporations. Individual and corporate income tax collections, account for 62 percent of total tax collected by the federal government.

What about the income taxes collected by the state of Oklahoma?

Oklahoma, also depends on personal income taxes as its main source of revenue. In 2005, personal income taxes accounted for 37 percent of total tax revenue.

The purpose of this study is to discover the differences and similarities between individual and corporate income taxes in the Federal and Oklahoma level.

The results indicate that there are more differences between the Oklahoma and Federal individual income taxes, than between Oklahoma and Federal corporate income taxes.

02.01.10 PRODUCTION AND CHARACTERIZATION OF BIODIESEL. F. N. Albahadily, Anthony Murray, Chance McCall, Dominique Westley, Eyuel Terefe, Matthew Hartley, William Cocke, Chemistry, University of Central Oklahoma, Edmond, OK.

Fresh and used cooking oil contain glycerides of long chain fatty acids. Upon reaction with methanol and in the presence of sodium hydroxide, the long chain fatty acids are converted to methyl esters. The methyl esters are the combustible ingredient in what is called biodiesel. Biodiesel is a promising alternative fuel to diesel because of its low emission of sulfur oxides, biodegradability and availability. Results reported in this presentation is a summary of the efforts by six SURE-STEP (Summer Bridge Program) students to produce and purify biodiesel from olive oil, canola oil and used vegetable oil. The produced biodiesel is analyzed by Gas chromatography/mass spectroscopy.

02.01.11 COMPARATIVE DNA QUALITY FOR SEQUENCING PREPARED FROM CLASSICAL AND AUTOMATED PURIFICATION METHODS. 1 Wondwessen Kebede, 1 Bizuayehu Kebede, 2 George Acquaah, 3 Kanyand Matand, 3 Ning Wu, 1 Biology, Langston University, Langston, OK. 2 Agriculture and...
Natural Resources, Langston University, Langston, Oklahoma. 3 Research & Extension, Langston University, Langston, Oklahoma.

DNA template preparation is the most important factor for high quality sequencing. It has become common practice to use specialized kits or instrument for DNA sequencing template preparation. This study was to assess whether the classical plasmid preparation was as competitive as the automated sequencing template purification for DNA quality and sequencing results. Bacterial colonies were randomly selected from peanut whole plant cDNA library. Both manual and automated plasmid preparation were performed using QIAGEN P1, P2, and P3 buffers or MINI-PREP 96TM instrument. All DNA samples were applied on 1% agarose gel for quality check and quantitation. Sequencing reactions were performed by using BECKMAN CEQ Quick Start Sequencing Kit. Sequencing was performed by using BECKMAN CEQ8800 sequencer. DNA templates prepared by traditional manual method were of high yield and of relative less purity compared to the templates purified through automated instrument. However, the sequencing results showed that DNA from both preparation methods was of comparative sequence quality and of at least 400 base calls and most reached 600 or more base calls. Although traditional plasmid preparation may take longer time to complete, it involves simple techniques and cheap costs. Also the method is easy for entry level operators. The average cost for this process is less than 20 cents per sample compared to $1.00 and $4.50 per sample when using MINI-PREP 96TM instrument and QIAwell kit, respectively. The study recommends that traditional plasmid preparation can be routinely applied for automated sequencing template preparation as long as the sequencing results are of as good quality as those of templates prepared through other advanced kits or instruments.

02.01.14 COLLEGE STUDENTS ATTITUDES AND PERCEPTIONS OF RACIAL PROFILING. Sam Lochmann, Adrienne Schoonmaker, Alan Duncan, Brittany Barkocy, Lawrence Merz, Patrick Parish, Ryan Belcher, Sociology, Criminal Justice and Substance Abuse Studies, University of Central Oklahoma, Edmond, OK.

The purpose of this study was to describe the attitudes and perceptions of college students on racial profiling.

02.01.16 A COMPARISON OF THE PROPENSITY TO CHEAT AMONG COLLEGE STUDENTS MAJORING IN ACCOUNTING, BUSINESS, AND NON-BUSINESS. Janelle Griffis, Accounting, University of Central Oklahoma, Edmond, OK.

Academic dishonest has become an increasingly serious epidemic in American Post-secondary education during the past decade. The purpose of this researcher was to determine if college students majoring in Accounting, Business, and Non-Business would differ in their perceptions of what constitutes cheating, what justifies cheating behavior, and their personal participation in cheating. The researcher hypothesized that students majoring in Accounting would be the most ethical group of students. The researcher used a 5-point Likert Scale to survey a non-random convenience sample of 187 undergraduate college students from a metropolitan university located in the Midwest. Independent T-Test, Frequencies, and Means were used to analyze the results. The results of the study indicated that Business majors has a more defined definition of cheating than did other students and that they strongly disagreed to justified cheating. There were also more differences found between Business and Non-Business majors than Between Accounting and Non-Business majors.

General Business Administration

02.02.01 DATA SECURITY BREACH AND THIRD PARTY IDENTITY THEFT: THE EVOLUTION OF CONSUMER FRAUD RESULTS IN A NEW ERA OF LEGAL LIABILITY FOR BUSINESSES. 1 Jennifer Barger, 2 Aubree Helvey, 1 College of Business Administration - General Business Department, University of Central Oklahoma, Edmond, OK. 2 School of Business, Cameron University, Lawton, OK.

Identity theft has become a major concern for most U.S. consumers and businesses. In the past, the primary means of identity theft was through obtaining personal identification of victims by stealing wallets and purses, intercepting mail, or even pilfering through one's trash. Today, many identity thieves are secretly retrieving consumer and employee information directly from business records by capitalizing on industry weaknesses in data security. Identity theft victims suffer a myriad of harms, ranging from ruined credit histories and damaged reputations, to false criminal records and ensuing arrests. The Identity Theft and Assumption Deterrence Act permits victims to seek restitution from convicted identities thieves; however, this provide little relief because the bigger problem is that identity thieves often cannot be located or are judgment proof. Unsatisfied victims are now relying on state law negligence claims to recover damages, not from the identity thief, but from
the business through which the thief accessed the information. These cases are still quite new but the emerging case law illustrates a willingness by courts to entertain negligence claims when the plaintiff is a customer or employee. Conversely, most courts are reluctant to hold the same business liable for damages suffered by non-customers. This research reviews the current case law in these third party negligence claims, discusses federal and state law requirements for physical and administrative safeguards over information, provides guidance on appropriate business practices that can prevent liability in those states that recognize third party negligence claims, and examines more recent mechanism of utilizing the Federal Trade Commission’s unfair and deceptive trade practices to remedy failures of adequate data security.

02.02.02 REORGANIZING AN AIR LOGISTICS CENTER: ANALYZING THE PROCESS WITH THE PERSPECTIVES OF ORGANIZATION THEORY. Melissa Ryan, M. Suzanne Clinton, PhD., College of Business, Cameron University, Lawton, OK.

Using various perspectives from Organization Theory, this paper analyzes the transformation process taking place at an Air Logistics Center. The reorganization is a multi-year, wide-ranging makeover of systems and processes from an assembly-line, factory-like operation to a structure modeled on the automotive industry’s flexible, disciplined, Lean Cell common production system. The Classical and Life Cycle Perspectives are used to illustrate the range of issues involved in implementation of the extensive change process. The Political Perspective illuminates the fact that power and authority remain largely intact while the organization changes to align itself along the lines of a business selling its products and services to the government. The Systems Perspective is used to provide an overview of the history of the operations, the current situation as transformation is implemented, and the plans for the completion of the reorganization. The authors address the impact of the transformation process on the human element, including the difficulty of fundamentally altering the working lives of the employees and management. The use of these perspectives offers insight into the difficulties that change brings and assists in identifying appropriate change management solutions.

02.03.01 THE ABILITY OF INOCULATION TO PROTECT THE COUNTRY OF ORIGIN IMAGE FOR HIGHLY AND MODERATELY INVOLVING PURCHASES. Kimberly Parker, Bobi Ivanov, Da'Shawn Crowder, Elizabeth McMahan, Jeffrey Buchanan, Kendel Lacy, Laura Collins, Shizuka Kaga, General Business, University of Central Oklahoma, Edmond, OK.

The country of origin is an important decision making tool used by purchasers. However, its importance is moderated by the purchaser’s level of involvement with the sought out product. The country of origin cue seems to be a more salient decision making tool with highly involving (higher differentiation) purchases, such as cars, compared to moderately involving (moderate differentiation) purchases, such as television sets. Still, despite the fact that the importance of the country of origin tool seems to be moderated by the level of product involvement, inoculation, as a strategy of resistance, seems to be equally effective in protecting the purchaser’s country of origin image of both highly (cars) and moderately (television sets) involving products against competitive attacks.

02.03.02 WHO MAKES YOUR DECISIONS? AN ADVERTISING STUDY. Cassandre Luberus, McNair Scholars Program, University of Central Oklahoma, Edmond, OK.

There are millions of purchases made everyday in different areas around the world. The question is; what sparks those purchases? The purpose of this study is to
Business

determine what affect advertising has on societal buying habits, accrued debt, and overall lifestyles. This study utilized a small non-random convenience sample of 76 participants. There were 50 participants from Virginia, 15 participants from New York, and 11 participants from Pennsylvania. A 30 question survey was provided that contained a Likert Scale addressing topics in relation to the study. If the hypotheses are supported then consumers are not in as much control of their lives as assumed.

02.03.03 UNDERSTANDING TRANSITIONAL SERVICES: HOW ORGANIZATIONAL STRUCTURE AFFECTS OUTCOMES. Donna Carlon, General Business, University of Central Oklahoma, Edmond, OK.

The purpose of this project is to study the development and delivery of school to work transitional services for young adults with low-incidence disabilities. On August 14, 2006, the Office of special education and rehabilitative Services, U.S. Department of education, issued final regulations which affect how transitional services are delivered. The regulations specify how changes should be implemented regarding the Individuals with Disabilities Education Act and Individuals with Disabilities Education improvement Act of 2004 (IDEA). Because low-incidence disabilities are rare, parents and families encounter many obstacles and are often frustrated in their attempts to obtain viable transitional services that result in fuller, more productive lives for these young adults.

A “perfect” transitional program would prepare the student to support himself/herself financially, and to be fully functional, contributing members of society. But due to the nature of their disabilities, the nature and level of services needed varies greatly from student to student. Confounding this dilemma are differing theories about how to best deliver the needed services. This research seeks to identify delivery models that are now in place, understand their historical development, and attempt to determine if any models or elements of these models are better in serving students with low-incidence disabilities. Cultural-historical activity theory attempts to understand how an organizational system that is multi-layered and complex functions best. Activity theory suggests that three integral components of complex systems must be considered when analyzing such systems: systems are multi-voiced; systems are historically situated; natural contradictions exist within and between systems which create significant obstacles in changing such a system.

02.04.01 PRICE DISCOVERY ROLE OF FUNDAMENTAL NEWS IN COMMODITY MARKETS: THE CASE OF U.S. NATURAL GAS MARKET. Zhen Zhu, Economics, University of Central Oklahoma, Edmond, OK.

In economics and finance literature on financial markets, several studies focuses on the volatility impact of public news on equity prices, bond prices, foreign exchange rates and interest rates; however, the study of price discovery role of the futures market in the presence of fundamental news in a commodity market is rare. This study contributes to the better understanding of the responses of commodity markets to fundamental news by investigating how the release of public news contributes to the determination of the commodity prices, not the volatility of commodity prices per se. We focus on several key issues including: How does the expectation of fundamental factors dictate the direction of commodity price movement? How does the market respond to fundamental news and how does it deal with the uncertainties in fundamentals? We also try to shed light on questions such as whether the commodity market reacts to fundamental news symmetri-
cally, and whether the price response to news depends on the state of uncertainty. Our empirical results help us to understand to what degree the commodity prices are determined by fundamentals.

02.04.02 HAVE STATE SALES BELOW COST LAWS BECOME A PROXY FOR PREDATORY PRICING CLAIMS? Jeremy Oller, Economics, University of Central Oklahoma, Edmond, OK.

This research investigates whether State Sales Below Cost Laws are an effective substitute to the Federal Predatory Pricing laws. In its most recent rulings pertaining to predatory pricing, the Supreme Court increased the burden for plaintiffs to recover under either the Sherman Antitrust Act or the Robinson-Patman Act. The Court interpreted the antitrust laws with respect to predatory pricing such that a plaintiff is now required to show that the pricing scheme is economically rational. The State Sales Below Cost Laws make no such provision, as they frequently condemn loss leader practices. I examine two issues in this research with respect to the balance between the state and federal laws. First, I examine whether plaintiffs are now more likely to pursue claims under the state laws than the federal antitrust counterparts. Second, I examine the retail grocery and supermarket industries to determine whether states enacting sales below cost laws are more prone to preserve small businesses.

02.04.03 IS IT THE SPENDING OR ALLOCATION?: EVIDENCE FROM THE SOUTH-CENTRAL REGION PUBLIC SCHOOLS. Sharon Bracken, Susanne Rassouli-Currier, Economics, University of Central Oklahoma, Edmond, OK.

Presumably, more spending in the classroom improves the performance among K-12 students. Proponents for the average 65 percent rule state that 65 percent of the existing expenditure of Oklahoma public schools expenditures should be allocated to that of instructional i.e., classroom use. Currently, the existing average is 58 percent. The increase in student performance will be measured by different standardized test scores. In other words, since districts will not receive any new funding, a higher percentage of public schools funding should be used in the classroom and less towards that of administration. In this paper the student’s performance in the South-central region of the United States (Arkansas, Colorado, Kansas, Missouri, Oklahoma, and Texas) is examined to see if, in fact, test scores improve significantly in response to the amount of money being spent. In addition, factors such as socioeconomic characteristics of the students, administrative salaries and other student and teacher demographics are considered so that their effect on the test scores, if any, can be isolated.

02.04.04 EXPLORING NOVICE INVESTOR’S DIVERSIFICATION BEHAVIOR AND ITS RELATIONSHIP WITH PERCEPTIONS OF RISK AND RETURN, KNOWLEDGE AND THE SIZE OF THE INVESTMENT PORTFOLIO. Andre Viana, Management, University of Central Oklahoma, Edmond, OK.

Investors use diversification as an attempt to reduce their exposure to risk. By investing in various companies across different sectors, industries or even countries, they reduce their portfolio’s price volatility. This study investigates novice investors’ diversification behavior and its relationship with their perceptions of risk and return, knowledge and the size of the investment portfolio. Specifically, we began with the hypothesis that the investor’s diversification behavior would be primarily influenced by portfolio size. The realistic simulation involves quantitative and qualitative questions on investment options available in the novice investor’s day-to-day life such as savings accounts, certificates of deposit, mutual funds, stocks, treasury bills, real estate, and commodity futures. The trend of previous studies has been to focus on diversification within asset classes such as stocks, rather than consider a comprehensive portfolio of diverse investment options. Initial observations of decision-making indicate that diversification behavior is consistent with the investor’s perceptions of knowledge, risk, and return on the investments. Preliminary results also indicate that novice investors tend to take on more risk in their own portfolio than if they were managing their parents’ assets. In addition, as the size of the portfolio increases, it is noticeable that investors tend to allocate more of their money to secondary investment classes. Although other variables such as knowledge and risk preference seem to be moderators, this finding appears to support the hypothesis that portfolio size is the primary driver of diversification behavior in the novice investor’s portfolio configuration.

Finance

02.05.01 MARKET REACTIONS TO ANNOUNCEMENTS TO EXPENSE OPTIONS. Larry Prather, Accounting & Finance, Southeastern OK State University, Durant, OK.

The joint hypotheses of informationally efficient markets and adequate SFAS No. 123 disclosure suggest that announcements to recognize employee stock options as an expense should not trigger stock price re-
actions because free-cash-flows will not change. Event study results from a sample of 241 firms that announce a change from footnote disclosure to expense recognition reveal statistically significant negative price changes on the announcement day followed by statistically positive price changes about equal in magnitude. We examine the learning, sophisticated investor, neglected firm, and firm size hypotheses to ascertain the cause of observed announcement-period stock price volatility and find varying degrees of support for the firm size, sophisticated investor, and learning hypotheses.

02.05.02  CHERNOFF FACES AS A MEANS OF COMMUNICATING FINANCIAL INFORMATION - AN EVALUATION OF STUDENTS’ PERCEPTIONS. Maryellen Epplin, Finance, University of Central Oklahoma, Edmond, OK.

Chernoff faces offer an alternative graphical technique for the presentation of multivariate data. Financial ratios have traditionally been shown in tables or column graphs. This study compares these traditional formats with a Chernoff face alternative. A survey presented selected firms’ financial ratios to upper-level Nursing students who had no previous experience with financial ratios, and to upper-level Accounting students who had previously calculated them. The students were required to judge the financial health of firms. Accounting students scored significantly better than Nursing students when tables were used, but not when column graphs or Chernoff faces were used. For Accounting students there was no significant difference between the results for tables, column graphs, and faces. For Nursing students, there was no significant difference between tables and column graphs. However, the Nursing students’ judgments about firms’ financial health were significantly better in two cases: faces produced better results than tables and than column graphs. The results have potential implications for communicating financial information. Chernoff faces may be more helpful for those who don’t have an extensive background in financial concepts. They can be presented in publications aimed at the investing public. Financial experts will probably prefer to continue using the currently available tools like tables and column graphs.

02.06.01  STUDENT PERCEPTIONS TOWARDS MIS AS A DISCIPLINE. QuratulAin Siddiqui, John Camey, Tim Bridges, Yasar Kayani, Business, University of Central Oklahoma, Edmond, OK.

Student interest in computer-related fields has declined over the past few years. One possible explanation for the decline is the perception by students that Information Technology classes are very difficult. The article evaluates the perception of MIS students and their attitude towards MIS as a major. The instrument that was used for this research was developed in a previous and similar study of Marketing students (Camey and Williams 2004). The instrument has been modified for the MIS discipline. It was hypothesized that student will leave the MIS fundamentals class with improved perceptions of MIS as a discipline. However, the results show that students have lower perceptions at the end of the semester. Different variables have revealed that students have a malformed image of MIS as a major. The result have also revealed that a different educational strategy should be adopted by Information Technology professors to facilitate the MIS major.

02.06.02  USING GAME-BASED LEARNING TO REINFORCE LEARNING OF CONCEPTS IN HIGHER EDUCATION. 1 Ernst Bekkering, 1 Ken Jones, 2 Noel Rhodd, 2 Priscilla Bryan, 1 Information Systems, Northeastern State University, Tahlequah, OK. 2 Business Administration.

Learning in higher education can take place in three domains: the cognitive domain, the affective domain, and the psychomotor domain (Bloom 1956). The cognitive domain focuses on the accumulation of knowledge. Courses with a predominant focus on material in the cognitive domain, such as orientation courses in Information Systems, can present a large amount of material. Mastery of cognitive material can take place at different levels: from Knowledge, to Comprehension, to Application, and three more levels in the classification by Bloom (1956). Students increasingly work part-time or even full-time, and the student population has grown up playing electronic games. We are developing a database of concepts and accompanying attributes found in one of the IS orientation courses. This database will be used as the knowledge base for a training game for students in the course. The development of the knowledge base and the prototype of the game are presented.

02.06.03  OPERATIONS MANAGEMENT MAJOR AND PARTNERSHIPS. YURY ROUBA, SABA BAHOUTH, Information Systems and Operations Management, University of Central Oklahoma,
Edmond, OK.

The Operations Management and Analysis (OMA) major at the University of Central Oklahoma was developed in the mid 1990s. Due to the later partnership with the Tinker Air Logistics Center in Oklahoma City, this major has grown from 15 students to nearly a hundred. It is presently one of the largest operations management programs in the country, with a job placement rate nearing 60% one year before graduation.

This study examines operations management programs at different universities around the country and compares them based on school size, program size, curriculum and other significant factors, including their partnerships with major employers in their community.

**02.06.04 WHERE WILL VOIP STAND IN NEXT TEN YEARS?** Tim Bridges, QuratulAin Siddiqui, Business, University of Central Oklahoma, Edmond, OK.

VOIP is a new emerging technology in various sectors. This article evaluates where VOIP will stand in next ten years and its application in different areas other than telecommunication sector. VOIP has also proved to be useful in educational area. VOIP usage is also rapidly growing in resident area. This article also analyzes that the implementation of VOIP in certain business will be very profitable.

**02.06.05 EVIDENCE OF THE INDUSTRY’S DESIRED TECHNOLOGY COMPETENCIES IN GRADUATES: A SURVEY OF JOB POSTINGS.**

Jason Poudrier, David Smith, John Di Renzo, Kimberly Merritt, Computing and Technology, Cameron University, Lawton, OK.

Professors within the IT/IS disciplines have long debated the most desired technology competencies for university graduates. This research will present evidence of the most desired technology competencies by gathering data on specific skills required in job postings at web-based recruiting services. Evidence of the desirability of various technology skills will be derived from 1) the total number of jobs posted nationwide requiring various skills and, 2) from the average salary for those jobs. This research has practical importance to every university delivering IT/IS related curriculum.

**02.06.07 E-TEACHING MOTIVATION AND DETERRENT: A CASE STUDY OF ONE HIGHER EDUCATION INSTITUTION IN OKLAHOMA.**

Joselina Cheng, ISOM, University of Central Oklahoma, Edmond, OK.

Advanced technology and a knowledge-based global economy have presented new opportunities and challenges for the traditional method of learning and teaching in higher education. Electronic methods of knowledge distribution and skill acquisition with advanced technology may offer a viable alternative to enhance traditional methods of education delivery in brick and mortar higher education institutions. According to the survey study conducted by the Association to Advance Collegiate Schools of Business, 39% of schools offered online courses and 60% full-time faculty were involved in online courses. In 2005, over 500,000 online courses were available and enrollment in online courses at U.S. postsecondary institutions was 1,666,100. As the demands for online courses continues to increase, administrators in higher education institutions may tremendous opportunities to foray into the e-learning market but at the same time have responsibilities to assist faculty members in transitioning to online teaching. This survey study used a computer to randomly select 400 faculty members from one oklahoma higher education institution. Closed-ended questions and Likert-type instrument were used to seek faculty members’ self-reporting motivation and deterrent to online teaching. Descriptive, correlation, and regression statistical procedures were conducted to determine the relationships among these variables. The findings of the study supported the research hypotheses that there were positive realtionships among perceived extrinsic and intrinsic motivation and e-teaching and negative relationships among perceived personal, institutional deterrent and online teaching. The result of this study may provide insight and knowledge that guide higher education administrators to implement institutional policies, reward systems, and training programs that support and assist faculty members in transitioning from teaching traditional face-to-face classroom to e-teaching in the 21st virtual classroom.

**02.06.09 EXPERIENTIAL LEARNING: RESPIRATORY THERAPY DATABASE HELPS EVERYONE BREATHE EASIER.** Lillian Estep, K. David Smith, 2 Suzanne Clinton, 1 Department of Computing & Technology, Cameron University, Lawton, OK. 2 College of Business Administration, University of Oklahoma, Norman, Oklahoma.

Experiential learning is the culmination of knowledge obtained through formal education and real-world situations or problems. An MIS student who is employed in the Respiratory Therapy Department of a local county hospital applied concepts learned in the classroom to problems faced at work to develop and implement a database. Through the development of the database, the student received hands-on experience with Systems Architect, a CASE tool, and Microsoft Access. By guiding the student in the solution of the a real-world problem, the instructor was able to enhance the classroom experience while the student was offered the opportunity to
solidify concepts obtained from the written word and lectures. As a result of the implementation of the database, the employer saved 730 man-hours per year, at an average cost of $15 per hour, for a total of $10,950 per year. Employee acceptance of and satisfaction with the database is illustrated by the following quotes: “I can’t believe that we ever used to write everything out by hand?” and “When we had a power outage, I realized the time [the database] saves us at every shift change.” The paper clearly illustrates how valuable a tool experiential learning can be for students, faculty, and the community.

02.06.10 REFLECTIVE LEARNING FOR STUDENTS’ DATA MODELING. Chawntaye Chandler, Connie Hughes, I-Lin Huang, Jon Walker, School of Business, Langston University, Langston, OK.

Accurate data models are well known as prerequisites for the quality of the final system. However, data modeling remains a complex and error-prone process for students. Empirical studies have showed that the performance of student modelers is significantly lower than that of expert modelers. In addition, empirical studies have also identified four cognitive abilities that set expert and student modelers apart: model-based reasoning, mental simulation, critical testing of hypotheses, and analogical domain knowledge reuse.

Reflection learning has long been recognized in the field of learning research as a strategy that can improve students’ cognitive abilities to solve complex problems. In order to improve students’ cognitive abilities of data modeling, this research argued that students should be trained to incorporate reflective learning mechanism into their data modeling process. On the basis of the theories on human cognition, this research also proposed a reflective learning process for data modeling to stimulate students to perform effective reflection and to achieve a higher-level of correctness of data models.

02.06.11 TECHNOLOGY ADOPTION IN THE HOME AND FACTORS OF TECHNOLOGY ADOPTION. Cliff Richie, Grant Alexander, Information Systems, Northeastern State University, Tahlequah, OK.

There are many factors that have been investigated that may influence the acceptance tendencies of purchasers of new technologies. These factors are anything that determines how well or how willingly an individual may accept new technology and use it. The purpose of this research is to investigate further what factors may play a part in an individual’s attitude toward purchasing and using new technology, particularly in relation to technology in the home. The results may be valuable to companies marketing and designing new technology by displaying how potential customers are affected by these factors, allowing companies to better appeal to consumers and meet their needs. As a whole, these factors influence the purchase and use of new technology in the home setting. This generalization is broken down into three factor categories: task-oriented, social influence, and personal. The task-oriented category is comprised of “utility for work-related use” (Brown), “attitude toward behavior,” and “job-fit” (Venkatesh). These factors affect the user as part of completing a job or task. The social influence category includes “status gains,” “friends and family influences” (Brown), and “visibility” (Venkatesh). These factors affect the user in how the user is perceived by those around them because of technology and how willing they are to use and purchase technology because they view others who use it. The personal factors category is comprised of “applications for fun,” “fear of technological advances,” “cost” (Brown), degree of playfulness (Webster), “ease of use” (Venkatesh), and “usefulness” (Davis). These are factors that represent personal details that may influence the decision of an individual to purchase and use new technology in the home.

Management

02.07.01 SOLDIER EMPLOYEES - WHAT EVERY EMPLOYER SHOULD KNOW. Darrell Ford, General Business, University of Central Oklahoma, Edmond, OK.

This article informs employers of the obligations and prohibitions contained in the 1994 Uniformed Services Employment and Re-employment Rights Act of 1994 (the “USERRA”). I examine case law and cite court decisions interpreting the USERRA. I also examine and cite regulations issued by the Department of Labor that went into effect January 18, 2006. With as many as 85% of companies employing personnel with some form of military status, it is imperative that companies, and especially human resource managers, understand and comply with the USERRA. This article highlights the fact that the USERRA creates a new, unique class protected from discrimination. This article also emphasizes that the USERRA overrides the employment at will doctrine when it comes to military service members re-entering the workforce.

02.07.02 HR PROFESSIONAL NEEDS ASSESSMENT: AN INVESTIGATION OF LOCAL ISSUES. Lee Tyner, Suzanne Clinton, Management, University of Central Oklahoma, Edmond, OK.
The employer council is a cooperative educational effort between the state employment security commission, state workforce partners and local area human resource professionals. Members voluntarily participated in an online survey. Specific variables of importance include years of experience in human resources and skill level in human resources (entry, intermediate, senior, expert). Respondents were asked to identify from a list of human resource topics the areas in which he/she most needed to improve skills. Additionally, respondents were asked to rank his/her top five and bottom five requests for topic presentations during upcoming employer council meetings. Summary results of the study include the following.

Areas of HR in which respondents most needed to improve skills: Benefits; Compensation; Compliance & Employment Law; Management; Recruiting; Safety; and Training & Development. Five Topics Respondents Most Preferred for Presentation at Council Meetings: Emerging Trends in HR; Improving Employee Performance; Leadership Development; Governmental Compliance (ADA, OSHA, EEOC, etc.); and Benefits Compliance. Five Topics Respondents Least Preferred for Presentation at Council Meetings: HR Metrics; Alternate Dispute Resolution; HR Technology; Responding to a Disaster; and Background & Reference Checking. Following this research, the employer council shifted focus toward essential needs of local HR professionals. A follow-up survey will be conducted Spring 2007.

**02.07.03 PROPERTY MANAGEMENT USING ACCESS DATABASE DESIGN, CREATION, AND IMPLEMENTATION.** Earl Gardner, Computing and Technology, Cameron University, Lawton, OK.

The local University database management class utilizes experiential learning. The spring 2006 class project was to design and implement a database solution for a local rental housing Limited Liability Company (LRH LLC) to effectively manage their rental properties. Previously, LRH LLC had been managing their business from Microsoft Excel spreadsheets. The database management class used the case tool, Systems Architect, to work through the various database models. Based on five years growth, it was determined that Microsogt Access would work for the company. The database was then implemented through the case tool. Unfortunately, due to time constraints, the project was not completed during the spring semester. Missing were nearly all the required GUIs (forms and reports). At that point, it was determined that a summer internship was required to complete the project. All models were re-visited. The final database contained five tables, numerous queries, forms and reports. an easy to use interface was developed which include a switchboard. Reports generated from the queried information contained information that allowed LRH LLC personnel to make important business management decisions. What was once a cumbersome, difficult to use, hodgepodge of data contained within Excel Spreadsheets, became an orderly, easy to read, easier to access, valuable business management tool.

**02.07.04 CORPORATE UNIVERSITIES: STRATEGIC KNOWLEDGE SHARING TOOL.**

Jen Tyner, 1 Lee Tyner, 2 Jennifer Barger-Johnson, 1 Management, University of Central Oklahoma, Edmond, OK. 2 General Business, University of Central Oklahoma, Edmond, OK.

This paper examines the importance of corporate universities through an investigation of the literature. A definition of the term is provided. An investigation of the differences between training, education and learning and the importance of this distinction to the various models is examined. The establishment and growth of corporate universities throughout the United States and the investment required for corporate universities is outlined. Factors driving the proliferation of corporate universities are addressed. The synergies developed through corporate commitment to learning are delineated. The reciprocal nature of corporate universities as a learning tool for both the organization and the individual are discussed.

**02.07.05 AN UNEXPECTED TARGET: THE SEXUAL HARASSMENT OF HUMAN RESOURCE PROFESSIONALS.** Lee Tyner, 1 Lee Tyner, 2 Jennifer Barger-Johnson, 1 Management, University of Central Oklahoma, Edmond, OK. 2 General Business, University of Central Oklahoma, Edmond, OK.

This study investigates the frequency of unwanted sexual behavior as experienced by human resource professionals, and examines whether or not such behavior is perceived as sexual harassment.

Participants of this study include regional human resource professionals who completed a 20 question Sexual Experiences Questionnaire (SEQ) utilizing a Likert-like scale. The SEQ is a common instrument for researching sexual harassment in various occupations. In the findings of the SEQ, unwanted sexual behavior is identified as being gender harassment, unwanted sexual attention, and sexual coercion. Additional data was gathered to investigate possible correlations of demographics and their individual perception of sexual harassment.

Prior research will be reviewed regarding the influence of race, religion, gender, and age on the perception of sexual harassment. The legal definition of sexual harassment, significant developments in recent case law, and any applicable employer defenses will also be explored.
Hunt, Chonko and Wood (1985) was modified slightly to further develop the findings of this study. This study concludes with an assessment of whether or not HR professionals are competent in identifying unwanted sexual behavior as sexual harassment, and if their perceptions are congruent with those of other occupations.

**02.07.06 SERVICE-LEARNING IN THE PRINCIPLES OF MANAGEMENT CLASS.** Tori Petete, Accounting, East Central University, Ada, OK.

This poster defines service-learning, its benefits and then shows how service-learning was incorporated into a Principles of Management class to meet a community need. About seventy students in two sections of Principles of Management were divided into eight project teams. The results of the projects of these teams are highlighted.

Service-Learning is a teaching method that incorporates community service experiences into academic courses. Students learn through active participation in meaningful and planned service experiences in the community that are directly related to course content. Service-Learning is not the same as experiential learning, volunteering, or community service. Service-Learning benefits to the university, students, community and faculty are highlighted.

The goal of the student service-learning projects was to address the cycle of poverty resulting from four factors related to the economy in the southeast quadrant of Oklahoma. These factors and related statistics are highlighted on the poster. The class was built around the four management functions of planning, organizing, influencing and controlling. As students studied these functions they were asked to apply what they were studying to their projects.

These eight projects resulted in a total of over $4000 in cash and merchandise being donated to various groups, schools and families. The students invested hundreds of hours in working with a total of four schools and five different community partners in four different communities.

**02.07.07 ETHICAL VALUES AND ORGANIZATIONAL COMMITMENT IN THE SCHOOL OF BUSINESS.** Adam Nicholas, Business Administration, East Central University, Ada, OK.

This paper examines the relationship between ethical values and organizational commitment of business students. This study replicates work previously done by Hunt, Chonko and Wood (1989). The original study examined people employed in various marketing jobs while the present study examines students in a school of business. The Corporate Ethics Scale developed by Hunt, Chonko and Wood (1985) was modified slightly and used to measure ethical values. The organizational commitment scale (OCQ) developed by Mowday, Steers and Porter (1979) was used to measure organizational commitment.

Approximately 150 students were surveyed in a variety of business classes. In addition to examining the relationship between ethical values and organizational commitment the paper also examines differences in the two variables based on such factors as classification, gender, income, marital status, age, GPA, campus involvement and major.

It is hoped that the results of this study can give guidance to administrators by not only examining the relationship between the two variables of interest, but also by setting benchmark measures that can be used for future comparisons. As pointed out by the authors of the study being replicated, if ethical values and organizational commitment are related then increasing ethical values will bring the benefits of increased organizational commitment.

**02.07.08 CROSS-CULTURAL PERCEPTIONS IN THE INDIA-U.S. BUSINESS CONTEXT.** Rama Subba Rao Appikatla, Management, University of Central Oklahoma, Edmond, OK.

India’s economic liberalization in 1991 opened the gateway for new opportunities in multilateral trade relations. In a broader sense, the world gained access to a vast wealth of untapped resources in India, including a highly educated workforce to satisfy the global desire for outsourced services. Although the U.S. has quickly become India’s largest trading partner, surprisingly little research has been devoted to cross-cultural perceptions in the business context.

The latest U.S. Census data suggests that the subpopulation of Indian origin constitutes a model minority in that approximately 77% of those who work are involved in technical, managerial, and professional occupations. With such positive statistics, it would appear that the group has assimilated into the very fabric of American society. However, there may be significant differences in the underlying values of the two cultures.

To explore this question, we developed an ethnocentric model to analyze the experiences and perceptions of U.S. educated Indians. Comparison of preliminary results to previous research findings on employee characteristics desirable to U.S. employers indicates a serious misalignment of motivating values. For instance, communication, interpersonal skills, and other leadership related factors were most important to U.S. employers, whereas Indians valued domain knowledge, dedication, and other characteristics reflecting their desire to be long-term assets to their employer.
02.07.09  RESPONSE PAD SYSTEMS: DO THEY IMPROVE OUTCOMES?--AN EXTENSION. Ralph W. Parrish, Philip Jeck, Management Department, University of Central Oklahoma, Edmond, OK.

This study extends work done previously in which we compared the average score on the departmental final examination of a class in which a response pad system (RPS) was used with the overall average achieved by the classes taking the same examination but in which no RPS was used. Although the instructor felt that class attendance and participation improved using the RPS, the difference in the mean scores on the departmental final was not significant. In this study, we compare the average grades achieved on the departmental final prior to the instructor’s use of the RPS with average grades after use of the RPS.

02.07.10  WAL-MART - WILL INDIA WELCOME THIS GIANT?. Sangeetha Tadimalla, JCGS&R, University of Central Oklahoma, Edmond, OK.

India is one amongst the fastest growing economies in the world. With a population of 1.1 billion and a growing consumer confidence, the is seems to be set for retail giants like Wal-Mart and others to tap this emerging market. According to AT Kearney’s Global Retail Development Index (GRDI, 2005), India takes the top place for a consecutive third year. According to Menzer, CEO of Wal-Mart’s International operations, “India represents a $250 billion retail market, growing 7.2 percent a year, but modern retailing is just starting to emerge. This shows us that India is a huge organic growth opportunity for Wal-Mart.” However, Wal-Mart has to wait as the FDI regulations in India do not allow it to set a 100% subsidiary in India. This study is aimed at finding out the opportunities and threats for Wal-Mart in the Indian business context.

02.08.01  THE PROCESS OF INOCULATION AND ITS POTENTIAL IN PROMOTING RESISTANCE TO THE EFFECTIVENESS OF MULTIPLE COMPETITIVE ATTACKS ON THE COUNTRY OF ORIGIN CONCEPT. Ivanov Bobi, Acharya Sudeep, Baty Brandon, Mashore Matthew, Parker Kimberly, Sears Kira, Sumbana Edgar, Marketing, University of Central Oklahoma, Edmond, OK.

This investigation tested the ability of different resistance strategies to protect the positive COO image attributed to products in the face of single and multiple competitor attacks. The results illustrate the superiority of refutational over supportive and restoration messages in protecting the positive COO image when facing single or multiple attacks. Also, the results indicate that refutational defenses, in which the message content (affective, cognitive or combined) is matched with the basis of the attitude (affective or cognitive); provide best protection against combined competitor attacks (affective and cognitive). Combined refutational defenses work better than mismatching refutational defenses, but not as well as matching refutational defenses. However, when facing multiple attacks, matching and combined refutational defenses work equally well and better than mismatching refutational defenses.

02.08.02  ALTERNATIVE FUELING METHODS. Jamie Dietz, Amber Esau, Dave Wood, Ty Oden, Mkt 3313, Northeastern State University, Tahlequah, OK.

Petroleum gasoline continually becomes more scarce each year resulting in higher fuel prices for the average consumer. The U.S. dependency on foreign oil and the high level of emissions are also downfalls in regards to traditional fueling methods. Many alternatives currently exist and more are being discovered. Some alternatives include hybrid, flex-fuel, bio-diesel, and fuel-cell vehicles. The focus of this research is on ethanol fuel. Ethanol fuel is a fuel that can be made in the U.S., used in most vehicles (new and old) and has lower emissions than traditional gasoline.

02.08.03  COMMON OPINIONS OF OUTSOURCING. Amber Gross, Brandon Prather, Dustin Martin, Laura Traylor, Mindi McBride, Marketing, Northeastern State University, Tahlequah, OK.

In the last several years outsourcing has gained popularity among business owners as an alternate form of employment in order to reduce costs. The topic of outsourcing is highly debated among workers of all levels. Business owners seem to be in favor of outsourcing while low-skilled workers are against it. The methods of research used are surveys addressed to people in the greater Tulsa area and internet research. Results are expected to show that individuals with greater education backgrounds and a higher level of employment would be more favorable toward the outsourcing of labor.

02.08.04  A COMPARISON OF OKLAHOMA CITY METROPOLITAN AREA REQUIRED ENTRY-LEVEL INFORMATION TECHNOLOGY JOB SKILLS AND RELATED JOB SKILLS TAUGHT IN THE UNIVERSITY OF CENTRAL OKLAHOMA'S MIS CURRICULUM. Gyoung-Hee Kim, Information Systems and Operations Management (ISOM), University of Central Oklahoma, Ed-
Business

mond, OK.

With the rapid advances in the Information Technology (IT) field, universities that provide IT professionals have grown more cognizant of the urgency to meet the needs of the ever changing business environment. This survey examines the recruitment requirements of companies hiring undergraduate students majoring in Management Information Systems (MIS). Employers’ requirements of both non-technical and technical IT job skills will be considered. The findings of the proposed survey will be used to assess the current curriculum of the MIS major in the department of Information Systems and Operations Management (ISOM) at the University of Central Oklahoma. The ISOM department wishes to provide MIS students with an educational experience highly conducive to employment in the IT field.

02.08.05 MYSTERY SHOPPING: IS IT REALLY EFFECTIVE IN HELPING MAINTAIN CONSISTENCY WITH SERVICE QUALITY? Brandi Griffin, Bill O’Brien, Jason Kostoff, Keith Hines, Laura Billingly, Marketing, Northeastern State University, Tahlequah, OK.

Mystery shopping is a method that companies are beginning to look at in order to help them maintain high levels of customer service and efficiency with in their organizations. The question to be asked is does it work, and if so how much of an effect does it have on improving the business? In this research we will explore whether or not this tool used by marketing research companies as a structured questionnaire and a large sample is really effective within convenience stores in the greater Tulsa area. We also want to look at the mystery shoppers purchase procedures while they examine specific details and aspects of the store, and how their feedback improves the overall quality of the store. The research will be conducted through all convenient stores in the Tulsa area. We will also explore how mystery shopping works, the procedures to mystery shopping, and statistical evaluations of companies who are currently using mystery shopping. We will conduct research through corporate officers and owners by using survey techniques and general questions. In addition to survey™s we will be observing and asking open ended questions with a small number of informants. We assume that mystery shopping does increase levels of customer service, helps maintain clean stores, and also increases traffic flow through out the store.

02.08.06 THE EFFECTS OF SCHOOL UNIFORMS ON STUDENT’S SELF-ESTEEM. Brandi Tracy, Lacy Harper, Meshel Gunther, Michelle Jordan, Tylee Tulsa, MKT 4333, Northeastern State University, Tulsa, OK.

Uniforms were implemented into schools in order to promote tolerance, equality, and student interaction. We have chosen to research the effects of school uniforms on student’s self-esteem. Our research will describe how wearing uniforms affect self-esteem among elementary, middle, and high school students. Through the use of the observation/survey by teachers and the interaction between students we hope to show the total effect, if any, which has taken place since the implementation of school uniforms.
03.01.01   A LONGITUDINAL STUDY OF STUDENT SATISFACTION IN A COLLEGE OF EDUCATIONAL PRE-CREDENTIAL COURSE AT NORTHEASTERN STATE UNIVERSITY.  Dawn Yonally, Cindi Fries, Karen Carey, Educational Foundations and Leadership, Northeastern State University, Tahlequah, OK.

This longitudinal study is an analysis of qualitative and quantitative data gleaned in a pre-credential course concerning student satisfaction in the College of Education at Northeastern State University. This course is taken by all students considering education as a major. Course improvements are noted.

03.01.02   STORIES, METAPHORS, AND MENTAL IMAGES: ENCOURAGING REFLECTION AND SELF-EVALUATION IN TEACHER CANDIDATES.  Dan Vincent, Curriculum and Instruction, University of Central Oklahoma, Edmond, OK.

This on-going qualitative study seeks to understand the value and role that stories, metaphors and mental images have in encouraging future teachers to reflect on and evaluate their understanding of teaching and learning. By modeling reflection on my own personal experiences through stories and mental images, students will be exposed to using stories or mental images to better understand teaching and learning. Also, by having students create metaphors about their views of teaching, and then periodically reflecting on and discussing those metaphors, students’ thoughts and ideas can be evaluated for changes in perspectives.

03.01.03   STUDENT SUPPORT SERVICES: A PROGRAM OVERVIEW.  Crystal Mohamed, Norman Markland, Student Support Services, University of Central Oklahoma, Edmond, OK.

Our nation has asserted a commitment to providing educational opportunity for all Americans regardless of race, ethnic background or economic circumstance. In support of this commitment, Congress established a series of programs to help economically disadvantaged Americans enter college, graduate and move on to participate more fully in America’s economic and social life. These Programs are funded under Title IV of the Higher Education Act of 1965 and are referred to as the TRIO Programs (initially just three programs). While student financial aid programs help students overcome financial barriers to higher education, TRIO programs help students overcome class, social and cultural barriers to higher education.

As mandated by Congress, two-thirds of the students served must come from families with incomes under $28,000, where neither parent graduated from college. More than 2,700 TRIO Programs currently serve nearly 866,000 economically disadvantaged Americans. Many programs serve students in grades six through 12. Thirty-seven percent of TRIO students are Caucasians, 35% are African-Americans, 19% are Hispanics, 4% are Native Americans, 4% are Asian-Americans, and 1% are listed as “Other,” including multiracial students. Twenty-two thousand students with disabilities and more than 25,000 U.S. veterans are currently enrolled in the TRIO Programs as well.

*All information and statistics are provided by the Council for Opportunity in Education & the U.S. Department of Education

03.02.01   IMPORTANT OF PLAY AS VIEWED BY CUSTODIAL GRANDPARENTS.  Susan Jones, Glee Absher, Human Environmental Sciences, University of Central Oklahoma, Edmond, OK.

Child development experts agree that play is a critical part of learning and social development of all children. Play is how children experience fun and joy. It unlocks the creativity and imagination of a child and develops reading, thinking, and problem solving skills as well as motor skills. Through play children develop their personalities and a positive sense of self, and realize their potential and experience success. Play provides the foundation for learning including language, reading, thinking and reasoning skills. The benefits are so impressive that every day of childhood should be a day for play. For adults, play means leisure, but for children, play is more like their job. The adult plays a key role in developing successful play in the early years. Children placed in homes with grandparents or other older generation relatives may be surrounded by love and caring people, but development in some areas may suffer. These caregivers were raised in an age that might not have given play the importance that the knowledge of today brings. The environment in which grandparents were raised will also affect how they in turn will raise their grandchildren. For this study, a convenience sample of grandparents responded to a 16 question survey about their interpretation of play with their grandchild. Findings were analyzed and interpreted.

03.02.02   I’M NOT READY YET!.  1 John Garcia, 2 Elyse Lovell, 1 College of Graduate Studies &
I’m not ready yet! Not ready for what? I’m not ready yet to be 50, 60, 70 or 80. What is it about age? Is it the number of the age or the number of the wrinkles or the number of the gray hairs? The perceptions in general American society are to covet youth and blur our vision to the wealth of aging. What age is old? Social perceptions versus the realities of aging for the 80 million strong Baby Boom Generation are the general topics of this research. Dychtwald’s four eras of retirement are explored. His fourth era focuses on those people who would like to be doing something novel and different - the so called era of “middlenessence” - an older and wiser version of adolescence. Dychtwald names this new era as “rehirement”. It is an era where people are seeking to be productive and involved and to reinvint themselves. Also explored is Harris Interactive’s study of retirees defining four distinct types of retirement experiences: Ageless Explorers (27%), Comfortably Contents (19%), Live for Todays (22%) and the Sick and Tireds (32%). Finally, ageism (prejudice toward / against an age group) and the Age Discrimination in Employment Act are reviewed. The final question of this research is whether the Baby Boom Generation is doomed to suffer the fate of Greek Mythology’s Titanus - that is, living forever but getting older and sicker - not enjoying eternally youthful lives.

Human Environmental Sciences

03.03.01 USE OF THERMOCHRONS IN THE CLASSROOM. Kristin McCoy, Cody Whittenburg, Margaret Avard, Chemistry, Computer, and Physical Science, Southeastern OK State University, Durant, OK.

Thermochrons involve a technology that easily allows an individual to track temperatures over a given period of time. This innovation is commonly used in an industrial/manufacturing setting, but is now being utilized to explore the natural environment around us. They can be used effectively in any science classroom; students may conduct basic temperature-related scientific experiments of their own design.

03.03.02 SNOW PIT STRATIGRAPHIC ANALYSIS. Cody Whittenburg, Kristin McCoy, Margaret Avard, Chemistry, Computer, and Physical Science, Southeastern OK State University, Durant, OK.

As snow falls over time, distinct layers, known as strata, are formed. Information from these layers can be collected and used to reconstruct meteorological events such as periods of snowfall or rainfall and warming trends. Others, in turn, may use this data to improve weather models, make inferences about the impact of temperature change on winter habitat for various species, assess the impact of snowmelt on hydrological parameters, determine air quality, and issue public safety warnings.

03.03.03 STUDENTS PERCEIVE SERVICE LEARNING TO BE A BENEFICIAL COMPONENT OF COURSE CONTENT. Tawni Holmes, Dawn Riden, Human Environmental Sciences- Nutrition, University of Central Oklahoma, Edmond, OK.

Service learning is gaining support in the University environment as an effective teaching method for educating college students. It is meant to enhance the concepts studied in the classroom while providing students an actual experience and providing support to the community. The objective of this project was to assess students’ reactions to the integration of a service learning component in a course. Students (n=19) in a Community Nutrition course were anonymously surveyed after spending approximately 25 hours in the community facility of their choice. Students did tasks related to food service and delivery (n=14), creating and providing nutrition education (n=13), and other nutrition related tasks. Overall, students indicated that they had positive experiences. Students felt that their time was productive (n=18) and that they were able to accomplish course objectives (n=19). Students agreed (n=10) or strongly agreed (n=8) that by engaging in this activity they learned more about their community and what they could do to help others. Students (n=18) also agreed that it helped the community. Facilities were also surveyed and had an overall positive response. Based on the results of the survey, a service learning component is being integrated into other appropriate courses.

03.03.04 MOTHER’S PERCEPTIONS OF THE EFFECTS OF SHELTER RESIDENCY ON THEIR CHILDREN. Brittny Caldwell, College of Education and Professional Studies, University of Central Oklahoma, Edmond, OK.

This study gathered information about the views mothers have on the effects of intervention and prevention programs offered to their children while living in a domestic violence shelter. The study is based on the premise that intervention and prevention programs for children living with domestic violence are important in assisting children through traumatic events they may have experienced while living in a violent home. Us-
ORIENTAL PROGRAMS.

03.03.06          RESEARCHING INTERGENERATIONAL PROGRAMS. Julie Phillips, Human Environmental Science, University of Central Oklahoma, Edmond, OK.

Intergenerational programs allow older adults and younger generations to create a meaningful connection. The purpose of this study was to contribute to the understandings of the many benefits of intergenerational care and to understand the senior’s perspective of their involvement in an intergenerational program. The methodology of this study was of a qualitative nature. Selective highlighting was used to reveal themes after the data was collected from interviews and surveys. Intergenerational programs are very beneficial to everyone involved and they should be a part of every community.

03.03.07          CADMIUM-INDUCED BONE LOSS IN OVARIECTOMIZED RATS WAS EXACERBATED BY POTASSIUM PHOSPHATE AND MODERATED AT SOME LEVELS BY DRIED PLUM. 1 Amani Soliman, 1 Barbara Stoecker, 2 Bahram Arjmandi, 2 Du Yu Soung, 2 Lattah Devareddy, 1 Nutritional Sciences Department, OSU, Stillwater, OK. 74078. , Oklahoma State University, Stillwater, OK. 2 Department of Nutrition, Food, and Exercise Sciences, Florida State University, Tallahassee, FL 32306.

Cadmium (Cd) is a toxic heavy metal that has detrimental effects on bone mineral density (BMD). Chronic phosphorous (P) supplementation decreases bone mass through a decline in serum calcium concentration and resultant hyperparathyroidism. The purpose of our study was to examine the effects of Cd and P on bone and to test hypothesis that dried plum would ameliorate the detrimental effects of Cd and P on bone. Fifty, 90 day-old Sprague-Dawley rats were ovariectomized (OVX) and assigned to the following five treatments (n=10): 1) control, 2) 50 mg Cd/kg diet, 3)50 mg Cd/kg diet with 1.2% potassium phosphate (KPhos), 4)200 mg Cd/kg diet, and 5) 200 mg/kg diet with 1.2% potassium phosphate (KPhos). After 45 days of treatment, half the rats in each group had 15% dried plum added to their diets. This second phase of the experiment continued for an additional 3 months. At necropsy, the distal femur was scanned using microcomputed tomography (uCT) to assess microarchitecture of the trabecular bone and cortical thickness at midshaft. In the distal femur a volume of interest beginning 25 slices below the growth plate and consisting of 100 slices at 16.5 micron interval was contoured and evaluated Bone volume fraction was significantly lowered by Cd and by KPhos (p<0.0001 and p<0.0004, respectively). Trabecular number (Tb. N) was decreased by KPhos (p=0.04) while trabecular thickness (Tb.Th) and trabecular separation (Tb. Sp) were significantly increased by KPhos. Significant increase affect connectivity density (ConnD). In rats fed Cd, feeding...
KPhos reduced ConnD. Dried plum was beneficial in rats fed 50 ppm Cd but detrimental in those fed 200 ppm Cd with KPhos. Cortical thickness was decreased by Cd and by KPhos (p<0.0001) but increased by dried plum (p=0.002). Our results indicate that Cd causes loss of both trabecular and cortical bone. KPhos increased those losses. Dried plum increased cortical thickness while effect of dried plum on trabecular microarchitecture varied depending on the levels of Cd and the presence of KPhos.

**03.03.08** DOSE-DEPENDENT EFFECTS OF VITAMIN E ON LIPID METABOLISM AND Atherosclerotic Lesion Formation IN ORCHIDECTOMIZED RATS. 1 S. C. Chai, 1 E. A. Lucas, 2 C. Wei, 3 B. H. Arjmandi, 3 L. Devareddy, 4 S. A. Lightfoot, 5 B. J. Smith, 5 D. J. Brackett, 1 Department of Nutritional Sciences, Oklahoma State University, Stillwater, OK. 2 College of Agriculture, University of Maryland, College Park, MD. 3 Department of Nutrition, Food & Exercise Sciences, Florida State University, Tallahassee, FL. 4 Department of Pathology, University of Oklahoma Health Sciences Center, Oklahoma City, OK. 5 Department of Surgery, University of Oklahoma Health Sciences Center, Oklahoma City, OK.

Previously we have reported that supplemental vitamin E was incapable of preventing orchectomy-induced bone loss in rats. As part of the same study, we evaluated the dose-dependent effects of vitamin E on lipid profile and atherosclerotic lesion formation. Forty 12-mo old male Sprague-Dawley rats were either sham-operated (Sham) or orchidectomized (orx, three groups) and fed a control diet for 120 days. Thereafter, rats were assigned to the various treatment groups (n=10): Sham + 75 IU vit E; Orx + 75 IU vit E, Orx + 250 IU vit E, or Orx + 500 IU vit E per kg diet. After 90 days of treatment, rats were necropsied and tissue samples were collected. Total cholesterol concentrations due to orx in a dose-dependent manner. Triglycerides tended (P=0.1152) to follow similar pattern. Superoxide dismutase (SOD), an enzyme that plays a crucial role in the detoxification of products resulting from oxidative stress, was increased by orx and further enhanced by vitamin E. More importantly, vitamin E at the two higher doses protected against lipid accumulation within the vascular wall of the aorta and may therefore provide some anti-atherogenic effects. Future studies are needed to investigate the anti-atherogenic potency of vitamin E and its mechanism of action.

**03.03.09** EFFECT OF BLUEBERRIES ON the anti-atherogenic potency of vitamin E and its mechanisms. Future studies are needed to investigate the aortic and may therefore provide some anti-atherogenic effects. Blueberries have been shown to have a high antioxidant capacity. Sixty-two five-month old female Sprague-Dawley rats were either sham-operated (Sham) or Ovx and randomly assigned to one of five treatment groups (n=12-13/group), Sham + control, Ovx + control, Ovx + 2.5% BB, Ovx + 5.0% BB, or Ovx + 7.5% BB. After 90 days of treatment, rats were necropsied and tissue samples were collected. Total cholesterol increased due to Ovx, but all three doses of BB were not able to prevent the Ovx-induced rise in serum total cholesterol. Triglycerides and liver cholesterol was not altered by Ovx and dietary treatment. The results of this study indicated that the hypercholesterolemic effects of ovariecetomy were not prevented by the doses of blueberry used in this study. Although lipid profile was not positively modulated by the doses of blueberry used in this study, blueberry may still help reduce CVD risk by its antioxidative and anti-inflammatory properties.

**Kinesiology, Health Studies & Special Services**

**03.04.01** COMMUNITY HEALTH EDUCATION IN RIO BRAVO, MEXICO: APPLYING LESSONS LEARNED IN THE CLASSROOM TO REAL LIFE EXPERIENCE. Albani Milton-Smith, C. Diane Rudebock, Ed.D., R.N., Cindy Eaton, J. Sunshine Cowan, MPH, CHES, Department of Kinesiology & Health Studies, Community Health Program, University of Central Oklahoma, Edmond, OK.

A UCO Community Health team traveled to Rio Bravo, Mexico, to provide health education on diabetes, hypertension, and personal hygiene. This education
Musculoskeletal disorders are common among agricultural workers. Among agricultural workers, dairy farmers have been identified as being at risk for knee osteoarthritis. Physical risk factors that may contribute to knee osteoarthritis include awkward postures of the knee. The purpose of this study was to quantify knee flexion exposure among dairy farmers 1) while milking and 2) while feeding in two common types of milking facilities (stanchion and parlor).

Methods:
Twenty-three dairy farmers performed milking and feeding tasks, 11 worked in a stanchion milking facility, and 12 worked in a parlor milking facility. An electrogoniometer was used to measure knee flexion during 30 minutes of the milking and feeding tasks. A split-plot repeated measures ANOVA was used to test for statistically significant differences in exposure to knee flexion while milking and feeding in both stanchion and parlor facilities.

Results:
Stanchion milking results in a greater magnitude and duration of knee flexion exposure compared to feeding in a stanchion, and milking and feeding in a parlor. All tasks (milking and feeding) and milking facilities (stanchion and parlor) result in exposure to knee moments and compressive forces which are greater than what is experienced while rising from a chair.

Conclusions:
The results suggest that working in stanchion milking facility results in greater exposure to physical risk factors for knee musculoskeletal symptoms such as awkward postures compared to working in a parlor milking facility. The results of this study may lead to future studies on ways to prevent exposure to knee flexion.

Education

TUTORLESS PROBLEM-BASED LEARNING GROUPS IN A MEDICAL SCHOOL.
Laurie Clark, Christopher Thurman, Danny Thomason, Sherril Stone, Stephen Eddy, Department of Family Medicine, Oklahoma State University Center for Health Sciences, Tulsa, OK.

Problem-based learning (PBL) has become a popular teaching method in medical schools because of its emphasis on developing problem solving skills as well as course content. Typically PBL depends on the availability of significant numbers of faculty to function as small group "tutors" and is therefore very resource intensive. This study compared achievement of content knowledge and student satisfaction in tutorless and physician facilitated small groups in a 2nd year medical school course and found no significant difference in these areas between the two groups. The one significant difference found was that students in groups with tutors worked longer than those without tutors.

ASSESSMENT OF KNEE FLEXION DURING WORK TASKS OF DAIRY FARMERS.
Matthew Nonnenmann, 2 Daniel Anton, 2 Fredric Gerr, 2 John Yack, 1 Occupational Safety and Health, Southeastern OK State University, Durant, OK. 2 Occupational and Environmental Health, University of Iowa, Iowa City, IA.

Background:
Musculoskeletal disorders are common among agricultural workers. Among agricultural workers, dairy farmers have been identified as being at risk for knee osteoarthritis. Physical risk factors that may contribute to knee osteoarthritis include awkward postures of the knee. The purpose of this study was to quantify knee flexion exposure among dairy farmers 1) while milking and 2) while feeding in two common types of milking facilities (stanchion and parlor).

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Conclusions:
The results suggest that working in stanchion milking facility results in greater exposure to physical risk factors for knee musculoskeletal symptoms such as awkward postures compared to working in a parlor milking facility. The results of this study may lead to future studies on ways to prevent exposure to knee flexion.
atory study investigating the attitudes toward the HPV vaccination. It is anticipated that attitudes towards immunization will affect the use and acceptance of the vaccine. Based on the results of this study, health care professionals can anticipate obstacles to the use of the vaccine.

03.04.05 IS DEAFNESS A CULTURE?. Michelle Williams, Carmalaeta McQuay, Jimmy Mitchell, Paul Emrich, Sally Clark, Human Resources, East Central University, Ada, OK.

Differing views on deafness can create confusion and misunderstanding. Two predominant views include the pathological model viewing deafness as a potentially treatable disability while the cultural perspective views deafness as a norm with a unique cultural identity. This study investigates attitudes of hearing individuals towards deafness as a unique culture and expert opinions of leaders in the field of Deafness. Semi-structured interviews and surveys are used to examine attitudes of hearing individuals and interviews are used to discover opinions from experts in the field of Deafness. Results can be used to help educate people on the variety of views towards deafness and increase cultural sensitivity towards deafness as a unique culture.

03.04.06 IMPACT OF IRON SUPPLEMENTATION ON IRON STATUS OF COLLEGIATE CROSS COUNTRY RUNNERS. Jeff Williams, Susan Payne, Kinesiology, East Central University, Ada, OK.

The objective of this study was to determine the effects of supplementation on low iron status in male and female collegiate cross country runners. Seven female and 13 male collegiate cross country runners between the ages of 18 and 23 completed baseline and post-testing blood analysis of iron status. Baseline tests revealed that 50% of males and 63% of females had below normal ferritin levels. Only one male and one female had below normal hemoglobin levels. Runners identified with low levels of ferritin began supplementation with ferrous fumarate tablets for the duration of the competitive season (7 weeks). Post-testing revealed that 100% of females, but only one male on supplementation increased ferritin to normal levels. Of those with low hemoglobin, 100% returned to above normal levels. These results indicate that male endurance athletes do in fact experience similar rates of iron deficiencies as females. However, iron supplementation alone was of no benefit for the male runners. This leads to additional research questions concerning maintenance of iron status in male endurance athletes.
tions were distributed among the class members.

03.05.03  EFFECTIVE BEHAVIOR SUPPORT: OKLAHOMA EDUCATORS’ RESPONSE OF CURRENT SCHOOL-WIDE POSITIVE BEHAVIOR SUPPORT PRACTICES. Melinda Anderson, TRIO McNair Programs, University of Central Oklahoma, Edmond, OK.

The purpose of this study is to investigate what kind of behavior support practices are currently found among various Oklahoma schools and whether these practices promote positive behavioral outcomes. The researcher hypothesized that graduate students would report satisfaction levels for current behavior support practices in statistically significant patterns. The researcher further speculated educators who have taught 6-10 years would be more likely to rate practices as being “in place” and not in need of much improvement than other experience categories. The researcher utilized a non-random convenience sample of 65 participants who were graduate students enrolled in educational classes. The researcher composed a 24 question survey using previously developed items from a study conducted by Lewis and Sugai (1999). Outcome of a frequency table was run on the educators’ response of satisfaction and the results failed a test of significant difference. Insights were gained from the given responses of the educators who were dissatisfied.

03.05.04  WILL YOUR GENERATION SUCCEED: AN INVESTIGATION OF FIRST GENERATION COLLEGE STUDENTS. Amy Boatwright, Anna Talkowska, Jayma Warren, Mary Hartley, Paul Emrich, Renee Hogue, Susan Stanford, Human Resources, East Central University, Ada, OK.

First generation college students (students whose parents did not graduate from a four year university), have unique needs that separate them from other students. Limited research has been done on the background characteristics of first generation college students at universities. This is a quantitative study surveying students at a regional university. This research project is focused on variables hindering student performance and academic decision making. A survey was administered to students at a regional university in the southwestern United States to investigate the success of first generation university students. It was hypothesized that first generation university students would experience more obstacles hindering success than other college students. Campus support services could use these results to address the unique challenges first generation college students encounter. Outcomes of this study can help increase retention and graduation rates of first generation college students.

03.05.05  POSITIVE DISCIPLINE PROMOTES A POSITIVE CITIZEN. Ashley McCann, Education, East Central University, Ada, OK.

“Don’t hit the puppy,” “stop kicking the table.” These are phrases commonly heard by children everyday. This paper will discuss different ways to discipline children in positive ways, how to handle misbehavior, and methods of discipline that promotes self worth. It will also discuss positive approaches to discipline; for instance, “touch the puppy gently,” or “keep your feet on the floor.” Changes in the words you say and the tone of your voice can mean a change in your child’s future.

03.05.06  HAS YOUR CHILD’S RECESS TAKEN A RECESS? Tiffani Sutterfield, Education, East Central University, Ada, OK.

“Ring! Ring! Ring! Line up students, it’s time for recess!” This is a phrase many students in America are not hearing in school these days. With so much emphasis on achievement in our school systems and with the Bush Administration passing the No Child Left Behind Act schools are forced to focus more on students’ success causing many schools to shy away from recess breaks. This paper will discuss how students benefit cognitively, socially, emotionally, and physically from recess. It will also look at how parents and educators can help get recess back in school for our students. With a little persistence hopefully all of our students will still be able to hear the recess bells ringing letting them know recess is over and it’s time for class.

03.05.07  THE INFLUENCE OF COGNITIVE STRATEGY INSTRUCTION ON STUDENTS’ SELF-EFFICACY, SELF-REGULATION, USE OF COGNITIVE STRATEGIES, AND WRITING PERFORMANCE. Mike Nelson, Bryan Duke, Professional Teacher Education, University of Central Oklahoma, Edmond, OK.

The purpose of this study was to determine the extent to which teaching overt cognitive strategies when using a writing rubric influences graduate students’ self-efficacy, self-regulation, use of cognitive strategies, and writing performance. Two sections of an introductory education research course participated in the study. One section received a rubric to guide their writing, while the other section received the rubric and participated in two sessions discussing strategies for effective technical writing (treatment). Treatment effects were found for self-efficacy in writing, self-regulated behavior, and use of cognitive strategies for writing. With regards to writing performance, students in the intervention scored themselves higher when it came to expressing ideas and accurately summarizing the empirical research articles.
03.05.08  THE INFLUENCE OF FLUENCY ON READING COMPREHENSION. Stacy Kipps, Education, East Central University, Ada, OK.

The theme for my research poster is The Influence of Fluency on Reading Comprehension. I will feature some of the techniques that are used in the classroom to promote fluent reading. I will show how increasing fluency directly relates to reading comprehension. Note: This poster is one in a series of three posters presenting The Influence of Fluency on Reading Comprehension. The other posters are presented by Renee Engel and Sarah Francois. If possible we would like to have our posters together. Thank you.

03.05.09  THE INFLUENCE OF FLUENCY ON READING COMPREHENSION. Sarah Francois, Education, East Central University, Ada, OK.

The theme for my poster will be the Influence of Fluency on Reading Comprehension. I will give the definitions for fluency and comprehension and how research has shown fluency is essential to reading comprehension. I will also give current strategies that are available for teachers to implement in their classrooms. Note: This poster is one in a series of three posters presenting information on, Influences of Fluency in Reading Comprehension. The other poster abstracts were submitted by: Renee Engel and Stacy Kipps. If possible we would like to be set up next to each other during the presentation. Thank you.

03.05.10  INFLUENCE OF FLUENCY ON READING COMPREHENSION AMONG GIFTED AND TALENTED STUDENTS. Renee Engel, Education, East Central University, Ada, OK.

This poster deals with the influence of fluency on reading comprehension among gifted and talented students. It will demonstrate why those students may or may not comprehend, while providing techniques to foster their development.

NOTE: This poster is one in a series of three posters presenting the “influence of fluency on reading comprehension.” The other poster abstracts were submitted by: Sara Francois and Stacy Kipps. If possible we would like to be set-up next to each other during the presentation.

03.05.11  DIFFERENT TYPES OF BEHAVIORAL MANAGEMENT TECHNIQUES USED IN EARLY CHILDHOOD CLASSROOM AND THE AFFECTS ON STUDENTS’ BEHAVIORS. Amanda Jarman, Early Childhood Education, East Central University, Ada, OK.

Every classroom of students is different, and every student is different as well, in regard to their behavior. It is left up to the teacher to determine what type of behavioral management techniques will accommodate the needs of his or her students. The purpose of this paper is to research different disciplinary tactics that have been used in an early childhood classroom, and to identify the effects that these tactics may have on the students’ behavior.

03.05.12  BRAIN DEVELOPMENT IN YOUNG CHILDREN. Retha Bennett, Education, East Central University, Ada, OK.

In this research paper, the development of the brain in young children will be discussed. There are many factors that contribute to child brain development. These factors include brain growth, synapses in the brain, nurture, and the learning processes of cognitive development as defined by Jean Piaget. This paper will examine the brain growth of a child, synapses, and what happens to the brain when synapsis occurs. The brain goes through many changes as a child matures and develops. Nurture, also contributes to the changes of the brain that occur in a child. A child’s learning process is made of several stages called cognitive development. This research also explores how the process of cognitive development occurs as a child is learning.

03.05.14  OKLAHOMA A+ SCHOOLS FINDINGS: PROMISING RELATIONSHIPS. 1 Bryan Duke, 1 Diane Jackson, 2 Charlene Dell, 2 Michael Raiber, 2 Nancy Barry, 1 Professional Teacher Education, University of Central Oklahoma, Edmond, OK. 2 School of Music, University of Oklahoma, Norman.

Oklahoma A+ Schools® is a whole-school reform model based around eight essentials: curriculum, multiple intelligences, collaboration, enriched assessment, experiential learning, infrastructure, school climate, and the arts. The current study was twofold. First, researchers compared the math percentages, reading percentages, and academic performance index (API) scores of schools involved in the Oklahoma A+ Network, with same district non-A+ schools with similar student populations. Second, researchers investigated students’ opinions of school characteristics. School data studied represented urban, suburban, rural, public, charter, religious and private schools throughout the state. Regarding the first prong, a series of t-tests comparing math percentages, reading percentages, and API scores for all students in A+ schools with their district averages for all students were run. Data reveal consistently higher scores (statistically significant at p < .05 for Years 2 and 3 and at p < .01 for Year 1) for A+ schools compared to their district averages in reading, math, and the arts. The current study was twofold. First, researchers compared the math percentages, reading percentages, and academic performance index (API) scores of schools involved in the Oklahoma A+ Network, with same district non-A+ schools with similar student populations. Second, researchers investigated students’ opinions of school characteristics. School data studied represented urban, suburban, rural, public, charter, religious and private schools throughout the state. Regarding the first prong, a series of t-tests comparing math percentages, reading percentages, and API scores for all students in A+ schools with their district averages for all students were run. Data reveal consistently higher scores (statistically significant at p < .05 for Years 2 and 3 and at p < .01 for Year 1) for A+ schools compared to their district averages in reading, math, and the arts. The current study was twofold. First, researchers compared the math percentages, reading percentages, and academic performance index (API) scores of schools involved in the Oklahoma A+ Network, with same district non-A+ schools with similar student populations. Second, researchers investigated students’ opinions of school characteristics. School data studied represented urban, suburban, rural, public, charter, religious and private schools throughout the state. Regarding the first prong, a series of t-tests comparing math percentages, reading percentages, and API scores for all students in A+ schools with their district averages for all students were run. Data reveal consistently higher scores (statistically significant at p < .05 for Years 2 and 3 and at p < .01 for Year 1) for A+ schools compared to their district averages in reading, math, and the arts. The current study was twofold. First, researchers compared the math percentages, reading percentages, and academic performance index (API) scores of schools involved in the Oklahoma A+ Network, with same district non-A+ schools with similar student populations. Second, researchers investigated students’ opinions of school characteristics. School data studied represented urban, suburban, rural, public, charter, religious and private schools throughout the state. Regarding the first prong, a series of t-tests comparing math percentages, reading percentages, and API scores for all students in A+ schools with their district averages for all students were run. Data reveal consistently higher scores (statistically significant at p < .05 for Years 2 and 3 and at p < .01 for Year 1) for A+ schools compared to their district averages in reading, math, and the arts. The current study was twofold. First, researchers compared the math percentages, reading percentages, and academic performance index (API) scores of schools involved in the Oklahoma A+ Network, with same district non-A+ schools with similar student populations. Second, researchers investigated students’ opinions of school characteristics. School data studied represented urban, suburban, rural, public, charter, religious and private schools throughout the state. Regarding the first prong, a series of t-tests comparing math percentages, reading percentages, and API scores for all students in A+ schools with their district averages for all students were run. Data reveal consistently higher scores (statistically significant at p < .05 for Years 2 and 3 and at p < .01 for Year 1) for A+ schools compared to their district averages in reading, math, and the arts.
utilized surveys and interviews. Students reported very favorable attitudes regarding their school experiences, specifically in that they find their schoolwork enjoyable, interesting, and challenging. Responses revealed somewhat lower ratings for the Choice scale.

**03.05.15 PRE-SERVICE TEACHERS’ UNDERSTANDING OF THE NATURE OF SCIENCE IN A REFORMED, STANDARDS-DRIVEN SCIENCE METHODS COURSE.** Monica Macklin, April Adams, Christol Pamela, Hurst Vicky, Underwood Melissa, Willingham Skyleen, Natural Sciences, Northeastern State University, Tahlequah, OK.

Science education in the United States has been the subject of many reviews and recommendations (AAAS, 1993; NRC, 1996, Rutherford & Ahlgren, 1990). Many of these documents express the importance of both the nature of science (NOS) and the process of science in science education. This poster documents the changes in pre-service teachers’ understanding of the NOS after taking a standards-based science content course. The course, Science in the Elementary School, is a requirement for all elementary education, early childhood education, and special education majors at Northeastern State University. The course teaches science through inquiry and attempts to help students integrate knowledge of science, learning, pedagogy and students. Discussions and interactions with groups and individual students are used to draw attention to important aspects of inquiry. The Student Understanding of Science and Scientific Inquiry is an instrument that assesses student understanding concerning the NOS and the scientific inquiry. It utilizes both Likert-items and open-ended responses. The instrument was given to 105 students as a pretest/posttest assessment. Pretest and posttest means were compared with a paired t-test. We will present the results, both Likery and open-ended responses for which there was a significant difference in the pre- and post-course scores and discuss how this innovative course might have resulted in significant student improvement concerning some aspects of the NOS.

**03.05.17 SELF-DETERMINATION THEORY AS A FRAMEWORK TO MEASURE ACADEMIC ENGAGEMENT IN ALTERNATIVE EDUCATION.** Cheryl Lovett, PTE, University of Central Oklahoma, Edmond, OK.

A primary objective of schooling in the United States is to prepare students to function effectively in adult society. Since about one-quarter of all students drop out of the traditional K-12 educational system before receiving their high school diploma (Kaufman et al, 2000), it is apparent that a significant population of Americans are beginning their adult lives with limited resources for contributing to our society (Massey & Thomas, 2000). The severity of these consequences to both society and the individual dropout has increased, posing serious social and economic concerns for our nation collectively, as well as for the dropout individually. Relevant to the social and economic costs of dropouts, the costs of developing effective intervention programs for potential dropouts is a seemingly cost effective option. Consequently, alternative education programs have been developed to serve these students deemed academically at risk for dropping out. The efficacy of these alternative programs, however, has yet to be established. Since the alternative school may be the last option for these students, establishing optimal conditions for maintaining academic engagement is of primary importance for alternative education programs. Using Self-Determination Theory (Deci & Ryan, 2001) as a framework, this study will investigate how alternative education settings support the academic engagement of alternative education students. A sub-theory of SDT, Basic Needs Theory, will be employed to examine how the basic human needs of autonomy, competence and relatedness predict academic engagement within the alternative education setting. Few studies have looked at the experiences of students within the alternative education setting to evaluate the impact of autonomy, competence, and relatedness upon their degree of academic engagement. Furthermore, the relative impact of these three needs upon the academic engagement of alternative education students has not been investigated. In an effort to better serve the academically at risk, it is imperative that a clear understanding of the motivational forces that under gird academic engagement is obtained. Therefore, it is the primary objective of this study to investigate how alternative education settings can be structured to better support students’ basic psychological needs.

**Psychology**

**03.06.01 HUMAN-WILDLIFE ISSUES IN THE KASOKWA FOREST RESERVE, MASINDI DISTRICT, UGANDA: PRIMATES, PEOPLE, AND CONFLICT.** 1 Donald Cole, 1 Jill Devenport, 2 Janette Wallis, 1 Psychology, University of Central Oklahoma, Edmond, OK. 2 Biology, ABTI-American University of Nigeria, Nigeria, Africa.

Human-wildlife issues continue in many parts of the world. This study aims to describe the perceptions about primates held by locals that use resources within the Kasokwa Forest Reserve, Uganda. Here, human-wildlife conflicts have resulted in injury or death in
both species. Many of the chimpanzees in the community have snare trap injuries and one adult male died from a trap injury. Two additional chimpanzees died in a fire during routine sugar cane harvesting. A human child was killed by a chimpanzee, and another was badly wounded by a chimpanzee attack. In Kasokw a, such conflicts may continue because many of the locals use the forest to obtain drinking water and plant crops up to the forest edge. This places humans directly in the home range of chimpanzees (Pan troglodytes schweinfurthii), and baboons (Papio anubis), which can be unsafe. A survey was developed to assess locals about fear, knowledge, and attitudes toward the primates. Locals perceive chimpanzees and baboons as dangerous (F = 54.23, p < .001), but report more fear toward chimpanzees (F = 64.58, p < .001) significantly over other primates. Next, it was found that locals harbor negative feelings toward crop-raiding baboons, while attitudes toward chimpanzees are positive (F = 54.10, p < .001). The results provide support for future educational programs about safety to reduce the negative consequences of human-animal conflict.

03.06.02 THE IMPORTANCE OF COMPANION ANIMALS IN EMERGENCY EVACUATIONS. Sherril Stone, Department of Family Medicine, Oklahoma State University Center for health Sciences, Tulsa, OK.

Due to the increasing natural disasters such as hurricane Katrina, wildfires, and the Asian Tsunami, individuals are beginning to make plans for emergency evacuation of their homes. Some disasters occur without notice and leave little or no time for people to gather any items before evacuating the home whereas other emergencies provide a few moments. This study examined the items that people would grab if they had time to do so during an emergency evacuation. Participants rank ordered the three items most important to them during an emergency evacuation. The participants reported that family/children, companion animals, and photographs were the three most important items they would take with them during an emergency evacuation. The participants listed a range of other items as important as well. However, they reported that they would refuse to leave the home without family/children and companion animals but would leave without the other items including photographs.

03.06.03 THE VALUE OF ANIMALS IN VACATION PREFERENCES. 1 Sherril Stone, 1 Patrick Tucker, 2 Dornan D’Arcy, 1 Department of Family Medicine, Oklahoma State University Center for health Sciences, Tulsa, OK. 2 Department of Geography, Central Connecticut State University, New Britain, CT.

Tourism is a vast, ever growing industry and competition for tourist dollars has increased significantly over the past few years. Amusement parks, cultural facilities, and recreational activities are promoted to potential tourists in an effort to attract them. Increasingly, locations with animal centered activities are touted as destinations for tourists. However, little is known about the role animals activities play in vacation preferences of tourists. This study examined the lure of animal related activities on the preferences of vacationers when presented with a choice between two trips: one with animal interaction and another without animal interaction. The results indicated that tourists chose more vacation packages that offered animal interaction activities than packages without animals.

03.06.04 SUPPRESSION GOALS AND CORRECTION FOR THE BIASING INFLUENCE OF ACCESSIBLE THOUGHTS IN SOCIAL JUDGMENTS. Robert D. Mather, Psychology, University of Central Oklahoma, Edmond, OK.

Many studies have shown rebound effects, in which judgments on a second task are congruent with the thought content suppressed in an initial task. Other research has found that participants with sufficient cognitive resources in a second task formed impressions that were incongruent with the thought content they had suppressed in an initial task. These divergent findings may have occurred because participants engaged in effortful correction for the biasing influence of accessible thoughts. Similar effects typically do not occur with concentration goals. I used an instructional manipulation of motivation to test this correction explanation. Participants unscrambled sentences by omitting a word to form either a positive or negative sentence about a person. They received either a negative suppression goal, a positive concentration goal, or no goal. Participants then watched a video of a child performing a spatial ability task with either motivating or nonmotivating impression formation instructions. Participants who pursued a negative suppression goal in the first task judged the child’s performance as more successful in the second task than did positive concentration participants, but only in the motivating condition. Findings suggest that effortful correction for the biasing influence of negative accessible thoughts occurred when participants followed suppression goals. The findings have implications for the conditions under which rebound and correction effects should occur.

03.06.05 TEACHER EFFECTIVENESS IN COUNSELING PROGRAMS: GRADUATE STUDENTS’ PERCEPTIONS. Sarah Deal, Psychology & Counseling, Northeastern State University, Broken
Determining what the best college teachers do to receive high student ratings can aid seasoned and/or new faculty in modifying and improving instruction. Investigation of exemplary teachers and teaching characteristics has become increasingly popular, as institutions of higher education place more emphasis on the scholarship of teaching.

The purpose of this research is to explore the perceptions of graduate students in Counseling programs throughout the United States concerning teacher effectiveness. Graduate students respond to an online survey created by the primary researcher. The questionnaire asks participants to indicate the level of importance of certain teaching characteristics, from “most important to possess” to “least important to possess” as well as provide opportunities to answer open-ended questions concerning teacher effectiveness. Although this is an ongoing survey, preliminary results indicate that students perceive the instructor’s knowledge of the subject matter as being the most important, followed by clear expectations, objectives, and presentation style, being available and helpful to students, possessing hands-on experience in the counseling field, demonstrating enthusiasm for the subject matter, being prepared and organized, encouraging discussion in class, and demonstrating an understanding of graduate students’ needs and the demands placed upon them. Qualitative written comments provide further insight into students’ perceptions.

**03.06.06 GAZE AS DEPICTED IN VERMEER’S GIRL WITH A PEARL EARRING.** Roger West, Hank VanVeen, College of Optometry, Northeastern State University, Tahlequah, OK.

Ten observers viewed Vermeer’s painting Girl with a Pearl Earring and estimated her direction of gaze when her eyes were exposed together and separately. The observers also viewed the painting when her eyes were digitally replaced by those from a real person. This study shows that Vermeer painted the girl’s eyes so that they matched the gaze of the real eyes with a precision of horizontal iris placement near the limits of visual acuity. It also demonstrates that Vermeer included three gaze illusions, none of which are documented to have been known in his time. When a model whose head is turned to one side gazes at an observer there is an illusion that she is looking to the side of the observer away from the direction of the head turn. This study shows that Vermeer painted his model’s eyes to reveal this illusion rather than painting a direct gaze by changing her true iris location. We also found that both painted and digital eyes confirm previous reports that when a model’s eyes are viewed separately, rather than gazing in the same direction, they appear to gaze temporally relative to one another. And, when a model’s head is turned and both eyes are viewed, the perceived direction of gaze follows that of the nearer eye.

**03.06.07 ACADEMIC DISHONESTY IN POSTSECONDARY EDUCATION.** Latricia Patmon, McNair Scholars Program, University of Central Oklahoma, Edmond, OK.

The purpose of this study was to determine how students perceive different behaviors of academic dishonesty and if those perceptions differed between genders. The researcher administered surveys to 147 undergraduate students attending a medium sized university during the summer semester. After collecting the data, cross tabs, frequencies, independent t-tests, and ANOVA tests were run to conclude if there was in fact a gender difference in perceptions of academic dishonesty. The results revealed a statistical significance in gender on certain behaviors, however, no significance was found when examining the overall data.

**03.06.08 THE EFFECTS OF GENDER AND ETHNICITY ON ACCURACY, RESPONSE TIME, AND EYE MOVEMENT.** Chris Copeland, Benjamin Gruel, Melton David, Mueller Conrad, Psychology, University of Central Oklahoma, Edmond, OK.

Eyewitness recall has become a particular concern for law enforcement officials because DNA evidence has recently exonerated inmates who were mistakenly identified by eyewitnesses as perpetrators. Such evidence poses the question: How trustworthy is eyewitness recall? A 2 (white/black male) X 2 (white/black female) factorial design was used to measure the impact of gender and ethnicity on response time, accuracy, and eye movement in a facial recognition task. The data were analyzed with a 2between X 2between participants MANOVA. Results suggest that eyewitness recall is consistently inaccurate, especially when the perpetrator is of a different race than the participant. The data therefore support the hypothesis of own race bias in memorization and recognition of faces.

**03.06.09 GOSSIP AND PERFORMANCE.** Wes Hanneman, David Holt, Tiffany Swyden, Williams Jeremy, Professional Studies in Psychology, University of Central Oklahoma, Edmond, OK.

Gossip is a social comparison phenomenon that is currently under researched. Gossip is involved in our everyday lives and a negative connotation is usually associated with it. The question arises, however, what is the effect of type of gossip on simple task performance? In the study, simple task performance was analyzed using gossiping behavior, both negative and positive aspects of the phenomena. The design is a 1 by 3 between
subjects design, including a control group. The results are inclusive and reveal results in all treatment groups. These results have lead to more aspects of gossip that need to be studied.

03.06.10 GENDER DIFFERENCES IN COPING RESPONSES TO SAME-SEX AND OPPOSITE-SEX SEXUAL HARASSMENT. Rhiana Wegner, Travis Tubré, Department of Psychology, University of Wisconsin - River Falls, River Falls, WI.

Sexual harassment research has primarily focused on cases involving opposite-sex interactions, leading to a biased representation of the incidence and nature of sexual harassment. This study presents a comparative assessment of female/male similarity and differences in potential coping responses to both opposite-sex sexual harassment (OSSH) and same-sex sexual harassment (SSSH). College students (n=453) read three scenarios describing behavioral examples of one of the three major categories of sexual harassment (i.e., gender harassment, unwanted sexual attention, and sexual coercion). They were asked to imagine that the behaviors in the scenario were happening to them. Next, they completed a modified version of the Coping with Harassment Questionnaire (CHQ; Fitzgerald, 1990), which asked about their likelihood of engaging in five potential coping responses to the hypothetical harassment (i.e., denial, avoidance, confrontation/negotiation, social coping, and advocacy seeking). Results showed that men’s responses to SSSH were significantly more negative than their responses to OSSH. Men’s responses to SSSH were more closely aligned with women’s responses to both SSSH and OSSH. We suggest that including SSSH scenarios in sexual harassment awareness training interventions may increase male participants’ understanding of the importance of avoiding behaviors that may be interpreted as sexual harassment.

03.06.11 RELATIONSHIP BETWEEN RELIGIOUS EXPOSURE AND SELF-CONCEPT AS AN EXPLANATION FOR INDIVIDUAL INFLUENCES. Darshon Anderson, McNair Scholars Program, University of Central Oklahoma, Edmond, OK.

This study sought to examine the relationship between early religious exposure (emphasis on specific behaviors) and an individual’s self-concept. It was hypothesized that individuals with parents who emphasized religion in the home and exposed them to religion often will have a higher self-concept, versus individuals with little or no exposure and emphasis. Because of the continued development of identity and self-concept during adolescence and young adulthood, it was also hypothesized that the younger participants who experienced higher religious emphasis would also have a higher self-concept apart from the rest of the group. The participants were 123 undergraduate and graduate volunteers from the University of Central Oklahoma and employee volunteers from Oklahoma Farm Bureau Mutual Insurance Company. The researcher developed a 42-question survey using previously developed surveys that included religious participation and self-concept. The first correlation calculated between the religious participation score and the total self-concept score produced no significance. A one-way analysis of variance also revealed no significance between age groups. The findings of this research did not concur with the findings of previous studies and the results indicated that early religious emphasis (exposure) did not correlate with a higher self-concept.

03.06.12 EXAMINING THE LINGUISTIC STYLE OF LIARS AND TRUTH-TELLERS ACROSS TWELVE DATA SETS. Rachael Ross, Angela Price, Juliana Stewart, Mary Dzinodlo, Psychology and Human Ecology, Cameron University, Lawton, OK.

Detecting deception is an important skill. Unfortunately, reviews of the psychological literature on the detection of deception tend to find accuracy rates of between 45 and 60% when the chance level is 50% (cf., DePaulo & Friedman, 1998). The Linguistic Inquiry Word Count (LIWC; Pennebaker, Francis, & Booth, 2001), which determines the relative frequency of using more than seventy word categories, has been found to be useful in detecting deception (Newman et al., 2003). Consistent with theories suggesting that people try to distance themselves from the lie, Newman et al. found liars used fewer first person pronouns when lying than telling the truth. The guilt and anxiety hypothesized to be experienced by participants as they lie were also found into their deceitful communications. Participants expressed more negative emotions when lying than telling the truth. Finally, the cognitive energy necessary to create the lie was greater than that needed to write honest messages leading deceitful communications to have less cognitively complex language. This poster summarizes results from 12 data sets in which Cameron University students lied and told the truth about one of several different topics (e.g., attitudes toward music, physical fitness routines). Although certain trends exist within each study, a clear pattern of findings across all 12 data sets did not emerge. Results consistent with that of Newman et al.’s are highlighted. Using the LIWC to detect deception may be useful in some contexts, but its usefulness is limited.

03.06.13 INVESTIGATING THE EFFECT
OF ALEXITHYMIA ON DREAMS. Jeri Randolph, TRIO-McNair Scholars Program, University of Central Oklahoma, Edmond, OK.

The purpose of this study was to investigate the effect alexithymia has on dreaming. Alexithymia is a condition in which individuals have trouble identifying or describing emotions, and lack or have little fantasy thought ability. The proposed hypothesis is that the higher the level of alexithymia the less frequent and meaningful the dreams. The researcher surveyed students attending a mid-sized university in the Midwest. The study had 162 total volunteer participants, 28 (17.28%) were male and 134 (82.72%) were female. The majority of participants were Caucasian (66.05%) within the age range of 21-29 (69.14%). Of the participants, 5.5% were found to be classified as alexithymic. The study utilized two research instruments: the Typical Dreams Questionnaire (TDQ; Nielsen, T.A., Zadra, A.L., Simard, V., Saucier, S., Stenstrom, P., Smith, C., & Kuiken, D., 2003) and the Toronto Alexithymia Scale (TAS-20; Bagby, R.M., Parker, J.D.A., & Taylor, G.J., 1994). A negative correlation was found between dream frequency and the alexithymic factors, this supported the suggested hypothesis.

03.06.15 STRABISMUS AND THE PERCEIVED DIRECTION OF GAZE. Roger West, Jennifer Stuteville, Jeremy King, College of Optometry, Northeastern State University, Tahlequah, OK.

People who have strabismus (a misalignment between their eyes) suffer psychological and social consequences. In social encounters, it is often difficult to determine whether they are looking at you, and even if they do they may look odd. While ocular alignment can be improved by surgery or vision training, in many cases those therapies are ineffective or too costly. We propose a technique which strabismics can use to improve their appearance simply by redirecting their gaze. We photographed a model gazing in different horizontal directions, and digitally edited the photos to simulate different amounts of horizontal strabismus combined with different amounts of lateral gaze. Twenty-two observers then looked at each photo and noted whether they perceived eye contact and a normal appearance. They reported that the model appeared to look normal and to give them eye contact 70% of the time for up to 18 prism diopters of outward deviation and 12 of inward deviation when she looked half her prismatic deviation to the opposite side of her strabismus. Even directing gaze toward the eye that tended to balance the misalignment rather than the “wrong” eye gave a noticeable improvement. We conclude that strabismics can improve their cosmetic appearance and make observers feel that they are being looked at simply by changing their direction of gaze. This technique should be especially useful during critical situations such as in a job interview or when being photographed.

03.06.16 AN INVESTIGATION OF IRONIC EFFECTS IN VISUOMOTOR TASK PERFORMANCE. Adam Randell, Chris Hart, Derek Fillmore, Psychology, East Central University, Ada, OK.

The theory of ironic processes suggests that when we intend to perform some behavior or mental task, that intent leads to an outcome that is sometimes, ironically, opposite that which was intended. For instance, people trying to fall asleep quickly often take longer to fall asleep, and people attempting to put a thought out of mind often find that very thought more intrusive. In the context of ironic effects of motor control, there has been a relatively little study; however, one group of investigators did determine that those people actively avoiding specific motor outcomes in a golfing task and in a pendulum movement task were more likely to produce the avoided behaviors than those who were not trying to avoid such behaviors. The present study expands the investigation of ironic effects of visuomotor control by examining the role of ironic processes in visuomotor tasks associated with popular sporting activities.

03.06.17 IMPLICIT DETECTION OF DECEPTION: LOOKING FOR CHANGE. Derek Fillmore, Adam Randell, Chris Hart, Psychology, East Central University, Ada, OK.

Humans are typically very poor lie detectors. Most people, even those in occupations that place emphasis on detecting deception, typically perform only slightly better than chance when trying to determine if others are lying. One reason for the poor performance in lie detection could be that most people simply look for the wrong cues of deception. In this study, two groups were shown videos of people lying and telling the truth. One group was instructed to identify liars. The second group was instructed to identify people whose behavior changed. It was found that those simply looking for be-
havioral change were much more successful at sorting liars and truth-tellers. The results of this study suggest that implicit attempts to identify liars may be more successful than explicit strategies.

03.06.18 THE EFFECTS OF SUGGESTION ON EARYWITNESS MEMORY. Amanda Bassett, Danielle Box, Ryan Long, Psychology, University of Central Oklahoma, Edmond, OK.

This issue is important because it shows the potential for eliciting false information from witnesses and could serve as a guide for investigators to use in order to ensure accuracy in the information they get from ear witnesses who could potentially be testifying in cases. The study looked at the effects of misleading postevent questions and negative feedback on eyewitness testimony. Participants listened to an audio clip of an armed robbery, and answered questions regarding the clip, several of which were suggestive. The data were analyzed with a 2 (male and female) x 3 (immediate, delayed, and no repeat) between participant ANOVA.

03.06.19 ABSTRACT. Mekay Bixby, Holly Swain, Mitchell Hubbard, Stacy Cornelius, Psychology, University of Central Oklahoma, Edmond, OK.

Undergraduate psychology students volunteered to participate in a mock crime study. Participants listened to an audio-taped crime and completed a questionnaire to test for accuracy of recalling the details of the event. Half of the participants received the crime only in the right ear (control) and half of the participants received the crime in the right ear and a conversation (distraction) in the left ear simultaneously. We found more accuracy of recall in the control group then in the distraction group. To measure accuracy of recall a 1 (percent correct) x 2 (control/distraction) design was used. We analyzed the data using a t-test for two independent variables. In relation to earwitness testimony, this procedure generalizes to court proceedings, law enforcement, or validity of testimony.

03.06.20 DIFFERENCES BETWEEN REGULAR AND SOCIAL SMOKERS. Kathryn Werdin, Richard Seefeldt, Psychology, University of Wisconsin - River Falls, River Falls, WI.

300 undergraduate participants were classified into one of the following categories: non-smokers, social smokers, ex-social smokers, daily smokers, ex-daily smokers, irregular smokers, and ex-irregular smokers. Between-group comparisons were made regarding Big Five personality characteristics, self-efficacy, attribution style, health-related attitudes and motivation for smoking behavior. Implications for differences on these variables with regard to smoking education and prevention programs are discussed.

03.06.21 RELATIONSHIP BETWEEN MUSICAL AND SPIRITUAL IDENTIFICATION. Joaquin Laws-Rodriguez, TRiO McNair Scholars Program, University of Central Oklahoma, Edmond, OK.

The purpose of this study is to examine the relationship between music and spiritual identification. Participants of the study completed a survey containing questions pertaining to musical ability-background, music appreciation, and spirituality. Statistical analysis was performed on the data to examine the relationship between music and spirituality. The researcher hypothesized those individuals who scored highly on a music appreciation scale would also score highly on a spirituality scale and vice-versa. Results from this study support the initial hypothesis of the researcher. Analysis of the data showed a statistically significant correlation between the Music Appreciation Scale and one of the spirituality subscales, Religious Well-Being. Further analysis also validated the Musical Ability-Background and Religious Well-Being Scale developed by the researcher for use in this study.

03.06.22 DOES EDUCATION AFFECT COLLEGE STUDENTS’ ATTITUDES TOWARD ABORTION? Cinda Dailey, TRiO McNair Scholars Program, University of Central Oklahoma, Edmond, OK.

The purpose of this research is to examine whether education influences a person’s attitude towards abortion. This study focused solely on education as an influential factor because education differs in context from other influential factors, such as religion. The researcher surveyed 30 male and 69 female (N=99) undergraduate students at a Midwestern University. Education was measured using the ordinal rankings of freshman, sophomore, junior, and senior commonly used in college classification. The researcher administered a 19-item survey, modified from Parson’s (1990) Reasoning About Abortion Questionnaire (RAQ), consisting of 13 statements coded as either pro-choice or pro-life. A One-way ANOVA was run for statistical analysis. Due to the large error rate and small sample size, statistical analysis reflected no significance between the variable groups. The findings of this study did not support the hypothesis that education would significantly affect an individual’s attitudes towards abortion. There were many limitations to the study and the researcher believes with a larger sample size, differences among groups may have been significantly different. Further research in this area with groups of drastically different educational levels is encouraged.

03.06.23 EFFECTS OF MUSIC TYPE ON EMOTIONAL PERCEPTION. Joaquin Laws-Rodriguez, Amanda Windell, Anthony Durham, Psychology,
University of Central Oklahoma, Edmond, OK.

The effects of music type on emotional perception have been evidenced in advertising, work productivity, and psychotherapy. Awareness of said effects may help consumers recognize the strategies used by advertisers in order to increase sales; increase work productivity by changing the working environment; and enhance the quality of treatment sessions. The current study examined the question, does music type affect response time in individuals when presented with emotional adjectives that correspond to visual stimuli? A 1x3 (positive music, negative music, control) between-subjects design was used to measure the impact of music type on response time to corresponding emotional adjectives in visual stimuli on undergraduate students. The data were analyzed with a 1x3 between subjects ANOVA.

03.06.24 THE RELATIONSHIP BETWEEN TRUST AND PERCEIVED UTILITY OF HUMAN AND AUTOMATED AIDS. Juliana Stewart, Angela Price, Mary Dzindolet, Rachael Ross, Psychology and Human Ecology, Cameron University, Lawton, OK.

The underlying assumption in providing an automated decision aid to a decision-maker is that the human computer “team” will be more productive than either the human or the automated aid working alone. Unfortunately, a growing body of literature indicates this assumption is not valid (e.g., Parasuraman & Riley, 1997). Automation reliance is complex and involves a variety of factors including automation reliability, perceived utility, and trust. In this study, one aspect of Dzindolet, Pierce, Beck, and Dawe’s Framework of Automation Use is examined, specifically, the relationship between perceived utility and trust. Seventy-two Cameron University students were given the option of relying on human or automated aids as they performed a soldier detection task. Attitudes toward the reliability and trustworthiness of the aids were assessed. Most of the results were consistent with the Framework of Automation Use. Implications for future research are discussed.

03.06.25 THIRTY YEARS OF WIN-SHIFT: A LITERATURE REVIEW AND CRITIQUE. Jill Devenport, 2 Jarred Jenkins, 2 Lynn Devenport, 1 Psychology, University of Central Oklahoma, Edmond, OK. 2 Psychology, University of Oklahoma, Norman, OK.

Persisting unchallenged for 30 years is the claim that animals employ a “win-shift” foraging strategy. Win-shift or its counterpart, “win-stay”, is regularly invoked in the comparative psychology and behavioral ecology literature, but based on a review of this literature, we conclude that the concepts have little merit. Neither of these rules-of-thumb gave structure to the reported results, except for instances in which choice behavior was explicitly shaped by reward contingencies over many trials. Of the studies that actually investigated strategic behavior, we found that path choices were not based on what animals took or “won” from a patch. Rather, choices were based on what was not taken, and therefore remained available for further harvest. Animals appear to retain a rough estimate of the amount of food remaining upon departing a patch and use a “what’s left” strategy in subsequent decisions. Across various species and designs, the critical variable governing return patch visits was degree of depletion.

03.06.26 MEMORY RECALL OF ALIEN LANGUAGE WHEN TAUGHT USING AN IMAGERY BASED METHOD. Kelly Lodes, Andrea Mills, Psychology, University of Central Oklahoma, Edmond, OK.

Is there a difference in memory recall when using the rote method versus an image linking method? More specifically, does linking an image with a vocabulary word have a significant effect on memory recall of the word? Undergraduate psychology students were shown a slide show containing 30 content slides, each including an alien word, its English translation, pronunciation, and a clue linking the alien word with its English translation. Additionally, the slides for the experimental group included a visual image depicting the clue. After completion of the slide show, participants were given a matching quiz. Results are discussed in terms of the effect of visual clues on memory recall of vocabulary words.

03.06.27 REMEMBERING CRIMINAL FACES: ATTRACTIVE VERSUS UNATTRACTIVE. Trina Kelly, Beth Peters, Shaun Rose, Department of Psychology, University of Central Oklahoma, Edmond, OK.

Do people remember attractive faces more than unattractive faces? Specifically, does the attractiveness of a criminal’s face affect whether or not an eyewitness will remember them? Undergraduate psychology students viewed a series of slides in session one of either attractive or unattractive faces (depending on which trial group they were randomly assigned to) and were told that these were the faces of criminals that recently burglarized a store. Then in session two those same attractive or unattractive faces from session one were randomly mixed with other neutral, filler, photos in a slide show viewed by the participants after a break between session one and two. During session two, the participants were asked to indicate which photos they remembered from session one. Results are discussed in
terms of the comparison of the number of attractive versus unattractive faces the participants remembered.

03.06.28 **‘MESSING WITH THE MIND’: FALSE MEMORIES OF A PERSON IN AN EVENT.** Angela Woodruff, Margaret Peters, Sarina Tessneer, Psychology, University of Central Oklahoma, Edmond, OK.

Can a memory of a person be encouraged? More precisely, can adding a new person to a previously seen event create a false memory of that person? Undergraduate college students viewed two versions of a mock restaurant scene within a two day period. The second version incorporated a new person that was not seen in the first. Participants were then asked, “Do you remember viewing this slide during Part 1?” and “How confident are you in your answer?” The results are discussed in terms of the effect of clip type, old or new, on the percentage ‘yes’ responses received.

03.06.29 **THE PRIMING EFFECTS OF TODAY’S SOCIETY ON ETHNIC INFERENCESE.** Cinda Dailey, Carenda Woolridge, Gary Roberts, Ryoko Ohashi, Psychology, University of Central Oklahoma, Edmond, OK.

Priming cues will produce different inferences about ethnic groups. Will different priming cues affect the response time of participants when constructing negatively biased sentences? The participants were randomly placed in one of three groups containing the following independent variables of priming cues: negative-bias, positive-bias, and neutral. The participants looked at thirty slides containing fifteen neutral and the remaining fifteen slides contained the biases according to each of the three groups. After the priming slides concluded, the participants were then given a paper containing six scrambled racist statements and twelve unrelated or neutral statements that they were instructed to unscramble and make into a complete sentence. The response time of the participants was measured in seconds according to how long it took them to unscramble and complete the sentences. The negatively primed group will complete the sentences in a significantly shorter amount of time than the positive and the neutral groups.

03.06.30 **EFFECT OF LEADING QUESTIONS ON EYEWITNESS MEMORY.** Fatemeh Radmard, Psychology, University of Central Oklahoma, Edmond, OK.

Do leading questions contaminate eyewitness memory? I had participants view three clips of crimes, to include: a jewelry robbery; shooting; and attempted mugging. After each clip participants were asked to answer questions regarding details of the viewed crime. Undergraduate psychology students in the control groups were asked unbiased questions, and in the experimental groups participants were asked leading questions. Results are expected to show a difference in the percentage of questions answered correctly between the control and experimental groups.

03.06.31 **THE PUBLIC PERCEPTION OF ETHNIC IDENTITY DURING ADULTHOOD.** Johna Davis, McNair Scholars Program, University of Central Oklahoma, Edmond, OK.

The purpose of this study is to examine and observe the perception of ethnic identity, knowledge, group-esteem and exploration in adults. By studying the importance of each component, the researcher hypothesized that the individuals were uneducated in regards to their ethnic identity and that Caucasians will show the most prominence in group-esteem and exploration. This is significant to society so that individuals can be better informed of strengths and weaknesses within their ethnic group. Students of six different ethnic backgrounds from a midwestern university participated in this study. The results were run by frequency tests and Pearson’s Correlation to determine the significant difference in the categories of knowledge and group-esteem and exploration.

03.06.32 **EFFECT OF ADJUSTMENT STYLES ON RACIAL PREJUDICE PT2.** Jarice Carr, TRiO McNair Scholars Program, University of Central Oklahoma, Edmond, OK.

The purpose of this study is to identify if there is any correlation between attachment styles and racial bias. In the researcher’s original study a correlation was identified between attachment styles and racial bias. In the current study the researcher seeks to resolve some of the areas of the study that may have caused the research to be flawed. In order to do this the researcher will change some key aspects of the original study such as the instruments used to measure racial prejudice and attachment, the race and sex of the person conducting the test, and the population tested. The researcher maintains the hypothesis that people who have non-secure attachment styles will be more likely to exhibit racist ideals and opinions. Those individuals with secure attachment styles will exhibit more egalitarian opinions on race and there will be significant difference between the scores of the individuals who were surveyed by an African-American administrator and a Caucasian administrator.

03.06.33 **EMOTIONAL AND BEHAVIORAL CHARACTERISTICS OF CHILDREN WITH FUNCTIONAL FECAL RETENTION.** Alexis Dugger, Psychology, Langston University, Langston, OK.
Previous studies on functional fecal retention report that the gastrointestinal disorder is associated with emotional and behavioral problems but not at a clinically significant level. This study aimed to investigate the psychosocial, parental stress, ADHD, and behavioral problems of children with functional fecal retention (FFR) compared to the normal population. A total of 59 Kansas University Medical Center patients aged 1-16 years were studied. Psychological tests were given pre and post FFR treatment to the children and parents. Children with FFR had elevations on psychological tests compared to the general population but mean scores were not in a clinical range for any subscale. In conclusion, psychological problems were found to be more prevalent in children with functional fecal retention. While psychological problems had slightly higher prevalence in the studied children they were not an issue for the majority of the subjects. The research implied that children with functional fecal retention could be better treated by a pediatrician then a psychologist or psychiatrist.

03.06.34 THE FACE OF DECEPTION. Kimali Howard, Mickie Vanhoy, Department of Psychology, University of Central Oklahoma, Edmond, OK.

Deception is an integral part of communication: the ability to both deceive and detect deception can give an organism an edge. For humans, subtle changes in facial expression and features might signal an act of deception. In Experiment one, we videotaped participants speaking about 2 things he or she felt pleasantly about and 2 things that he or she felt negatively about. We then taped participants lying about the truthful statements. We trained ourselves on the Facial Action Coding System (FACS) and then extracted 2 microexpression still clips of each participant truth-telling and 2 stills of each subject lying. We then coded each still based on the FACS. We compared the action units (AUs) of the truthful clips with the AUs of the lying clips. Participants in Experiment two viewed video clips of the males and females from Experiment one lying or truth-telling and were asked to make judgments on the truthfulness of each picture. Factor analysis was used to determine: the accuracy of the general population in a deception detection task, visibility of which facial features are gazed at to determine deception, and increase or decrease in interest for deceptive versus truthful faces (as measured by pupil dilation on the Eyetracker).

03.06.35 THE EFFECT OF ETHNICITY ON FACIAL RECOGNITION. Tychala Bruner, Amanda Adams, Michael Tomlin, Stefanie Harrington, Stela McCullough, Psychology, University of Central Oklahoma, Edmond, OK.

This study examined the effect of ethnicity on facial recognition. Does a person’s ethnicity bias his or her ability to identify a suspect? It is important to find out if using an eyewitness in court is an effective way of identifying a criminal. Participants viewed two video clips consisting of an African American male suspect and a Caucasian male suspect, and then asked to identify the suspects in the video clips from a picture lineup. The design used to study the effect was a 2 (ethnicity of participant) x 2 (ethnicity of suspect) ANOVA. Results indicated no differences among the participant’s ability to correctly identify the suspect, regardless of the ethnicity of the suspect and the ethnicity of the participant.

03.06.36 LEARNING PHOTOSHOP VIA ON-SCREEN VIDEO-BASED PROCEDURES. Annette Moulder, Dr. Abbas Johari, Jamie Crow, Jason Cobb, Multimedia Design, Cameron University, Lawton, OK.

This presentation will report on status of an undergraduate research study on learning a Photoshop skill via on-screen video-based procedural tutorial. Often, text-based procedures do not report on all necessary instructional steps to accomplish tasks. These procedures are out of date, time consuming, and challenging to develop. Contrarily, Captivate(â—“) -- a product from Macromedia -- automatically records all onscreen REAL actions performed by experts and then instantly creates interactive video-based movies that are extremely rich in detail and completeness.

Thirty two students from three beginning classes in multimedia have been randomly assigned to one of two treatments, the video-based procedures and the non-video-based treatment. The time required to complete this task for both treatments will be recorded. The result and in-depth literature review of this study may benefit those who are interested in conducting research on visual/film instructional procedures in learning computer-skills. Presenters will display actual treatments and its detail construction via an online e-portfolio.

03.06.37 INTERPARENTAL CONFLICT AND CHILD ADJUSTMENT:AN OVERVIEW. Yin Hwee Chua, Psychology, University of Central Oklahoma, Edmond, OK.

Conflict within the family is recognized as one of the risky family characteristics. Numerous studies have reviewed the topic on the effects of divorce on children’s maladjustment. Over the years, the research on conflict-adjustment has advanced from identifying aspects of marital conflict that are related to child functioning, to identifying specific factors and leading towards causal explanation. This paper reviews two major theories in the field: cognitive-con-
textual framework (Grych & Fincham, 1990) and emotion-regulation theory (Davies & Cummings, 1994). Other cognitive processes as the mediating factor for childrenâ€™s adjustment to marital conflict are also examined. Current issues in methodology and research design are discussed and recommendations for future research are summarized.

03.06.38 THE EFFECTS OF CELL PHONE RINGING IN COLLEGE AND HIGH SCHOOL CLASS ROOMS, AND THE DISTRACTION THEY CAUSE WHILE STUDENTS ARE TAKING A TEST. jonathan manning, crystal abram, kristen dahle, psychology, University of Central Oklahoma, Edmond, OK.

The purpose of this study is to determine whether cellular phones in classrooms are a distraction to students, with an emphasis on ring tones. The reason for this study is to evaluate if the distraction of cell phones ringing during a test will affect student test scores. The current study used 3 subjects (math, history, and visual) to test participants. Researchers divided participants into 2 groups. The control group received no distraction while taking tests and the experimental group received the distraction of a polyphonic ring tone during testing. The experimental group received 4 different ring tones throughout the testing. The researchers further divided the groups according to which of the 3 tests they would be taking. A 3 (test A, test B, test C) x 2 (control/experiment) design was used to measure the affect of distraction on test scores. We used an analysis of variance statistical test to compute the gathered data. Our study generalizes to college and high school classrooms.

03.06.39 EFFECTS OF SELF-EFFICACY AND SELF-TALK ON HIGH AND LOW PRESSURE PERFORMANCE. Rachel Ferren, Heather Shea, Psychology, University of Central Oklahoma, Edmond, OK.

Does self-talk and self-efficacy affect performance on a task? Specifically, does positive or negative pressure affect performance on either a creative or structured task? Undergraduate psychology students were asked to either create a house out of legos or follow a picture model of a house that they had to replicate out of legos. Before they began, the experimenter created a positive or negative pressured environment which they had to work under to complete the house in three minutes or less. Results are discussed in terms of positive or negative pressure on either a creative or structured task performance.

03.06.40 STUDENT SUCCESS IS CENTRAL. Angela Knight, J.D., Lorry Youll, Ph.D., Mark Hamlin, Ph.D., Funeral Service, University of Central Oklahoma, Edmond, OK.

Students enrolled in a course designed to increase academic performance and reduce attrition rates (i.e., college success) were asked to identify what they considered to be the most valuable skills gained from the course. Rates and level of achievement along with skills identified as being important by the students with a high level of achievement in the college success course were compared against a control group that consisted of students enrolled in a General Psychology course during the same semester.

03.06.41 HUMAN PERCEPTION OF CANINE EMOTION. Heather Rabalais, Psychology, University of Central Oklahoma, Edmond, OK.

Perhaps the 4.7 million dog bites each year that require medical attention are due in part to the fact that the bite victim did not recognize the dog’s warning signals. Can people recognize dog emotions as accurately as human emotions? Presumably, people who can recognize the threat or fear displays of dogs would avoid contact with them. In this study, participants viewed three-part slides of human faces and dog faces. The top center of the slide contained a photo of a human face or a dog face. If the face was human, the bottom two photos on the slide were dogs and vice versa. Participants, in a matching task, selected which bottom photo best matched the expression of the top center photo. The accuracy and response time results have implications regarding the annual $102.4 million in estimated hospital expenses and $1 billion in homeowners’ liability claims.

03.06.42 JUST NOTICEABLE DIFFERENCE AND TEMPO DRIFT. Kimberly Thomas, Psychology Department, University of Central Oklahoma, Edmond, OK.

Rapid perception of change in environmental energy is important for survival. This study applies Weber’s law to perception of tempo change using sound waves to simulate environmental energy shifts in a response time paradigm. Two independent variables; beginning tempo and direction of change each have two levels; slow-(43bpm) & fast-(75bpm) and increasing and decreasing tempo respectively. Using Windows Mediaplayer, participants in this totally within-subjects design were exposed to each of four listening conditions; slow-up, slow-down, fast-up and fast-down; in two blocks of 24 trials. Participants used standard closed-ear headphones for listening and responded with a wireless mouse as change was perceived. They verbally reported whether the change was an increase or decrease. The measures recorded were the change in beats per minute (bpm) before detection occurred and the accuracy of the de-
cision. The null hypothesis holds that if Weber’s law does not apply to tempo perception, there will be no difference in detection time between conditions. In four studies, each with 10 participants, a significant main effect between Slow and Fast beginning tempo in both directions was consistently found (p

03.06.43 COLLEGE FEMALE ATTITUDES TOWARD PERFORMING FELLATIO. Dennis Kramer, Regina Cowan, Stephanie Garrison, Steve Brewer, Thuytien Mai, Social & Behavioral Sciences, Rogers State University, Claremore, OK.

Results of a recent national survey of selected sexual and health behaviors suggest that the lifetime prevalence of oral sex among teenagers has increased in recent years. The Center for Disease Control and Prevention estimates that more women ages 15-17 have engaged in oral sex than vaginal intercourse. That same study reports that more than half of all teenagers ages 15-19 had acknowledged having given or received oral sex. If oral sex is becoming more common, it is important to understand one’s attitudes and motivations. The present study represents an initial attempt to understand female attitudes toward fellatio by soliciting responses from a college age population. To this end, 228 college females volunteered to complete a sexual behavior inventory that asked them to report on a wide range of sexual behaviors and attitudes. One open-ended question asked these women to describe their attitude toward performing fellatio. Five raters independently and reliably classified each narrative as belonging to one of seven mutually agreed upon motivational categories as well as whether the narrative indicated a positive or negative attitude overall. Results indicated that most women expressed a positive attitude toward fellatio, while 5% explicitly stated it was demeaning. Attitude was related to age and several measures of sexual experience. The desire to please was the most frequently given reason for performing fellatio, followed by the need to reciprocate.

03.06.44 HEMISPHERIC DIFFERENCES IN LANGUAGE PROCESSING. J. Michael Bowers, Shelia Kennison, Psychology, Oklahoma State University, Stillwater, OK.

The research investigated how the left and right hemispheres of the brain are involved in word perception. We conducted a series of experiments that used the divided visual field technique to measure the speed at which participants could perceive words. Using this technique, words are briefly presented to the left or right visual field (i.e., right or left hemisphere, respectively). In Experiment 1, participants viewed brief presentations of letter strings and were instructed to judge whether the letter strings were words or non words. In Experiment 2, participants viewed brief presentations of words and were instructed to name words as quickly as possible. In both experiments, the visual field in which the letter string/word appeared was varied (i.e., left vs. right). Words were either those that had been learned early in childhood, specifically prior to the age of four, or those learned later in life. The third factor that was varied was the order of presentation. Words were presented either in a random order or in blocks corresponding to semantic categories (e.g., animals, body parts, food items, or clothing). The blocking condition was expected to cause participants to develop expectations for additional words belonging to the given category. The results of both experiments showed that the right hemisphere is involved in the perception of words learned early in childhood to a greater extent than in the perception of words learned later in life when words are presented in a semantically blocked format. The research is important because it shows that there are circumstances in which words are perceived more rapidly by the right hemisphere than the left hemisphere.

03.06.45 THE EFFECT OF THE SHIFTING STANDARD ON SOCIAL PERCEPTION. Nolan Lawless, Mary Lawless, Psychology, Southwestern Oklahoma State University, Weatherford, OK.

This study investigated attitudes towards minority groups as a function of experience using the shifting standard paradigm, which is used to measure prejudicial attitudes which are often masked by “political correctness”. Data was gathered via completion of questionnaires and surveys. The subjects were drawn from psychology classes at the university, and included any university students over the age of 18 who wish to participate. Results and implications will be discussed.
frames dominated both sides of the debate. For the purpose of this research, we asked questions such as “who is quoted or described most often” as playing the dominate role at framing or defining the debate. From the analysis of the statements that we coded as causal agents, we found that the largest percentage of statements were framed from the challengers’ view. The majority of moral judgments justifying actions and recommendations for treating the problem were dominated by the President and his supporters.

04.01.03  MEDIA BEHAVIOR PATTERNS OF THE UNIVERSITY COMMUNITY. Lindsay Kight, Daniel Henson, Sachiko Miyaura, Yumi Kashiwagi, Communication and Art, Northeastern State University, Tahlequah, OK.

The purpose of this study was to determine the media behavior patterns and their differences for the university community. A pen and pencil questionnaire was used to measure the respondent’s media usage patterns. The independent variables are type of media and the type of university community member. The dependent variable is media usage patterns. A convenience sampling technique was used to select the sample. The data was analyzed with SPSS. Descriptive statistics were used to describe the media usage patterns of each type of university community member.

04.01.04  THE DIFFERENCES BETWEEN AMERICAN AND JAPANESE DATING PRACTICES IN THE NSU COMMUNITY. Daniel Henson, Sachiko Miyaura, Paul Westbrook, Communication and Art, Northeastern State University, Tahlequah, OK.

The purpose of this study was to identify differences in dating practices between Japanese and American students and the ways in which those differences might interfere with the ability of Japanese and American Students to form close relationships. At first, collective and individualism characteristic were defined. Then comparisons are listed from the beginning of relationships to the end of relationships. Finally, Japanese and American couples’ problems and ways to solve problems were researched. Japanese girls and American boys in the NSU community in Tahlequah were interviewed in private settings.

04.01.05  OWNERSHIP TYPE AND NEWS QUALITY: A PILOT TEST OF THE INDIANAPOLIS TV MARKET. David Scott, Mike Chanslor, Communication Studies, Northeastern State University, Tahlequah, OK.

Questions regarding the quality of local news, regardless of the medium, are of primary importance in a news-rich democratic society. Classical democratic theory suggests citizens must be well informed on local
issues via an independent press that provides governmental accountability. We seek to explore the issue of ownership type and the quality of local news by advancing the argument that television news quality may be assessed using an investment model of news. We predict an inverse relationship between the relative investment of resources made in the production of local news at a given local television station and the size of the media group. The larger the media group, the fewer resources devoted to locally originated news stories. A pilot test of an investment model of television news quality in the Indianapolis television market yielded mixed results regarding the hypothesized relationships between the quality of local television news and broadcast station ownership. However, the limited findings would seem to support FCC regulations that would allow consolidation on a regional level or across media types. This regulatory approach could create strong local or regional based ownership groups that would not dominate a single market but could pool newsgathering abilities on a local or regional scale (as opposed to a general syndication of generic news stories being disseminated through local affiliates).

**04.01.06 THE ALTERNATIVELY CERTIFIED TEACHER: THEIR STORY.** Dana Eversole, Barbara Fuller, Renee Cambiano, Communication, Northeastern State University, Tahlequah, OK.

Quality teachers have an impact on improving student learning and performance, but teacher shortages remain a problem for Oklahoma secondary education facilities. This study examines three different areas with a high concentration of alternative certified teachers. It looks at the process of obtaining alternative certification, the background of the individuals seeking alternative teaching credentials versus the traditional method, and the response of administrators hiring alternative certified teachers.

**04.01.07 A STUDY OF A RELIGIOUS ASSOCIATION: IDENTIFYING AND INTERPRETING SYMBOLS OF ORGANIZATIONAL CULTURE.** Lisa Lipson, Communication, Southeastern OK State University, Durant, OK.

Cultural symbols include the language, customs, artifacts, and beliefs of a group. A cultural study involves conducting observations and interviews of these. One level of observation involves tangible artifacts that make the organization unique. Another level involves identifying values held by the members. For the purpose of this study, I observed a religious association that provides support for its members. I first observed the tangible artifacts such as materials in a book case and artwork. Other tangible artifacts included the arrangement of office furniture. Next, I observed the second level of cultural symbols by interviewing administrators about their values and personal mission. The respondents also completed a questionnaire with open-ended questions about their personal mission, importance of their responsibilities, and forms of communicating in the organization. I also conducted a text analysis by reading the association’s employee handbook about the mission statements and values to understand its culture. From observing the tangible artifacts and gathering information about the values, I concluded that the culture of the association is a family-oriented organization that is operated like a business. Although it has a board of directors and executive committee, the administrators act as parents in that they want to support the needs of members. Also, while their primary responsibility is mission work, they seem most concerned with the welfare of their local members.

**04.01.08 START TALKING AND GET TO WORK: ANALYSIS OF COMMUNICATION PROBLEMS IN A SCHOOL DISTRICT.** Jessi French, Jeffery Inman, Communication, Southeastern OK State University, Durant, OK.

In a study of a school district, I investigated four types of communication activities: information management, problem solving methods, motivating workers, and conflict management. I interviewed the organizational members by asking questions about their communication activities. Information management problems involved the methods of communicating. Supervisors did not have consistent methods of communicating with the campuses in the district. A form of communicating with one campus involved leaving memos in faculty boxes without confirmation that memos had been received. At another campus, the workers having phones in their classrooms were able to have immediate contact. While each campus had computers, they were not networked. Supervisors have little face-to-face contact with the different campuses. Problem solving procedures were also difficult because there was no clear method for identifying and voicing problems. Managing conflict was concern in that supervisors were viewed to develop relationships with one campus more than others. Finally, having clear procedures for motivating employees and teachers was problematic. There was not a reward system and many workers seem to be apathetic. After researching the communication problems in this school district, I concluded that increased technology would alleviate many communication problems. Based on my study, I developed an intervention plan for this organization. This workshop will be described in the poster presentation.
04.01.09 THE EYES HAVE IT: THE RELATIONSHIPS BETWEEN EYE CONTACT, SELF-ESTEEM AND SUCCESSFUL JOB PLACEMENT. Julie Penn-White, Amanda Thompson, Michelle Breithaupt, Communication & Theatre, Southeastern OK State University, Durant, OK.

Vocational rehabilitation specialists are responsible in part for returning individuals to the work force; therefore, this research examined what these experts perceive the relationship to be between eye contact and self-esteem, and their significance to successful job interviews. Results from this study indicate that eighty percent of the vocational rehabilitation specialists surveyed agreed that self confidence and self esteem were highly associated with gazing (eye contact). Ninety percent reported that eye contact or lack of eye contact in a job interview would, in fact, determine if a person would or would not be offered the position. These responses indicate that vocational rehabilitation specialists are aware of the correlation between eye contact and self esteem, and the subsequent impact upon successful job offers. These results further support the notion that what and how individuals communicate with their eyes can have a direct effect upon their success and/or relationships in the work place.

04.01.10 THE SPIRITUAL ANTECEDEMTS OF ABRAHAM LINCOLN’S RHETORIC. Ronald Price, Communication, Cameron University, Lawton, OK.

In previous research, the author has written on Lincoln’s virtues, the 2nd inaugural, and an analog criticism of the Cooper Union and Gettysburg Addresses. In this study, the analysis extends to the spiritual antecedents of Lincoln’s rhetoric. To fully understand Abraham Lincoln, the “rhetorical” President, it is essential to comprehend, at least in part, the historical and developmental aspects of his growing religious convictions.

This study was funded, in part, by a grant from the Communication Department of Cameron University and included study at Lincoln Memorial University, Harrogate, Tennessee and the Disciples of Christ Historical Society Museum, Nashville, Tennessee.

04.01.11 THE IMPORTANCE OF NONVERBAL COMMUNICATION TO THE MEANING OF MESSAGES. Justin Faulkner, Matt Moyer, Communication & Theatre, Southeastern OK State University, Durant, OK.

This study shows the importance of nonverbal communication to the meaning of messages. This study was conducted through surveys at a local regional university in southern Oklahoma. Results from this study indicate that the importance of nonverbal communica-

tion depends highly on the person taking it and what kind of educational background they have. Those surveyed from the school of business, teachers and communication put an emphasis on nonverbal communication, while those surveyed in safety courses put little importance on nonverbal communication. Woman rate nonverbal communication at 57.8 percent while men rate it at 48.4 percent. This study shows the amount of meaning that has to do with nonverbal communication is 53 percent in comparison to earlier studies which showed 69 percent. Our research proves the results of surveys is dependent on who is taking the survey.

04.01.12 THE TRAILS AND TRIUMPHS OF A HEALTH CAMPAIGN. Wayne Janoe, Communication & Theatre, Southeastern OK State University, Durant, OK.

Health promotion campaigns are a vital mode of communication which provide a vehicle for keeping the society safe and healthy. This health promotion campaign includes efforts to influence large numbers of people to engage in health-promoting behaviors. The purpose of this campaign is to educate college students about fitness and life choices and the implications of these choices. This campaign provided information to college students on various elements of unhealthy lifestyles, especially obesity. This analysis of a characteristic health communication focuses on real-life lessons in carrying out a campaign on a small college campus. To surpass the barrier of delivering a message where people have “heard it all before,” this study was presented in a new, fresh manner that originated from peers. This advertising and marketing program was extensive utilizing campus media outlets and various campus organizations. The goal of this campaign was to be an agent of change. While largely successful, the campaign featured short-comings. Additional exploratory research is recommended to examine the suitability of the communication approach before developing full-scale campaigns.

04.01.13 HEALTH COMMUNICATION CRUCIAL TO MEDICAL MISSION. Erin Sloan, Michael Wallace, Communication & Theatre, Southeastern OK State University, Durant, OK.

Medical Missions provides free medical services to low socio-economic patients who lack insurance and the financial means to obtain medical care. This study shows the increasing number of people who lack health insurance and do not receive governmental assistance. This study was designed to examine how Medical Missions influences health communication. Research was conducted in a volunteer capacity. The medical staff was professional and friendly, providing patients
a sense of comfort from the moment they entered the door. This research proved that most of the people who see the medical staff at Medical Missions were of low socio-economic status. Patient response to a more relaxing and informal environment was a sense of comfort and even laughter. This study shows a direct result of good communication between volunteering staff, when working with each other and while assisting patients. This research demonstrates the importance of health communication.

04.01.14 STUDENTS ATTITUDES TOWARD PRE-SHOW ADVERTISING AT THE MOVIE THEATRE. Lynne Jonesl, Heather Owens, Mass Communication, Northeastern State University, Tahlequah, OK.

The purpose of this study was to determine moviegoers’ attitude toward the pre-show advertisements. A convenience sample of 97 college students was selected. Only respondents who attended theaters on a regular basis were used. A pen and pencil survey was used to collect the data. Students’ attitudes toward the types of pre-show material were measured on a 6-point scale and analyzed with SPSS. The results found parts of the pre-show were liked better.

04.01.15 ADVERSE ADVERTISING. Chelsea Ryman, Communication & Theatre, Southeastern OK State University, Durant, OK.

An estimated 73 million children under the age of 18 live in the United States. Studies show that watching television is the most popular activity for the majority of these children. The average child watches 27 hours of television a week. Advertising agents view children as an important target of the $894 million spent for general advertisements and the $36 billion spent for food advertisements. Excessive television viewing has been linked to obesity in children. Studies show up to 95 percent of food advertising during the prime of children’s television viewing time is fatty or sugary foods. This research was conducted in a health class of 25 fifth graders. This study was based on observing the contents of snacks and lunches over a three month period and asking children about eating habits at home. This research shows that fast-food advertisements have an affect on food choices. This research suggests a high correlation between fast foods and the number of hours spent watching television. Based on the study group, students were not as affected by television advertisements as previous studies show.

04.01.16 RADIO’S EFFECT ON HEALTH MEDIA MESSAGES. Matt Moyer, Jessica Rollins, Communication & Theatre, Southeastern OK State University, Durant, OK.

Media messages play an important role in everyday lives. Research shows the effect of media messages and the outcome of those messages on a campus environment. The purpose of this study is to better understand the far reaching effects of media messages as they apply to public health concerns on a campus environment. Fifty random people were surveyed concerning public service announcements on the Domestic Violence March and Candlelight Vigil. Thirty-two had heard the PSA. Forty-four people surveyed heard the announcement on the Anger Management Workshop, 25 random people heard the PSA on the on the Sexual Assault Workshop and 35 heard the announcements about Fight the Freshman 15. This study was limited to broadcasting point of view. Research shows that with fliers and other print media, information is more difficult to get to the public. A public service announcement can provide all the information a person needs by listening to a 30 second spot.

04.01.17 EFFECTIVE LEADERSHIP IN SMALL GROUP SETTINGS. Kendall Adams, Jesse Doyle, Justin Faulkner, Matt Moyer, Summer Magby, Communication & Theatre, Southeastern OK State University, Durant, OK.

Communication scholars identify communication and organization as essentials for effective leadership. This research team conducted a survey of 77 faculty members on campus. Members of the research team compiled information and compared data to previous studies. This research indicates that the leadership qualities deemed important by university faculty are the same leadership skills that general organizations find most important. Research and previous studies agree that communication, professionalism and organization are top leadership qualities. The results of combined studies support the findings that professionalism, communication and organization are vital to the leadership of a small groups’ success.

04.01.18 NATIVE AMERICAN CHURCH: THE HIDDEN RELIGION. Merry Buchanan, Steven Pratt, Communication, University of Central Oklahoma, Edmond, OK.

This research addresses the decline in membership and participation in the Osage Indian Native American Church. Specifically, this study investigates the current state of the NAC among the Osages, the quasi-Osage culture that has been borrowed from the NAC, and reasons why the Ki-kon-ze is the hidden religion of the Osage Indians.

04.01.19 PERFORMANCE AND RELATIONSHIPS ON THE PLAYING FIELD: AN ANALYSIS OF INTRA-TEAM COMMUNICATION. Shaylon
Carter, Communication, Southeastern OK State University, Durant, OK.

This project examines the effects of communication activity among football players during their performance. Several studies have examined communication and other aspects of teamwork (e.g., Anshel, 1994; Bowers, Jentsch, Salas, & Braun, 1998; Connelly & Rotella, 1991). For example, some communication acts can cause players to have a negative attitude, which can cause them not to perform at a high level. Other studies have correlated team communication as it relates to leadership, motivation, principles of feedback, and conflict resolution. The purpose of this study was to examine different methods of intra-team communication between players. To examine team communication, I assessed differences in verbal and nonverbal communication during successful and unsuccessful plays by the team. Specifically, I examined (a) what are players’ differences in communication patterns during successful and unsuccessful plays, (b) which communication patterns are more likely to occur; and (c) whether players differed in terms of non-verbal communication during successful and unsuccessful plays. Communication events during practice were used for the analysis. To ensure that certain types of communication were captured, observations of players as well as a survey given to the players were used. I found that, for successful plays, the team members communicated more and used more positive words. For unsuccessful plays, the team members communicated less and used negative talk.

04.01.20 READING THE AMBIGUITIES OF THE GAY MALE BODY IN ADVERTISING AND FILM. Kole Kleeman, Mass Communication, University of Central Oklahoma, Edmond, OK.

Since the early nineties, due to the political and economic manifestations of the gay and lesbian movement, we are witnessing the re-discovery of the beauty of the male body. This paper will examine the production and reception practices of the newly discovered beauty of the male body in film and advertising. My analysis will examine semiotically the newly emergent objectified and sexually ambiguous coding of the male body observable in Calvin Klein, Abercrombie Fitch and Diesel ads. I will trace the genealogy of these ads. to a largely gay male aesthetics of the body. In addition to advertising strategies of marketing the gay male body as spectacle and “object of desire” the discussion of the pan-sexuality of star images in film will be another focal point of analysis. The sexual ambiguity of Hollywood stars such as Jean-Claude Van Damme and Keanu Reeves will be discussed in terms of their ambiguous masculine performativity and extratextual marketing strategies in the tabloid press for Van Damme to reasonate or be homologous with upwardly mobile gay male consumption patterns. Keanu Reeves will be decoded for the ambiguous bisexual masculinity he portrays in various film performances. My paper will show how gay male bodies and their re-definitions of masculinity are penetrating mainstream advertising and film culture.

04.01.21 WHAT WE WERE PROMISED. Tiffany Budorf, Mass Communication, University of Central Oklahoma, Edmond, OK.

First we must define and get to know the “Comfort Women,” and how they came to be. Next, the fact that the media had just started covering the sensitive issue, and finally, what is being done now to help the women tell their stories. I will explain what a “Comfort Women” is and the horrifying history behind their courageous story, and then I will explain what has been covered by the media and what has not been covered by the media, and finally I will examine the efforts that are being made to make sure that the stories of these brave women never die.

04.01.22 THE LIBERAL AND CONSERVATIVE BIAS OF THE PRINT MEDIA. Elizabeth Rhodes, Mass Communication, University of Central Oklahoma, Edmond, OK.

The New York Times and The Oklahoman are known for their bias. The New York Times have in many examples shown the liberal bias and anti-republican views of the author in the articles. In the same likeness The Oklahoman is overtly conservative in their views and use of photography. The bias is shown not only as a reflection of the writers but in the journalism schools that they attend. My paper will make an agreement for bias teaching in schools and the reflection they have on the journalist and the newspapers they work for.

04.01.23 STEREOTYPING OF ETHNIC WOMEN IN AMERICAN MEDIA AND ADVERTISING. Chandra Nalln, Communication, University of Central Oklahoma, edmond, ok.

The mass media has played an important role in creating images of ethnic groups for decade. The ability to do so makes print, news and television media one of the most powerful resources on the globe. On a daily basis, individuals are constantly being bombarded with images of how American society defines ethnicity. Many ethnic groups are victims of these stereotypical images. Along with ethnic groups, comes the misconception of the ethnic woman.Women in the media already face subjective ness, due to the gender roles placed on society. The perceived images of ethnic women condemn them to lower intellectual and social society. The main
focus of this paper is to take a look at the stereotypes of ethnic women by identifying and analyzing how they are perceived in America. The stereotypes of African-American women in the media and advertising. African-American women have been the victims of stereotypical images for centuries and the negative images of Black women serve to support an oppressive patriarchal system that degrades and denigrates them according to race, class and gender. Stereotypes of Muslim Immigrant women in the media. Islamic women’s identities have been misunderstood for a number of years and after September 11, 2001, America was changed forever by the attacks that took place. Stereotyping of East Indians women and the media and producing Indian culture. East Indian women are also victims of America’s false perceptions and the American culture has not even placed these women into mainstream media. Being able to identify what the stereotypes are that come along with groups of ethnic women will help to recognize the issue and by analyzing these characteristics will help diminish them.

04.01.24 VOICE VS. FACE VS. CONTENT.
Josh Cantrell, Chris Jamar, J.T. Proffer, Communication & Theatre, Southeastern OK State University, Durant, OK.

When in conversation, a listener must take into account all forms of verbal and nonverbal messages, in order to interpret what the speaker is trying to communicate. Previous studies show that facial expressions have the most impact on a listeners’ perception of a speaker’s attitude. Studies have also found that vocal cues have more impact than verbal messages when in conversation. In this study, we set out to determine whether the average adult believes they focus more on vocal cues, facial expressions or the actual content of the message when listening to a speaker. We conducted interviews with random adults, along with conducting a simply survey with straightforward questions about general conversation. Our results show that 60% of individuals pay more attention to facial expressions, followed by a vast difference of 25% who reported actual verbal messages to be the most influential. Vocal cues were perceived to be significant by 15% of the participants. This study supports the notion that facial expression is more influential than verbal content when interpreting messages; conversely, the present research does not support the notion that tone takes precedent over verbal codes.

04.01.25 IDENTITY ADVERTISING AND THE FALSE QUEST.
Lacey Boaldin, Journalism/Mass Communications, University of Central Oklahoma, Edmond, OK.

Her own sense of being in herself is sup- planted by a sense of being appreciated as herself by another (Berger 46). John Berger’s timeless words from Ways of Seeing (1972) define a tragic flaw in the female psyche placed upon her and within her from childhood by a culture of voyeuristic advertising and media-constructed cages. The cage is mass media’s cultivation of self-viewership that inwardly overrides self-acceptance, and replaces it with outer self-reconstruction. In Naomi Wolf’s The Beauty Myth (1991) she powerfully recognizes that in fact, “The contemporary ravages of the beauty backlash are destroying women physically and depleting us physiologically. If we (women) are to free ourselves...it is a new way to see” (Wolf 19). So well-constructed are these attractive barriers, and so primitive their origination that males and females, products of their environmental hazards, believe that the cage is a part of who they are, instead of a prison they are taught to step into. For women and their male counterparts respectively, media advertisements focus on self in the guise of viewing, coveting and emulating the outer-selves of projected others, resulting in a dangerously false quest for independence and identity. The false search for and coexisting need for independence is incentive enough to equate beauty with power. And symbiotically, beauty is defined overwhelmingly by the runways and television screens of America. American culture is dominated by the few wealthy advertisers, filmmakers, and the clustering of overpaid celebrities. Thus, Americans’ self-identification is found only through the re-creation of the seemingly “normal” self, imposed by the relative few, expressed ironically as the presumed majority. How can women escape constant surveyal in a society in which their very power lies in their subjectivity to men? Likewise, the attainability of popular culture’s standard is questionable if not destructive to the self-esteem of male consumers striving, like their female counterparts, to achieve the American dream’s belonging and independence through the power of a superior image. My analysis is of these images themselves and the paradigm they present to society.

English

04.02.01 TEACHING CONFORMITY IN KURT VONNEGUT’S “HARRISON BERGERON”.
Lexi Stuckey, English, University of Central Oklahoma, Edmond, OK.

This paper examines Vonnegut’s short story, “Harrison Bergeron,” and its context in order to show how the work’s theme can be easily misinterpreted. The sto-
ry is a simple but powerful tale that, some decades later, has emerged from its humble beginnings to find a place in many an English class’s list of discussion exercises. “Harrison Bergeron” is commonly accepted as a satirical warning against the dangers of enforced equality, but my argument is that a close reading of the text and information from and about Vonnegut reveals that the story may actually advocate for conformity.

The essay will explore the work’s historical context, the depiction of its three main characters, the plot climax, and its resulting meaning, continuing on to the author’s politics, quotes, and reflections on this work specifically in order to illustrate how muddled this once-thought-crystal-clear theme actually is. Are we as teachers unwittingly and ironically taking the form of Vonnegut’s Handicapper General, doing our students a disservice by ourselves conforming and teaching that only one message can be taken from this story?

04.02.02 THOMAS JEFFERSON’S SENSE OF HUMOR. Kevin Hayes, English, University of Central Oklahoma, Edmond, OK.

Dumas Malone’s magisterial six-volume biography of Thomas Jefferson remains a scholarly landmark in American history, yet there is one problem that pervades the work. Malone never recognized Thomas Jefferson’s sharp wit and brilliant sense of humor. Rather, Malone goes out of his way to assert that Jefferson had no sense of humor. A careful study of Jefferson’s writings and anecdotes of others who knew him reveals that he had a delightful sense of humor. A master of tall talk, he loved to pull someone’s leg. The humor he displayed in conversation carried over into his writings, which frequently display his wit.

04.02.03 NO MIDDLE FLIGHT: DUBARTAS’S PROPHETIC INFLUENCE UPON MILTON. Allen Rice, English, University of Central Oklahoma, Edmond, OK.

In the opening prologue of Paradise Lost, Milton proclaims his great aspiration for his ìadventìrous Song, / That with no middle flight intends to soar / Above the Aonian Mount, while it pursues / Things unattempted yet in Prose or Rhyme î. (1.13-16). Few critics have expressed any real interest in the intriguing phrase “with no middle flight.” What is this “middle flight?” What is the lower flight which the “middle flight” surpasses? What comprises the higher flight Milton is attempting? By analyzing the concept of the “middle flight,” we can perhaps gain some new insight into Milton’s poetic and even prophetic aspirations. I contend that the source of the concept of the “middle flight” is Dubartas’s Creation poem, La Semaine ou Creation du monde translated into English by Joshua Sylvester as The Divine Weeks and Works. By contrasting the approaches the two poets take to their biblical subject matter, we can see that Milton takes a far more daring, even prophetic ìflightî as an exegete/poet than Dubartas did, because Dubartas fears transgressing into areas of Forbidden Knowledge. Though Raphael warns Adam of venturing into the forbidden, Milton himself ventures much farther than Dubartas, and furthermore, I suggest that Milton’s higher flight might well have been specifically inspired by Dubartas’s rather uninspired and mediocre middle flight. Ultimately, Milton seems to be satirizing the timid Dubartian ìMiddle Regionî by placing the demonic council exactly there.

04.02.04 CHANGING THE COURSE OF HUMAN EVENTS: IMPLEMENTING OKLAHOMA CAMPUS COMPACT SERVICE-LEARNING INCENTIVES. Shelley Wagner, English, University of Central Oklahoma, Edmond, OK.

The poster presentation will display the results of my Spring and Fall 2006 research regarding community service, service learning, and community leadership in the classroom and the resulting implementation of a service-learning grant received from the Oklahoma Campus Compact program into the English Composition courses which I am privileged to teach here at UCO as a Teaching Assistant in the English department.

Through UCO’s Volunteer Center, I found a wonderful tutoring program administered through Oklahoma City Public Schools entitled HOSTS, which stands for Helping One Student To Succeed. My students were required to tutor at Coolidge Elementary and then write about their experience. I will be providing the background and initial investigation of the project through pictures and resources. I will provide student samples and quotes regarding the implementation as well as the community service involved in the class. I hope to have a few of my students on hand on Research Day to help explain the processes, difficulties, and achievements realized through participating in service learning.

I will display the requirements for the student’s fulfillment of the service-learning project in my course and the success of the program through anonymous samples of student work. This poster presentation will fulfill the final requirements of the service-learning grant by allowing a public presentation and explanation of the implementation of the program.

04.02.05 HERE THERE BE DRAGONS. Jeannette Mirrl, English, University of Central Oklahoma, Edmond, OK.

This project discusses three forms of the legendary dragon: the European Dragon, the Asian Dragon, and
the Amphiptere. Cultivated by many cultures around the world, these dragons each display distinctive characteristics.

A random survey of UCO students and personnel, asked to identify the dragon form that first comes to mind, revealed the European type of dragon was largely the first recognized. This dragon is a large reptilian beast, flying through the sky on its bat-like wings, consuming fair maidens, and breathing flame on those who dare to venture near.

Also quickly recognized by those surveyed, the Asian dragon is an entertaining amalgamation of various animal parts. According to legend, his features are a camel’s head, stag horns, rabbit eyes, bull ears, carp scales, a snake neck, belly of a clam, tiger paws, and eagle talons. In legend, the Asian dragon is not a vicious monster as is the European, but a god to be respected and revered.

The last dragon in the survey, the Amphiptere in his most famous guise is Quetzalcoatl, a Mesoamerican god who sometimes appeared in the shape of a man and other times in the form of a flying feathered snake. Amphipteres often possessed wings.

04.02.06 THE ENGLISH LANGUAGE LEARNER IN TODAY’S CLASSROOM: AN APPROACH TO STEPHEN KRASHEN’S ACQUISITION LEARNING THEORY. Kerri Duke, Kara Taylor, Katie Pershall, Sara Moore, English, East Central University, Ada, OK.

The acquisition learning distinction is the most fundamental distinction of all the hypotheses of language learning. Stephen Krashen’s theory distinguishes between the importance of the acquired and learned system. The relationship of each supports the works to meet the English Language Learner’s needs through input, grammatical sequencing, and office filtering. The variable of Krashen’s theory with be survey through teachers and college professors to determine its reality in the classroom today of the English Language Learner.

04.02.07 GENDER ISSUES IN CHILDRENS LITERATURE: A STUDY OF GENDER UNDERSTANDING AND GENDER STEREOTYPES IN CHILDRENS BOOKS. Susan Smith, April Cassiano, Deena Cantrell, English Department, East Central University, Ada, OK.

ABSTRACT Besides being an important resource for developing children’s language skills, children’s books play a significant part in transmitting society’s culture to children. The research examines how genders are portrayed in children’s books, thus contributing to the image children develop of their own role and that of their gender in society. The project points out that gender bias exists in the content, language, and illustrations of a large number of children’s books and that it contributes to gender stratification in children by stereotyping the roles males and females have in society. This article will review research studies of selected children’s literature as well as discuss findings from informal interviews with educators that support the idea that books are often the primary source for the presentation of societal values to young children.


Many theories have been conducted exploring the methodology of using musical elements in the classroom, namely the English classroom. By studying such discourses, we will reveal music has a place in the English classroom with an ability to aid students in enhancing rhetorical analysis skills, poetry comprehension, criticism, and grammatical understandign. This project specifically achieves such building skills by listening, reading, and analyzing the music and lyrics of Bob Dylan.

Integrating Dylan’s musical prose as a primary method in the classroom proves beneficial as we explore his contextual and controversial songs which allow students to experience a wide variety of rhetorical usages. Poetically, Dylan’s music exacerbates a variety of forms and dynamic innovation. Finally, Grammatically, Dylan’s work spans several dialectical issues, syntax variations, and stylistic skills that exemplify the difference between writing and “creative writing.” This project examines these three areas alongside specific Dylan lyrics in order to streamline the ideology into a useful method in the modern English classroom.

04.02.09 D.H. LAWRENCE’S “LOVE ON THE FARM”: DYING TO LIVE. Amanda Mohler, Languages and Literature, Southwestern Oklahoma State University, Weatherford, OK.

Abstract for Research Day 2006 D.H. Lawrence’s “Love on the Farm” describes a day in the life of a young woman. In particular, he describes the anxious manner in which she waits for her lover. Lawrence uses the imagery of two of nature’s most fearful females, the swallow and the rabbit, to portray the woman’s...
own agitated anticipation as she waits for the à…œelarge dark handsâ…œ (1) of à…œeveningâ…œMs anxious beastâ…œ (7). Laurenceâ…œ Ms images of the female animals create a bestial and natural setting through which readers visualize the panic and fear this ensnared woman feels. Our basic human instincts are also those of animals; therefore, we understand what it is to be captured by this man. It is apparent she is unable to escape his grasp, either paralyzed by fear or wooed by love, so she allows herself to symbolically dieâ…œ”à…œethe little deathâ…œ of orgasm—in order to continue physically living. This poem reflects Lawrenceâ…œMs juxtaposing of violence and sexuality in life and in art, and his career-long focus on the privileging of instinct over things rational, a direct result of his readings in Nietzsche.

04.02.10 ARE YOU SMELLING WHAT WE’RE STEPPING IN: APPLYING FUNCTIONAL DISCOURSE THEORY TO TELEVISION CAMPAIGN ADS IN THE 2006 OKLAHOMA LIEUTENANT GOVERNOR RACE?. Audrey Forbes, Edrick Harrell, Tommy Hammons, Zac Foster, English, East Central University, Ada, OK.

Abstract: Television campaign ads for Oklahoma Lieutenant Governor Candidates Jari Askins and Todd Hiett will be reviewed independently, using the Functional Theory of Political Campaign Discourse. With no outside influences and a list of questions, a determination can be made which candidate will most likely win the 2006 Oklahoma Lieutenant Governor Race. In the independent review a tabulation of attacks, defenses and acclaims will be noted from primary research in the following areas: gender; linguistics and grammar; language and culture; dialect. This research will show how the gender role of the candidates will affect voters’ decisions; how the candidates will use linguistics and grammar to portray themselves and each other to voters; language and culture will also deal with this area, as well as dialect. Culture will also delve into the background of the candidates.

04.02.11 WORLDS APART: A RESEARCH MEMOIR OF THE TIES BETWEEN A VIETNAM SOLDIER AND WIFE. Jennifer Allen-Ayres, English, University of Central Oklahoma, Edmond, OK.

Veterans of the Vietnam War have only recently begun to discuss openly their experiences. What effect might the lives of these soldiers, many now Baby Boomers entering into retirement, have on the parenting of their children? Narratives and non-fiction accounts traditionally focus on the role of the soldier at war, although equally interesting and complex are the familial relationships transformed by wartime dangers and separation. This memoir focuses on personal communication between a Vietnam soldier and his wife from 1969 to 1970 and examines how the dynamics of marital roles change when a couple is separated by combat service. Common means of communication are altered due to a physical disconnect and to the hazardous circumstances of war. Personal story fuses with history, highlighting the long-term effects of the Vietnam War on latter generations and illustrating the underlying tensions of a pivotal period. My thesis investigation is a research memoir of these effects on the lives of one couple.

04.02.12 IS LANGUAGE THEORY KRASHEN?: LANGUAGE THEORIES IN THE SECOND LANGUAGE CLASSROOM. Katie Creed, Sheridan Irick, English, East Central University, Ada, OK.

This project discusses the similarities and differences in widely-accepted first- and second-language acquisition theories, such as those of Noam Chomsky and Stephen Krashen. Then, with the aid of high school second-language textbooks and the results from a survey of local high school second-language teachers, we explore the values of the different theories and the ways in which those theories are applied in the high school second-language classroom.

04.02.13 BOOSTING RECOGNITION FOR UCO’S PASSPORT TO EGYPT PROJECT TO INCREASE GLOBAL AND MULTICULTURAL AWARENESS. Susan Spencer, English, University of Central Oklahoma, Edmond, OK.

The University of Central Oklahoma’s “Passport to…” program was founded in 2004 by then-Provost Donald Betz and UCO’s Faculty Enhancement Coordinator, Brent Wendling. We seek to increase global awareness among the student body and enhance our institution’s profile in the local community by offering educational and entertaining events on and near the UCO campus. I took over as program coordinator in Spring 2006.

This year the Passport committee experimented with different methods of increasing attendance and awareness for Passport events. By “piggybacking” two or more events into “mega-events,” partnering with the Oklahoma City Museum of Art, finding new avenues for press and poster coverage, and offering a highly publicized drawing for tuition credits at the end of the semester, we have achieved these goals. As we move toward next years “Passport to Central America” we seek opportunities for increased awareness and participation from the UCO community and beyond.

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Foreign & Modern Languages

04.03.01 CAN THE ECONOMIC IMPACT OF THE OVERWEIGHT POPULATION BE REVERSED?: EVIDENCE FROM A PILOT PROGRAM IN THE OKLAHOMA CITY SCHOOL DISTRICT. Susanne Rassouli-Currier, Economics, University of Central Oklahoma, Edmond, OK.

According to the American Obesity Association (2000) almost 15.5 percent of teenagers and 15.3 percent of children (ages 6 to 11) are obese. The increase in obesity among young people in the last two decades is dramatic and health issues arising from it can have significant negative economic consequences. This study uses the data from a pilot program in the Oklahoma City school district and examines the effectiveness of the program. Granted the program is in its infancy, however, the evidence suggests that in general it is effective. Therefore, the results may be used as the basis of justification for an allocation of educational funding to such programs.

04.03.02 COMPARING THE MOTIVATION TO LEARN A FOREIGN LANGUAGE TO COLLEGE STUDENTS IN ELEMENTARY CLASSES TO COLLEGE STUDENTS IN ADVANCED SPANISH CLASSES. Tara Williams, TRiO McNair Scholars Program, University of Central Oklahoma, Edmond, OK.

The purpose of this research is to explore the motivation of college students to learn Spanish as a second language. The researcher hypothesized that the students would choose to learn a foreign language because of advancement in the work field. Participants were undergraduate and graduate students attending the University of Central Oklahoma in the summer. This study was associated with students enrolled in Spanish classes. The ages of the participants ranged from 18 to 33 years of age and over. The researcher created a 29 question survey. There was one question that was open-ended, which pertained to their major. The findings indicated that students were motivated to learn a foreign language because of job advancement and other factors.

04.03.03 A TALE OF A MALACHITE TAZZA. Tamara Pacillo, 1 Audrey Myers, 1 Deanthe Evans, Mara Sukholutskaya, 2 Dwight Myers, 3 Francis Stackenwalt, 1 Russian, East Central University, Ada, OK. 2 Chemistry, ECU, Ada, OK. 3 History and Political Science, ECU, Ada, OK.

This interdisciplinary presentation will tell a fascinating story of a malachite vase that was made in Russia and later traveled to the United States to find home at Linda Hall library in Kansas City. The chemistry part of the presentation will analyze chemical characteristics of malachite, its structure and its deposits in Russia. From the Russian segment the viewers will learn about associated with the Ural mountains; and also about malachite artifacts tradition in Russia. And finally the last portion of the poster presentation will provide the historical background of Russian/American relations of early 20th century as well as the circumstances that lead to the vase’s journey to the United States.

History

04.04.01 INDIAN RESISTANCE IN NORTHERN CALIFORNIA: A STUDY OF THE REASSERTION OF TRIBAL SOVEREIGNTY IN THE TYME MAIDU TRIBE OF THE BERRY CREEK RANCHERIA MENTOR: DR. SARAH JANDA. Saundra Mitrovich, McNair Scholars Program, Cameron University, Lawton, OK.

Although scholars have researched the history of federal Indian policy and California tribes in the past five centuries, few have examined the pattern of Indian resistance in the Tyme Maidu tribe in Oroville, California. The literature often combines tribal history and methods of resistance together rather than studying various effects of federal Indian policy on individual tribes. This study recovers how the Tyme Maidu tribe resisted the destruction of Indian rights through research of documents containing correspondence between the tribe and government officials and a study of previous research on Indian-white relations in California. An analysis of the documents yielded facts about changes in Indian-white relations in California often neglected when addressing federal Indian policy. The study offers additional information to the growing body of research on the history of tribal sovereignty and explains how the Tyme Maidu tribe utilized and resisted changes in federal Indian policy to their advantage.

04.04.02 DANGLING JUSTICE AT FORT SMITH. Molly Mirll, History and Geography, University of Central Oklahoma, Edmond, OK.

This study concerns the historical careers of Isaac C. Parker and George Maledon - the “Hanging Judge” and the “Prince of the Hangmen” of Fort Smith. Isaac Parker was appointed judge of the U.S. Court for the Western District of Arkansas on March 19, 1875. At this time, Fort Smith was described as a tough town strewn with rip-roaring saloons, but Parker meant to establish peace in the wild Indian Territory. The first executions, held on September 3rd, 1875, presided over by George Maledon, ended with the simultaneous deaths.
of six men. Obtaining a 73 percent conviction rate before leaving office in 1896, Parker reportedly held court six days a week and eventually sentenced 168 men and four women to hang. George Maledon served as the chief executioner. Known as the “Prince of Hangmen,” Maledon reportedly took great pride in his work. His responsibilities included maintaining the gallows, issuing official witness passes on execution days, and providing new suits, coffins, and arrangements for any needed burials for the condemned prisoners. Hangings were spectacular affairs with thousands in attendance. Pre-dating modern professional sports stadiums and concert arenas, these frontier justice executions served as big entertainment venues for the local citizenry.

04.04.03 THE COUNCIL HOUSE FIGHT. Molly Mirll, History and Geography, University of Central Oklahoma, Edmond, OK.

This study concerns the history of the Council House Fight, which occurred on January 10, 1840, in San Antonio, Texas. During the turbulent 1800s, frequent battles for territorial control resulted in gruesome confrontations between Comanche warriors and the encroaching Anglo-American settlers. Under a flag of truce, three Penateka chiefs were to meet with negotiators at the Council House in San Antonio to conduct a formal prisoner exchange. The Texans, who knew of multiple captives, were initially angered when the Comanches only produced one sixteen-year-old Anglo girl. After they had also heard the mistreated girl’s stories of both sexual and physical abuse at the hands of her Comanche captors, the Texans reacted by surrounding the Council House and instructing interpreters to inform the chiefs that they were now the hostages. As invited guests, the chiefs became indignant at being treated in such an inhospitable manner. Dashing for the door, one chief stabbed a sentinel before being promptly shot. A general melee then ensued, with fighting raging through the streets of San Antonio and even into private homes. The Council House Fight was a tragedy. This incident provoked severe retaliatory raids by the Indians and destroyed whatever confidence the Comanches had in the integrity and honesty of President Mirabeau B. Lamar’s Texas government.

04.04.04 THE LIFE AND CAREER OF PRINCE EUGENE OF SAVOY. Molly Mirll, History and Geography, University of Central Oklahoma, Edmond, OK.

This study concerns the life and military career of Prince Eugene of Savoy. In the fifteenth century, Prince Eugene entered into the services of the Holy Roman Emperor, Leopold I. He later served under both Joseph I and Charles VI as a successful general, a diplomat, and a formidable political figure. His brilliant career in the Austrian military banished the threat of the Ottoman Empire from the center of Europe, while also helping to establish the Habsburg’s empire. Napoleon Bonaparte ranked the Prince among the seven greatest commanders of history. His military victories while representing the Emperors’ forces in the Balkans won him wide fame and helped him amass a personal fortune. In 1683, he served as a Christian volunteer and helped Leopold’s forces defeat the Turkish Muslim army, which had been besieging Vienna. After the great battle of Temesvár against the Turks, Pope Clement sent the commander a blessed hat and sword. In 1704, Eugene joined forces with the duke of Marlborough to win the signal victory of Blenheim. Eugene’s palace, the Belvedere, located in Vienna, Austria, remains a breathtaking example of the splendid Baroque architectural style. Due to its incredible beauty, the Habsburg family and Archduke Franz Ferdinand, whose assassination caused World War I, chose the castle as their home.

04.04.05 THE LIFE AND CAREER OF FRANK LLOYD WRIGHT, 1867-1959. Molly Mirll, History and Geography, University of Central Oklahoma, Edmond, OK.

This study delves into the life and career of Frank Lloyd Wright. Born in Wisconsin, his many creative architectural designs included such innovations as “the living room,” “the carport,” and the “open floor plan.” His personal life proved extremely complicated, often reflecting fascinating interpersonal relationships and examples of emotional strife. For example, during the early 1900s, his companion, Mamah Borthwick was tragically murdered by a servant in the couple’s home. Born in Wisconsin, he was dramatically affected upon witnessing the collapse of the state capital building’s new north wing. By 1887, Wright had his first personal chance to design buildings. Not only working on personal residence projects, this important American artist created fantastic structures, ranging from Houses of Worship, to skyscrapers, offices, and even public works projects. Wright built the famous Guggenheim Museum in New York City, but also created the impressive Price Tower skyscraper in Bartlesville, Oklahoma. He called it “The tree that escaped the crowded forest.”

04.04.06 THE DRAGON IN THE JUNGLE: CHINESE MILITARY OPERATIONS IN THE VIETNAM WAR, 1965-1970. Xiaobing Li, Department of History and Geography, University of Central Oklahoma, Edmond, OK.

Once again, Americans are focused on war in Asia,
this time a war against terrorism and foreign fighters. Surely, it would appear, the current war is totally unlike any other in our history. But is it? Over forty years ago, the United States sent troops to Vietnam to check Communist aggression against the free world. Several Communist states sent their troops to Vietnam against the U.S. forces, including China. Between 1965 and 1968, over 320,000 Chinese troops were sent to Vietnam. The peak year was 1967 when 170,000 Chinese soldiers were present. When the last Chinese troops withdrew from Vietnam, 1,100 Chinese soldiers had lost their lives and 4,200 had been wounded. This history research project provides new and penetrating insights for understanding America’s fighting experience in Vietnam by looking for the stories from “the other side.” It examines the operations of the Chinese armed forces in the Vietnam War. It explores the Chinese Communist sources, including party documents, local government archives, veteran recollections, and personal interviews. It offers readers the first chance to experience the war through the eyes of the Communist soldiers. It begins with the Chinese and Vietnamese leaders who reached a cooperative agreement for Chinese troops to enter and operate in Vietnam. It explains the objectives, plans, and strategies of the People’s Liberation Army (PLA), known as the Chinese armed forces. Then, it focuses on the deployment and operations of the Chinese forces to determine what lessons the Chinese troops had learned from their experience in China’s longest war. The history project makes a major breakthrough by employing this unique approach and blows fresh air into the military history and Asian Studies of this area. It opens new sources in an unprecedented manner that will stimulate a large and enthusiastic audience.

04.04.07 DEATH BY FEAR: THE CONVICTION OF JULIUS AND ETHEL ROSENBERG (1951-53). Heather Samuels, Liberal Arts-History, University of Central Oklahoma, Edmond, OK.

Shortly after the end of World War II, the Soviet Union accomplished what the United States believed only American scientists could achieve—the atomic bomb. During the Second Red Scare, the fear of communism in the U.S. became compounded with the fear of Communist Soviet Union having advanced weaponry. After a chain of events, the Federal Bureau of Investigation maintained that New York couple, Julius and Ethel Rosenberg, were Soviet spies who passed on the secrets of the bomb. In 1951, the two received the sentence of death by electrocution after a guilty verdict. Ethel’s brother David Greenglass, was the primary witness to their acts of espionage, since he too was involved. In order to receive a lighter sentence for his own treachery, he implicated his sister and brother-in-law. In June 1953, the Rosenbergs became subject to the electric chair. The extreme fear of communism during the Cold War coupled with a faulty accusation from Greenglass, caused an unwarranted death sentence to Ethel Rosenberg. This research utilizes government documents, newspapers, magazines, and various secondary sources.

04.04.08 ATOMIC VINDICATION. Daniel Dumbleton, History and Geography, University of Central Oklahoma, Edmond, OK.

On August 6, 1945, the United States formally demonstrated the totality of its power by dropping the atomic bomb on the Japanese city of Hiroshima. Three days later on August 9, the United States dropped the second atomic bomb on Nagasaki. My thesis is as follows: The United States was legally and morally justified in using the atomic bombs to hasten a Japanese surrender and save countless American lives. By using the atomic bomb against the Japanese, the United States sent a clear and unprecedented message that their terms of a  ❚unconditional surrender❖ would be met under the threat of atomic annihilation. Historians, in their attempts to explain the events of August 6 and 9, have proposed two different historical interpretations of the bombings of Hiroshima and Nagasaki. This research utilizes official archival documents from the Harry S. Truman Library, as well as newspapers and other secondary sources that will provide answers to three central questions that the two historical interpretations address. The questions are as follows: 1) Was the United States justified in using the atomic bombs against the Japanese in World War II? 2) Would Japan have surrendered if the atomic bombs had not been used? 3) Did the United States have hidden and/or ulterior motives when they used the atomic bombs against the Japanese?

04.04.09 THE GAY ACTIVIST ALLIANCE V. THE UNIVERSITY OF OKLAHOMA, 1981: A STRUGGLE FOR ACKNOWLEDGEMENT. David Johnston, Liberal Arts, University of Central Oklahoma, Edmond, OK.

The Gay Activist Alliance, a student organization, had attempted to be recognized as official on the University of Oklahoma Campus thirty years ago. Many pressures, both legal and societal blocked the GAA from becoming a full-fledged contributor to campus life. The Oklahoma Daily, a campus newspaper, followed Mark Deutschendorf and the GAA from the initial defeats and struggles, to the final victory. The combination of legislative pressure and homophobia initially prevented the Gay Activist Alliance (GAA) from being an official student organization on the campus of OU until the Oklahoma State Supreme Court gave them their rec-
The women and men faced difficulty in maintaining clear gender roles often blurring the lines between what was considered feminine and masculine.

This project attempts to explore one family’s origin and journey as it moved westward. The starting goal is to examine the family (both women and men) using primary and secondary documents. However, the roles of the women of the family will be more highly concentrated upon to determine if they were subject to the four attributes of the Cult of True Womanhood (piety, purity, domesticity, submissiveness). If upon finding that they, like other women, were subject to the Cult, it is intended to further investigate the women’s role in civilizing the savage frontier. Answering questions such as, “Were the women preservers of civilization or are they, as Julie Roy Jeffrey would suggest, creators and expanders of civilization?” will be the primary motive.

Indian culture is not static; it continues to evolve and change along with the environment and maintaining a certain way of life requires effort, patience, and determination. Numerous ways exist, however in which Indians can carry on their traditions, including dance, folklore, dress, language, singing, drumming and art among others. Steven Mopope, Monroe Tsatoke, Spencer Asah, Jack Hokeah and Lois Smoky and later James Auchiah, a group of Kiowas from Anadarko, Oklahoma, who became known as the Kiowa Five, possessed and practiced all of these customs. Through their efforts, Indians gained acceptance in fine art venues, and lives as artists. The Kiowa Five’s success was sparked by Oscar Jacobson, a mover and shaker in American Indian and Western art history. Together they earned great National and International fame, and because of their devotedness the Jacobson House: Native Art Center exists. Today Indian artists can display and sell their art there.

Within the confines of the history of the American West, women, as a whole, have been a neglected entity. Historians have argued that during the 19th century there was a restructuring of female roles in Anglo society placing women under the rule of what is known as the Cult of True Womanhood and changing the standards by which women were evaluated. However, as America progressed west into the frontier, women...
club, religious organization, literary society and musical group activities enabled students to develop their speaking, writing, social and musical skills. Physical and character development comprised an integral part of student education.

The school faced chronic difficulties caused by minimal legislative funding. Faculty members and students coped with these difficulties by repairing and constructing buildings and furniture, managing school operations efficiently, and finding contentment in living without amenities.

During the school’s later years of operation, new community circumstances reduced the demand for an agricultural high school. In 1927, State legislators authorized the school’s officials to change the institution from one that offered high-school-level work to one that provided college-level work. Cameron State School of Agriculture became Cameron State Agricultural College and retreated from the mission of teaching farm family children to assume their parents’ places.

04.05.01 LA CULTURA DE LA ACEQUIA MADRE REVISITED: DITCH DAY IN EL CERRITO, NEW MEXICO. Kim Penrod, Ajax Delvecki, Brianna Spears, Doug Hurt, History/Geography, University of Central Oklahoma, Edmond, OK.

In 2000, Jeffrey Smith et al. analyzed the yearly cleaning (la limpia) of El Cerrito, New Mexico’s irrigation ditch (acequia) and its contribution to shaping village culture. The authors argued that la limpia was an event that promoted use of the Spanish language during ditch cleaning, allowed multiple generations to gather to tell family stories, created gender roles with males working in the ditch and women cooking food and watching children, and illustrated a different work ethic between generations. We revisited this article during our return to El Cerrito for la limpia 2006. While many traditions endure, several cultural changes have occurred in six years. These transformations include increasing use of the English language and decreased gender divisions. Keywords: El Cerrito, New Mexico, acequias, cultural geography.

04.05.02 COURTHOUSE SQUARES IN OKLAHOMA. John Milbauer, Social Sciences, Northeastern State University, Tahlequah, OK.

Scholars have long pondered the regional status of Oklahoma. Is it the South, the Middle West, the South-west, the West, Amerindia, or something else? The Shelbyville courthouse square is a cultural indicator of the Upland South. It consists of a square with roads intersecting at all four corners and with a courthouse in the center. In 2005 and 2006 the author examined the street patterns surrounding all seventy-seven of Oklahoma’s county courthouses. He studied the courthouse settings in the field and he analyzed them on the historical Sanborn maps and on the original townsite plat maps. The Sanborn maps were especially useful because they illustrated how courthouse squares have changed through time. The greatest number of courthouses, fifty-five percent, occupied part or all of a city block. The second largest category, however, was the Shelbyville, which accounted for thirty-four percent of all courthouses. Also present were the Lancaster and the Harrisonburg squares in addition to other types. The number of Shelbyville squares indicates that the culture of the Upland South is significant in Oklahoma.

04.05.03 UTILIZING AERIAL PHOTOGRAPHS WITH TOPOGRAPHIC MAPS TO INTERPRET ALPINE GLACIAL LANDFORMS. Gregory Plumb, Cartography and Geography, East Central University, Ada, OK.

The Atlas of Landforms, authored in 1965 by Scovel, O’Brien, McCormack, and Chapman, is a classic earth science publication because it incorporates photography with topographic maps as an educational method for interpreting and understanding landforms. Inspired by this outstanding work, this poster presentation applies this approach for illustrating landforms associated with alpine glaciation. During the summer of 2006, a field excursion was taken to Wrangell-St. Elias National Park and Preserve, located within the southeastern sector of the main body of Alaska. Encompassing 20,587 square miles, it is the largest unit of the National Park System, making it nearly one-third the size of Oklahoma. It contains some of the world’s most outstanding examples of glacial landforms. A pilot was hired to tour the park, with over 150 photographs taken during the flight. After the trip, a poster design was created by plotting the aircraft route on topographic maps, identifying landform types on the photographs, and pinpointing their locations on the maps. Completing the design are narratives discussing these glacial and glacially-related features.

04.05.04 CUSTOMIZED TECHNIQUES FOR CONDUCTING A PIPELINE SURVEY. Adam Drannon, Cartography and Geography, East Central University, Ada, OK.

Accurate land surveying is an essential component of the oil and gas pipeline industry. The legal
right-of-way boundaries within which the lines will be constructed need to be established and confirmed in the field. The actual positioning of the pipelines in the ground must also be ascertained. This is important not only for the engineering aspect of building of pipelines, but also for documenting their presence for maintenance and safety concerns. This poster focuses upon the techniques that are employed for carrying out a pipeline survey. The step-wise procedures for collecting the information, storing it in a digital format, and its subsequent utilization are illustrated based upon a pipeline survey conducted in southern Kansas in which this author was a participant.

04.05.05 AN APPLICATION OF GEOSPATIAL TECHNOLOGIES: A HISTORICAL WALKING TOUR OF ADA, OKLAHOMA. David Dill, Mark Micozzi, Cartography and Geography, East Central University, Ada, OK.

Upper level coursework in geographical information system, remote sensing, and cartography allows undergraduate students to apply these geotechniques to a plethora of geospatial data. The authors partnered with the Historical Society of Ada (PAST: Preserving Area Stories in Time), Ada Jobs Foundation, and the Chamber of Commerce to create a digital database and resulting map for a previously created analog version of a historical walking tour of Ada. Since the passage of Ada’s centennial celebration in 2001, PAST was in need of a more formal and accurate map, as well as the addition of numerous updates for its brochures to residents and visitors. Using 2005 orthophotographs from the United States Department of Agriculture as a base map, the topology of an existing road network from the United States Census Bureau was updated so that historical homes, building locations, and direction of travel could be created using ESRI ArcGIS software. After a few meetings with PAST members, several data layers were created and poster and brochure ideas were explored. Several large posters were produced for display (seen here) at various venues in Ada and maps were printed for use in the newly printed brochures: A Historical Walking Tour of Ada. This project is currently part of a larger economic development plan for Ada, East Central University, and the upcoming centennial for the state of Oklahoma.

04.05.06 AN APPLICATION OF GEOSPATIAL TECHNOLOGIES: A HISTORICAL DRIVING TOUR OF ADA, OKLAHOMA. Nelson Dobbs, Mark Micozzi, Cartography and Geography, East Central University, Ada, OK.

Upper level coursework in geographical information system, remote sensing, and cartography allows undergraduate students to apply these geotechniques to a plethora of geospatial data. The authors partnered with the Historical Society of Ada (PAST: Preserving Area Stories in Time), Ada Jobs Foundation, and the Chamber of Commerce to create a digital database and resulting map for a previously created analog version of a historical driving tour of Ada. Since the passage of Ada’s centennial celebration in 2001, PAST was in need of a more formal and accurate map, as well as the addition of numerous updates for its brochures to residents and visitors. Using 2005 orthophotographs from the United States Department of Agriculture as a base map, the topology of an existing road network from the United States Census Bureau was updated so that historical homes, building locations, and direction of travel could be created using ESRI ArcGIS software. After a few meetings with PAST members, several data layers were created and poster and brochure ideas were explored. Several large posters were produced for display (seen here) at various venues in Ada and maps were printed for use in the newly printed brochures: A Historical Driving Tour of Ada. This project is currently part of a larger economic development plan for Ada, East Central University, and the upcoming centennial for the state of Oklahoma.

04.05.07 MAPPING AND MANAGING A GEOGRAPHIC MUNICIPAL SEWER SYSTEM DATABASE. Thomas Creecy, Cartography and Geography, East Central University, Ada, OK.

Among the important functions of modern government municipalities is to maintain a functional and safe sewage system. In today’s computer age, such infrastructures have their component characteristics and locations digitally documented. This poster presentation illustrates a case study of how the City of Ardmore, Oklahoma is converting from hand-drafted maps to computer-drawn renditions using Geographic Information System (GIS) technology. The first step is to take the old maps into the field, find the features such as sewer manholes and visible sewer lines, and encode their locations in real-world coordinates using a global positioning system (GPS) device. The GPS is interfaced with the GIS, enabling the characteristics of the features to be documented at the same time. Additional data is collected in neighborhoods where the sewage system has been recently constructed or modified. Back in the lab, underground lines and their characteristics are added to the database by connecting manhole locations, and verified by examining the earlier maps and consulting with longtime city public works employees. Since the database is stored in real-word coordinates, the sewer data can be integrated with other spatial themes such as roads, buildings, and orthophotography. Any subsequent changes occurring with the sewage
system will be passed on by the public works crew or engineers to the city’s GIS department for updating the database. This will enable maps of the infrastructure to remain current and correct.

04.05.08 MAPPING DOMINANT CROP AND LIVESTOCK TYPES IN THE U.S. Chad Meadows, Cartography/Geography, East Central University, Ada, OK.

The Web Atlas of Oklahoma is an interactive encyclopedia of maps that portray historical, environmental, economic, political, cultural, and many other topics about the state. The atlas also includes national maps that reveal spatial patterns and relationships for the entire United States.

Data from the National Agriculture statistics service were tabulated at the state level. Data of major crop and livestock types for the entire country were selected to be examined further. These data were entered into ArcMap, a computer mapping system, and processed into a series of national maps. The crop maps include different variables such as acres planted, acres harvested, total production, and crop yield. Livestock maps show the dominant livestock by state as well as maps of specific livestock and their distribution across the nation.

These maps and many others on the Web Atlas of Oklahoma provide students and educators with an abundance of geographical information about Oklahoma and the United States at the click of their mouse.

04.05.09 THE ROSWELL INCIDENT: CREATING TOURISM OUT OF A CONSPIRACY. Adam Milligan, Cartography and Geography, East Central University, Ada, OK.

In July 1947, debris was found on a ranch near Roswell, New Mexico. Initially the U.S. military reported the discovery of a "flying disk," which just a few hours later was retracted to being a weather balloon in response to nearly immediate media attention. For decades the incident was largely forgotten, relegated mainly to UFO and related literature that started to be popularized in the late 1960s. Following a published interview in 1978 of a person involved with the original recovery of the debris, The Roswell Incident has attained notoriety to an extent that the name is now synonymous with UFOs and extraterrestrials.

Regardless of whether a person is skeptical of the otherworldly explanation of the event or believes it to be a government cover-up, its impact upon popular culture is not to be denied. Roswell is referred or inferred in many books, movies, and television episodes; there is even a television series named after the town. Within the past decade or so, the community has par-

laid the aftermath of the incident to become a part of its economy. While the place won’t be confused with Las Vegas, Branson, or Gatlinburg as a gaudy tourist mecca, it is readily apparent upon visiting the city either in person or via cyberspace such an industry has emerged. The evidence is direct, where the International UFO Museum and themed gift shops can be found downtown. It is also indirect, ranging from restaurants with alien motifs, including national chains, to cleverly named generic businesses.

04.05.10 CONFLATION OF ROAD CENTERLINES FOR GPS-COMPATIBLE USAGE. Clint Whiston, Cartography and Geography, East Central University, Ada, OK.

As the law enforcement agency of the Chickasaw Nation, the Lighthorse Police has the need for detailed road information. Their desires include the ability of their dispatch to quickly locate any address and identify the patrol cars closest to that address. Additionally, their responding officers would also possess navigation systems showing maps highlighting the quickest route of travel and depicting their vehicle location at any given time.

One of the requirements to realize this vision is to build a digital geographic road database. The work needed to be achieved expeditiously and at a reasonable cost. This was made possible by obtaining road centerline data originating from the Bureau of the Census. Unfortunately, due to inadequate positional accuracy when used with a global positioning system (GPS), it would not have been unusual for an officer to believe a house address to be on the wrong side of a street.

This problem with accuracy was solved by conflating the road centerlines. This involved digitally overlaying the roads with large-scale color aerial photography. When viewed on a computer monitor, the road positions were conflated, i.e., adjusted, to their middle as interpreted on the photography. Conflation was implemented at a scale of 1:1,500, which assured the adjusted centerlines are digitally depicted within the width of the actual feature locations. This improved the positional accuracy of the transportation network to suit the purpose of this project.
the Conquest of England and the Battle of Hastings. The demise of Harold of Wessex (King Harold II) and the triumph of William of Normandy (“The Conqueror”) have become a part of both history and legend. In a paper delivered at the International Congress for Medieval Studies in Leeds, England, I presented an Aristotelian evaluation of how Harold is actually depicted in the Bayeux Tapestry ... as opposed to how we might think he is presented. His “tragic character” in the Tapestry is more complicated than is often acknowledged, particularly when judged in light of Aristotle’s criteria for making a moving and successful “poesis.”

04.06.02 THE UCO MEDIEVAL SOCIETY VIKING BOAT. Dana Redd, UCO Medieval Society, University of Central Oklahoma, Edmond, OK.

The UCO Medieval Society constructed a 21 foot long “faering class” Viking boat, a four-oared rowing boat of the sort owned by many Viking families for their personal use. Clinker-built (skin first) and water tested, the boat is an actual working craft capable of holding 4 to 6 adults. Modeled on a boat found in an excavation at Scar, in the Orkney Isles, this boat has been used in several displays and presentations. The boat was built as an “experimental archaeology” project under the direction of Dr. Stephen Law, one of the faculty sponsors of the Medieval Society.

04.06.03 CAENIS: THE LAST RAPE VICTIM IN OVID’S “METAMORPHOSES”. Margaret Musgrove, Humanities and Philosophy, University of Central Oklahoma, Edmond, OK.

In Ovid’s Metamorphoses, written early in the first century CE, the poet tells the story of many male deities and their sexual assaults on human females. The last of these human rape victims, the nymph Caenis, presents a unique response to her attacker. This paper looks at the story’s position within the Metamorphoses and reads Caenis’ voice as a voice of protest against the powerful male forces that victimize her.

Caenis initially seems to be a typical Ovidian rape victim, similar to the nymphs Callisto, Io, and Daphne, whose stories appear earlier in the work. But after Caenis is raped by the god Neptune, she makes an unusual request. Most female rape victims in mythology are punished by a jealous goddess, or change into something inhuman (a tree or flower, for example), or become the mother of their rapist’s child (Semele, raped by Jupiter, becomes the mother of the god Dionysus, for example). Caenis, however, requests that Neptune grant her a unique “reward” for her stolen virginity: she asks to be made into a man. This reward constitutes a demand for immunity from further rape: she demands, and is granted, impenetrability. Not only does she become a man, but she becomes a nearly invulnerable one, who cannot be pierced by sword or spear.

In earlier stories, Ovid depicts the male gods’ triumphing over their female victims or callously silencing them through pregnancy or metamorphosis. In the Caenis story, Ovid allows both the narrator and the character to interpret rape as a serious offense for which the rapist must pay, even if he is a god.

04.07.01 HUME’S ETHICS IN THE WORK OF JANE AUSTEN . Eva Dadlez, Humanities and Philosophy, University of Central Oklahoma, Edmond, OK.

I intend to argue that the system of ethics advocated in David Hume’s Treatise of Human Nature can be discovered in the intellectual and moral repertoire of the heroines of Jane Austen. This is an assumption about the theoretical perspective into which the ethical endorsements made in Austen’s work best fit. I will maintain that such endorsements converge with views concerning human nature and morality put forward by David Hume, arguing against those who wish to propose a mesalliance between Austen and Aristotle. Of importance to the present project are investigations into Austen’s and Hume’s perspectives on the connection between morality and sentiment, the significance of sympathy, the regulation of sympathy by the adoption of a general point of view, the depiction and analysis of particular vices, and the characterization of marriage as a relationship between equals.

04.08.01 THE POWER OF STORIES TO LEAD THE PUBLIC SERVICE DURING BUREAUCRATIC REFORM. Brett Sharp, Political Science, University of Central Oklahoma, Edmond, OK.

This research analyzes the underlying values of the National Performance Review (NPR) and the reception of these values by public administrators. NPR was a large-scale effort to reform the federal bureaucracy during the Clinton presidential administration. This research asks, “Were the stories within NPR effective vehicles for communicating the values intended by the authors of the initial report?” The National Performance Review is compared with the implicit theoretical framework for effective organizations exemplified by
Robert E. Quinn’s Competing Values Model, a standardized leadership instrument based on factor analysis and multidimensional scaling. A content analysis of the initial report (controlled by measuring inter-rater reliability) is correlated with a story analysis instrument. A correlation matrix of the content analysis demonstrates that the factors are unique and cleanly separated in this application. A partial correlation between story analysis and content analysis controls for the values previously held by public administrators. The results suggest that the stories in NPR were effective at communicating the values intended by the authors of the report. This research shows that NPR was driven primarily by the values of change and productivity. Stories served to intensify the communication of these values. Therefore, leaders attempting to redirect a large workforce may maximize their influence by using powerful stories that transmit clear values.

04.08.02 LOCAL SCRIP IN THE USA DURING THE 1930S: LESSONS FOR TODAY?. Loren Gatch, Political Science, University of Central Oklahoma, Edmond, OK.

Among the major policy innovations in the United States arising out of the Great Depression must be counted those that transformed the nation’s monetary system. Precipitated by the collapse of the nation’s banking system in early 1933, these innovations included the abandonment of the domestic gold standard, a revaluation of the dollar against gold and, by 1935, a centralization of the Federal Reserve System’s powers in Washington, D.C. What has remained less appreciated was the parallel proliferation of grassroots monetary responses to depression conditions. Across the United States during the 1930s, hundreds of issuers ranging from public authorities at the state and local levels to private groups, corporations and even individuals put out their own circulating media in order to remedy different aspects of the economic hard times. Whether issued as clearinghouse certificates, barter and self-help notes, self-liquidating scrip, trade checks, or tax anticipation warrants, this remarkable efflorescence of local currencies represented a distinctively American reflex to the challenges of the Great Depression. This presentation describes the variety of local scrip experiments undertaken in the United States, and places these experiments within the theoretical and legal context of monetary reform during the 1930s. Although the success of these experiments varied according to the type of scrip issued and the circumstances of its management, the general experience of depression scrip has been embraced by modern advocates of local currency. This paper argues that, in the case of local currency, the lessons of the past must be chosen carefully.

While some scrip schemes of the 1930s do offer useful guidance for present-day local and regional currencies, many others failed to achieve their goals, and thus represent experiences to be avoided.

04.08.03 THE ROAD MAP FORMULA AND THE END OF THE TWO STATES SOLUTION. Husam Mohamad, Political Science, University of Central Oklahoma, Edmond, OK.

In general, the Road Map formula consists of three phases. In its first phase, the Road Map demands from the Palestinians the confiscation of weapons and dismantling of the infrastructure of all Palestinian militant factions, including Hamas, Islamic Jihad, the Al-Aqsa Martyr Brigades and leftist groups. The completion of such task might be difficult to achieve if the newly elected Palestinian leadership is not given assurances from the U.S., similar to those given to the Israeli Prime Minister, pointing towards a future political settlement that meets the minimal national demands of the Palestinian people. A likely setback in accomplishing this undertaking is also the risk of creating a low intensity level civil war that could significantly hinder the Palestinians’ efforts to achieve their goals. As expected, with the Israeli withdrawal from Gaza, it also is possible to see further power struggles emerging between the PA and militant Islamists in the territories. Based on the degree of progress on the ground, the Road Map’s second phase requires Israel to recognize a provisional Palestinian state, which would likely include the Gaza Strip and parts of the West Bank. The third phase process will likely become more controversial, given that the focus of talks will become more centered on determining final status issues that include statehood, refugees, settlements, security, borders and the Jerusalem question. One concern that may arise at this phase is a repeat of the collapse of the Camp David II negotiations, especially if Israeli and U.S. negotiators expect to see major compromises on the part of the PA in the post-Arafat era. While exploring factors, events and forces that may have motivated President Bush’s efforts to resolve the Israeli-Palestinian conflict, this article will underline the main themes of Bush’s two states and those of the Road Map’s formula. It also examines signs of inconsistencies and fluctuations in the Bush Administration’s policies towards the Israeli-Palestinian conflict, along with comparing Bush’s rhetoric on the Palestinian state to the actual realities on the ground. The purpose of this article is to seek a critical understanding of U.S. policy towards the Israeli-Palestinian conflict in general and the Bush Administration’s conception of the two states solution in particular.
04.08.04 CHARACTERIZING PRACTICES OF RELIABILITY REPORTING ACROSS STUDIES USING THE BUSS-DURKEE HOSTILITY INVENTORY. James Richardson, Matt Vassar, Political Science, Oklahoma State University, Stillwater, OK.

The purpose of the present study was to investigate the reliability reporting practices of the Buss-Durkee Hostility Inventory (BDHI) since its inception in the 1950s. Due to the erroneous belief that reliability is a property of the scale rather than the scores produced by the measure, it was of interest to examine the BDHI’s reliability reporting history due to its longstanding tradition in hostility research. Two-hundred fifty-three studies were located from electronic database searches. These studies were next coded to examine: (a) studies that correctly calculated reliability coefficients for their own data; (b) studies that induced reliability information from other studies; (c) studies that mentioned reliability information for the BDHI but did not provide an estimate; and (d) studies that failed to mention reliability. Results suggest that of the 253 studies examined in the analysis, only 6.3% (n=16) properly calculated and reported reliability for their own data, 10.3% (n=26) induced reliability, 6% (n=15) mentioned reliability, and 77% (n=196) made no mention of reliability whatsoever. A discussion of these findings is presented in light of best practice and correct examples of reliability reporting are showcased.

04.08.05 ANTI-INTELLECTUALISM, RELIGION, AND GROWTH: THE CASE OF OKLAHOMA. John Ulrich, History and Political Science, East Central University, Ada, OK.

Richard Hofstadter (and others) note that anti-intellectualism has a long tradition in the United States. It is not unique to Oklahoma. What appears to be unique to Oklahoma is that the state merges several significant, powerful social sources, each of which (it is argued) brings its own flavor of anti-intellectualism to the feast. These sources include a political history of populism, a cultural history of southern heritage, and a religious history largely comprised of fundamental and evangelical Protestant denominations and sects. It is also often suggested that support for intellectualism, or what Hofstadter refers to as “the life of the mind,” runs counter to development of a productive, healthy business climate with characteristic economic growth. This research explores these issues with respect to Oklahoma. Data on religious, economic, and social factors for Oklahoma and surrounding states are evaluated. This research is one component of a larger effort exploring the relationship between religious beliefs, values, and civic engagement.

04.08.06 E-DEMOCRACY: EVIDENCE FROM THE GRASS ROOTS. Tony Wohlers, History and Government, Cameron University, Lawton, OK.

The increasing application of information and communication technologies in the public sector has contributed to remarkable advances in electronic- or e-government. Some argue that e-government strengthens the existing public service and information infrastructure and broadens the public space used by citizens to participate in democratic decision making. Ideally, the extension of public space through e-government will strengthen democratic processes by creating a more client-oriented, responsive, and transparent government. The ability of e-government to deliver these benefits depends on the structure of and resources available to government. To shed more light on these issues, this study asks: What is the state of e-democracy at the local level of government in the State of Oklahoma? Based on a random sample of cities and towns across the state and a series of benchmarks to assess e-democracy, this study analyzes the performance of e-democracy at the local level of government. The findings illustrate that the democratic potential of local e-government has not been realized.

Sociology & Substance Abuse Studies

04.09.01 RESPONDING TO CLANDESTINE METHAMPHETAMINE LABORATORIES IN OKLAHOMA. Rashi Shukla, E. Elaine Bartgis, SOC/CJ/SAS, University of Central Oklahoma, Edmond, OK.

Throughout the 1990s, Oklahoma experienced a significant increase in the number of clandestine methamphetamine laboratories in operation in the State. Clandestine laboratories posed great risks to individuals and law enforcement exposed to the toxic chemicals resulting from the manufacturing process and raised concerns about environmental contamination. In response to this problem, Oklahoma passed a number of pieces of legislation aimed at increasing formal surveillance of and controlling access to key ingredients used in the methamphetamine manufacturing process. This study describes Oklahoma’s efforts to employ legislative changes to impact the clandestine laboratory problem. Preliminary data on the impact of this legislation on the clandestine laboratory problem will be presented.

04.09.03 WORKING WITH THE POOR: A STUDY ON ATTITUDES TOWARD THE POOR...
OF SOCIAL WORK STUDENTS. Angela Rasberry, Kimi Coker, Social Work, East Central University, Ada, OK.

This study explores attitudes toward the poor among students majoring in Social Work and Non-Social Work Majors. A comparative exploratory research design will be used to assess attitudes towards the poor; a questionnaire will be administered among social work majors and non-social work majors. It is anticipated that social work majors will have more positive attitudes about working with the poor. It is anticipated that a difference in attitudes in working with the poor in the variables age and gender will be identified. This study will provide useful information in developing curriculum preparing students entering helping professions.

04.09.04 PEOPLE YOU DONT LIKE: ASSESSING AVersions TO A DIVERSE POPULATION IN HELPING PROFESSIONS.. Autumn Heaps, Charbara Ostgarden, DonNell Riggs, Kaycee Roberts, Vickie Caldwell, Social Work, East Central University, Ada, OK.

The purpose of the study is to help both students and professors gain a better understanding of the bias and prejudicial attitudes of students majoring in helping professions on working with certain diverse populations. Interviews will be conducted with professors from three different majors as well as a literature review to help create a list of diverse populations. An exploratory survey will be conducted using college students majoring in Social Work, Human Resource Counseling, and Criminal Justice. The survey will ask them to rate their comfort level of working with the groups identified and to state whether discomfort is the result of value beliefs or education and training deficiencies. It is anticipated that the population group that will rate the highest will be the homosexual population and/or those who have abused children. This survey will assist students in acknowledging areas where they possess prejudice, bias and allow them to seek a better understanding of the population in question.

04.09.05 IMMIGRATION DIVIDES AND UNITES: HOW IMMIGRATION VIEWS DIFFER AMONG SOCIAL WORK AND NON-SOCIAL WORK STUDENTS. Jenny O’Dell, Amanda Wehrli, Kacey Foster, Rachel Sitton, Ray Loehr, Whitney Musgrove, Social Work, East Central University, Ada, OK.

The purpose of this research study is to better understand the views of social work majors in comparison to non-social work majors regarding the subject of immigration. The particular areas of focus will be gender, ethnicity, religious and political affiliation, major, and minor. This study will be an explanatory and comparative study. The method of research that we will use in order to obtain our research results is surveying our subjects using a Likert Scale. The survey will be completed by students across the East Central University campus. Our hypothesis for the outcome of this study are as follows: We expect (1) Social work majors will have a more empathetic outlook on the topic of immigration than non-social work majors, (2) There will be little to no difference among views held by males and females, (3) Age will have a significant impact on the subjects’ feelings pertaining to immigration, (4) Race, religion, and political affiliation will provide us with the greatest display of differing views.

04.09.07 WHY BECOME A SOCIAL WORKER? ASSESSING THE REASONS FOR SELECTING HELPING PROFESSIONS. Dana Nobles, Adrian Gold, Jessica Young, Mary Holly, Melissa Lott, Wanda Brown, Social Work, East Central University, Ada, OK.

The purpose of this study is to determine why individuals choose helping professions. The research design used in this study will be exploratory/comparative design. College students majoring in a helping profession discipline will be surveyed to assess the reasons for selecting their chosen field. It is anticipated that non-traditional students will select their major based on life experiences.

04.09.08 IS VIOLENCE LEARNED?: PROBATION AND PAROLE OFFICERS SPEAK OUT. Pamela Hunt, Candy Hightower, Curt Rawls, Glen Jones, Maximina Eudovique, Paul Emrich, Department of Human Resources, East Central University, Ada, OK.

The current prison system in the United States results in cohabitation of non-violent and violent offenders. Preliminary research shows that the current prison system may be creating more deviant criminals rather than rehabilitated ones. A possible risk associated with incarceration involves the risk of previously non-violent offenders exhibiting violent behaviors. It is anticipated that non-violent offenders incarcerated with violent offenders increase their violent behaviors. Probation and parole officers in multiple counties in Southeastern Oklahoma were surveyed to investigate the relationship between non-violent offenders, violent offenders, and violent behaviors. The results of this study will increase the awareness of potential effects of placing non-violent and violent inmates within the same prison unit.

04.09.09 CORRELATES OF ADDICTION PRONENESS AMONG COLLEGE STUDENTS. Elisabeth (Libby) Wood, Sociology, Criminal Justice, and Substance Abuse Studies, University of Central Oklahoma, Edmond, OK.
This research examines the relationship between addiction proneness and three discrete variables: sex, parental addiction, and history of abuse. The literature reveals that there might be specific characteristics or personality types that contribute to addiction. There is very little literature on addiction proneness; however, research on major addictions as it relates to history of abuse has been confirmed. Findings on sex and parental addiction as they relate to addiction proneness are inconclusive.

The convenience sample in this research consisted of 169 respondents, drawn from targeted general education courses to reflect the diversity of the larger institution. The institution is a commuter university located in a moderately large mid-southwestern metropolitan area. This university contains approximately 15,700 students, of which, 32 percent are part-time.

Results of an analysis of variance (ANOVA) and an independent t-test revealed a significant relationship between the dependent variable, addiction proneness, and the independent variables of parental addiction and history of abuse. No significant relationship was found between addiction proneness and sex.

04.09.10 COLLEGE STUDENTS ATTITUDES AND PERCEPTIONS OF THE U.S. PATRIOT ACT. Stephan Warren, Cheylanda Wilson, Jared Maxwell, Matt Heitzman, Stacy Brock, Tim Hayden, Sociology, Criminal Justice and Substance Abuse Studies, University of Central Oklahoma, Edmond, OK.

The purpose of this research was to describe college students attitudes and perceptions of the U. S. Patriot act. Findings related to lack of understanding of the concepts of the Patriot Act and lack of information on what is contained in the act.

04.09.11 DEFINING TERRORISM: COLLEGE STUDENTS ATTITUDES AND PERCEPTIONS. David Harrison, Brant Cale, Jananne Risenhoeover, Tiffany Hezel, Sociology, Criminal Justice and Substance Abuse Studies, University of Central Oklahoma, Edmond, OK.

The purpose of the research was to describe the attitudes and perceptions of college students contemporary definition of terrorism. Findings related to lack of a clear definition of terrorism or terrorist acts.

04.09.12 COLLEGE STUDENTS ATTITUDES AND PERCEPTIONS OF SAFETY POST 9/11. Ryan Andresen, Amanda Powders, Chad Chance, Grant Hutchinson, Talia Casey, Sociology, Criminal Justice and Substance Abuse Studies, University of Central Oklahoma, Edmond, OK.

The purpose of this research was to describe college students the attitudes and perceptions of safety post 9/11. Findings related to personal security and transportation concerns.

04.09.13 COMBATING THE BUDGETARY CRUNCH: LAW ENFORCEMENT AGENCIES UTILIZING VOLUNTEER PROGRAMS. Danyle Pixton, J. Harrison Watts, Criminal Justice & Sociology, Cameron University, Lawton, OK.

In today’s era of budgetary constraints police agencies across the country are looking at alternative means to serve the citizens while maintaining a high level of service and professionalism. This study examines the Lawton Police Department’s utilization of the Sentinel program which uses volunteers who go through specialized training to assist the police department in taking basic calls for service, traffic control, funeral escorts and fingerprint collection at crime scenes. This study gives special emphasis to the financial impact that the Sentinel program offers this particular law enforcement agency.

04.09.14 INTIMACY VS. SEX. Marquise Miller, McNair Scholars Program, University of Central Oklahoma, Edmond, OK.

The purpose of this study was to explore the importance of intimacy, while examining the deceptions of sex and intimacy, as it relates to emotional cheating, non-sexual relationships, and the evolution of the meaning of sex and intimacy over the past several years. The researcher hypothesized that intimate relationships would thrive in the absence of sex. The findings concluded that truly intimate relationships could not exist apart from sex, thus the hypothesis was rejected.
when GTM520-05 cells were treated with DEX they ingested fewer beads. Another study was to determine the effect of endothelin-1 (ET-1) on calcium homeostasis in TM cells. ET-1 induced calcium influx in TM cells is mediated mostly by ET-A.

06.01.03 FEEDING RATES AND NEST ATTENTIVENESS IN SWAINSON’S WARBLERS (LIMNOTHLYPIS SWAINSONII). Mia Revels, Department of Natural Sciences, Northeastern State University, Tahlequah, OK.

Swainson’s Warblers are one of North America’s most poorly studied migratory bird species. Due to the difficulty of locating and monitoring their nests, very little is known of their breeding biology, particularly their nesting behavior. This study was initiated in order to document adult behaviors at the nest, including nest attentiveness and feeding rates of both male and female Swainson’s Warblers. Nests were located by systematically searching known male territories. Nests with nestlings were videotaped until fledging or predation occurred. Videos were viewed and the arrival and departure times for both male and female at the nest were recorded for the length of the tape. We also recorded the number and time of feeding. 81 hours of videotape were analyzed. On average, males spent only 44 seconds at the nest per trip, whereas females spent an average of 45 MINUTES at the nest during each visit. Male Swainson’s Warblers fed nestlings more frequently (120/179, 67%) than females (59/179, 33%). Overall, the feeding rate was 1.13 parental feeding trips per nestling per hour. Prior to this study, very little was known about the parental care of Swainson’s Warblers. Brooke Meanley (1971) reported on behavior at a single nest for a single 7 hour period. This study provides analysis of over 81 hours of breeding behavior for this very cryptic and difficult-to-study species. This information will be valuable for conservation and management of Swainson’s Warblers.

06.01.04 INHIBITION OF OOCYTE MATURATION IN XENOPUS BY POLYBROMINATED DIPHENYL ETHERS, PERFLUOROCTANE SULFONATE, AND PERFLUOROOCTANOIC ACID. 1 Douglas Fort, 1 Brody Buzzard, 1 Matthew Barnes, 1 Megan Benyshek, 1 Robert Rogers, 2 John Weeks, 2 Patrick Guiney, 1 Research & Development, Fort Environmental Labs, Stillwater, OK. 2 SC Johnson & Son, Racine, WI.

Under normal conditions, Xenopus oocytes undergo final maturation which is induced by progesterone via a membrane bound receptor (OMPR) or androgens via a classical intracellular receptor (AR). Final maturation is marked morphologically by germinal vesicle
breakdown (GVBD). The anti-progestin and anti-androgen activities of a series of persistent halogenated substituted polybrominated diphenyl ethers (BDEs) including: pentabromodiphenyl ether (PBDE) [DE-71], octabromodiphenyl ether (OBDE), and decabromodiphenyl ether (DBDE); and the ubiquitous perfluoroochemicals (PFCs), perfluorooctane sulfonate (PFOS) and perfluorooctanoic acid (PFOA) were screened using an in vitro Xenopus oocyte GVBD assay. Results suggested that each of the BDEs, but not PFOS or PFOA inhibited progesterone-induced GVBD in vitro in a concentration-dependent manner. BDE potency for progesterone-induced GVBD, expressed as an IC25, ranged from 0.08 Âµg/L for PBDE to 8.45 Âµg/L for DBDE. PFOS, PFOA, and to a lesser extent PBDE, inhibited androstenedione-induced GVBD with potencies (IC25) ranging from 1.98 Âµg/L for PFOS to 8.14 Âµg/L for PBDE. Radioreceptor binding studies with isolated OMPR indicated that inhibition of progesterone-induced GVBD was proportional to BDE binding affinity for the OMPR. These results suggested that the inhibitory effects of the BDEs on GVBD may be mediated primarily through the OMPR, whereas, the inhibitory nature of PFOS and PFOA is postulated to be a result of inhibition of the AR pathway. Furthermore, the inhibitory potency of the BDEs appeared to be inversely related to the degree of bromination of each mixture. Ultimately, these results suggested that these substances were capable of interfering with endocrine systems and reproductive processes in amphibians.

06.01.05 NOTES ON THE FOOD HABITS OF GREAT HORNED OWLS IN OKLAHOMA. Vanessa Kittredge, Paul Wilson, William Caire, BIOLOGY, University of Central Oklahoma, Edmond, OK.

We analyzed the prey remains in 17,744 great horned owl (Bubo virginianus) pellets collected throughout the state of Oklahoma from 1976 to 1999. The pellets contained remains from insects, crayfish, snakes, a Phrynosoma cornutum, 16 bird and 29 mammal species. Prey items in the diet of Great Horned Owls in Oklahoma in this pellet study and those listed in previously published reports are summarized.

06.01.06 EVALUATION OF THE NIDEK OPD SCAN ABERROMETER. 1 Thomas Salmon, 2 Jeffrey Cleland, 1 1001 N. Grand Avenue, Northeastern State University, Tahlequah, OK. 2 Aircreww Health and Performance, US Army Aeromedical Research Lab, Fort Rucker, Alabama.

Purpose. Aberrometers based on the Shack-Hartman principle are the most widely used instruments for measuring the eye’s higher-order aberrations. Their validity is well established. The Nidek OPD Scan uses a different principle that may have theoretical advantages. Our purpose was to evaluate the OPD Scan by comparing its measurements to those of a Shack-Hartmann aberrometer (the COAS) on human eyes. Methods. 48 Army flight candidates who had had successful LASIK surgery volunteered to have their eyes measured by both instruments. Raw data consisted of Zernike coefficients describing the magnitude and sign for 39 specific aberrations of each eye. The values reported by each instrument were compared using Student’s T test for paired data and difference-versus-mean analysis. We also compared spectacle prescriptions measured by both instruments. Results. For certain aberrations, the two instruments reported significantly different values. The differences increased in direct proportion to the magnitude of the aberrations. Spectacle prescriptions compared well and agreed closely with clinical data. Conclusion. Relative to the COAS, a Shack-Hartmann-type aberrometer, the OPD Scan tended to overestimate certain higher-order aberrations. Both instruments showed similar good accuracy for measuring the spectacle prescription (lower-order aberrations). Doctors should take this into account when using the OPD Scan.

06.01.07 TOXOPLASMA GONDII ACTIVATES TRANSCRIPTION FACTOR HIF1 INDEPENDENT OF EXTRACELLULAR SIGNAL-REGULATED KINASE. Mark Johnson, Biology, University of Central Oklahoma, Edmond, OK.

Hypoxia inducible factor-1 (HIF1) and SREBP2 (sterol regulatory element-binding protein-2) are transcription factors responsible for the induction of genes which are either pro-parasite or pro-host. HIF1 is responsible for the induction of glucose transporters and glycolytic enzymes, factors controlling angiogenesis (VEGF) and erythrocyte proliferation (Epo) when in presence of hypoxia. SREBP2 is a transmembrane ER resident protein that in response to decreased cholesterol is cleaved by two proteases, releasing SREBP2 into the cytosol freeing it to translocate to the nucleus for lipogenesis. By identifying the molecular host-parasite relationship during infection, we see that the transcriptional and signaling pathways reveal potential chemotherapeutic targets. Within the DNA construct, a luciferase reporter was attached to the promoter region of the target genes so that the expression of SRE/HRE can be measured by luciferase activity. Because HRE is mediated by the accumulation of HIF1, our results show that Toxoplasma gondii activates HIF1 during infection and that the synthesis of HIF1 secondary to ERK1/2 phosphorylation is not a supported event.

06.01.08 THE OKLAHOMA
DATABASE: HIGHER-ORDER ABERRATIONS OF NORMAL EYES. 1 Thomas Salmon, 2 Corina van de Pol, 1 Oklahoma College of Optometry, Northeastern State University, Tahlequah, OK. 2 Refractive Surgery Center, US Navy Medical Center, San Diego, CA.

Purpose. Aberrometers are new instruments that can measure higher-order aberrations (HOAs) of eyes. These difficult-to-measure optical errors cannot be corrected by spectacles and sometimes cause poor vision after refractive surgery. To diagnose HOAs doctors need to know the values expected for normal eyes, but standard norms have not been established. Our purpose was to develop a table of reference norms for ocular HOAs. Methods We collected HOA data for 2,560 normal adults eyes (1,433 subjects) from 10 sites around the world, then computed overall means and standard deviations for numerous HOA indices for pupil diameters of 6.0, 5.0, 4.0 and 3.0 mm. Results Tables list means and standard deviations for forty-one HOA indices for four pupil diameters. These include the following mean magnitudes (6.0-mm pupil): vertical coma 0.14 μm; spherical aberration 0.13 μm; oblique trefoil 0.11 μm; total HOA RMS 0.33 μm. 90% of eyes had HOA values less than double the means. Conclusion The HOA statistics reported here can be used as reference norms to help diagnose eyes with abnormally large HOAs. This will be especially useful for managing patients with poor vision that cannot be corrected with conventional spectacles, such as refractive surgery patients that suffer from poor vision in low light.

* Preliminary results were presented at Research Day last year. A report of this study has been accepted for publication in the Journal of Cataract and Refractive Surgery.

06.01.09 THE EFFICACY OF COMPACTED-DNA NANOPARTICLES IN OCULAR GENE DELIVERY. Contessa Majors, Cell Biology, Langston University, Langston, OK.

Purpose: The purpose of this research was to examine the effects of DNA nanotechnology as a form of gene therapy for retinal degeneration slow (rds). Transgenic rds +/- mouse mimic, Retinitis Pigmentosa (RP), a genetic disease that affects the retina and causes the loss of peripheral and night vision; RP is the result of a disruption in the rds gene. In this study we deliver the therapeutic gene by subretinal injections in the eye of the rds/+ mouse. Immunohistochemistry (IHC) and Polymerase chain reaction (PCR) were used to analyze gene expression at different time points post-injection (P12 until PI 14). Results: Our preliminary results indicate that the expression of the supplement gene can be detected at P114. Conclusions: Analysis of further time points are in progress and hopefully in the future the injection of DNA nanoparticles into the retina could be used in the delivery of therapeutic agents to prevent or slow retinal disease development.

06.01.10 THE ROLE OF PREDATION IN EPISODIC TERRITORY ACQUISITION BY FIRST-YEAR COLLARED LIZARD MALES. Troy Baird, Jennifer Curtis, Biology, University of Central Oklahoma, Edmond, OK.

Previous studies have shown that 2yr+ collared lizard males usually defend reproductive territories, whereas sexually mature first-year males are usually non-territorial. The plastic nature of these tactics has been demonstrated by the transition to territorial behavior by first-year males when all older males were removed experimentally. Rapid change in tactics suggests that first-year males are poised to take advantage of opportunities for territory acquisition, however, simultaneous predation on several territorial males is unlikely. We tested the hypothesis that non-territorial first-year males switch to territorial tactics in response to predation on individual territorial males by recording the behavior of 31 first-year males prior to and following 13 predation events. Following nine events, no adjacent territorial male(s) expanded into the vacated territory, whereas at least one territorial male expanded in four instances. Predation prompted increases by first-year males in rates of patrol, frequencies of distant display, aggressive encounters with males, courtship with females, and the number of females courted. By contrast, whether or not an adjacent territorial male expanded into the removed male’s territory influenced the frequency of male-male and courtship encounters, but not the frequencies of patrol and display. In addition, over the last 16 years overwinter mortality or predation on territorial males early in the season has allowed first-year males to establish and maintain territories. Focal observations on these first-year males revealed frequencies of social behavior similar to that of 2yr+ males. Together these results suggest that first-year males change their social tactics in response to predation on individual territorial males, the presence of expanding neighboring males influences frequencies of social interactions with conspecifics but not rates of patrol and display, and that mortality of territorial males episodically allows territory acquisition by first-year collared lizard males.

06.01.11 THE QUANTIFICATION OF AQUEOUS TRACERS IN LABORATORY AQUIFER MODELS USING A LIGHT TRANSMISSION VISUALIZATION METHOD. 1 Carol Bratt, 2 Lynn Wood, 2 Michael Brooks, 2 Mustafa Bob, 1 McNair
Fecal pollution of water resources is a serious problem. Remediation of fecal pollution is simplified if the source of contamination is known. One method for identifying the source of contamination utilizes PCR amplification of 16S rRNA gene (rDNA) sequences from a class of obligate anaerobic bacteria (order Bacteroidales) that are abundant in the gut of warm-blooded animals. Bacteroidales strains were examined for their potential use as specific indicators of chicken fecal contamination. DNA from chicken feces was amplified using Bacteroidales-specific 16S rDNA primers. PCR products were cloned and sequenced. Phylogenetic analysis of 270 bp Bacteroidales 16S rDNA sequences from human, cow, and chicken (this study) feces revealed several host-specific clades. PCR primer pairs were designed based on the sequences from a putative chicken-specific clade. Preliminary results indicate that one of the primer pairs amplified chicken and turkey fecal DNA suggesting that this primer pair may be avian-specific. Future plans include analysis of 670 bp 16S rDNA PCR products for the design of chicken feces-specific PCR primer pairs.

PREVALENCE OF ANTIBODIES TO WEST NILE VIRUS IN SELECTED FARM ANIMALS IN CENTRAL OKLAHOMA. Riaz Ahmad, Jeff Burke, Biology, University of Central Oklahoma, Edmond, OK.

We are conducting a survey of the prevalence of IgG antibodies to West Nile Virus (WNV) in central Oklahoman farm animals. A total of 300 serum samples will be collected from cattle, pigs, goats, sheep, and chickens reflecting three seasons. Two sampling cycles have been completed and the third is underway. Currently, we are in the process of standardizing the indirect Enzyme Linked Immunosorbent Assay (ELISA) which will be employed to detect the presence of antibodies to WNV in the serum samples. Presence of IgG for West Nile Virus will lead to a color change indicating a positive test. The strength of the color change will be measured by the optical density, indicating the concentration of the antibodies in each serum sample. The data will be statistically analyzed with respect to species, season, and location using a three-way analysis of variance (ANOVA).

COMPARING SELF-INITIATED MOBILITY IN INFANTS WITH AND WITHOUT NEUROLOGICAL DISABILITY. 1 Vaniecea Pollard, 2 Thubi Kolobe, 1 Biology, Langston University, Langston, OK. 2 Rehabilitation Sciences, Oklahoma University Health Sciences Center, Oklahoma City, Oklahoma.

Infants with neurological disabilities, such as cerebral palsy (CP) and Down syndrome (DS), show severe delays in motor and cognitive development relative to chronological age. Involvement of neural plasticity as a treatment of such neurological disorders is increasingly being seen. Previous studies have found that interven-
sions involving sensory linked motor performance have been critical in facilitating motor improvement. The purpose of this study was to compare self-initiated mobility in children with CP and DS. Three infants, ages 8, 9, and 22 months, with diagnoses of no CP, DS, and CP respectively, participated in the study. The infants were videotaped in 5 minute trials using the Self-Initiated Prone Progression Crawler (SIPPC), a mobility aid that assists in infant crawling. Each recorded trial was coded and scored using the Mobility Scale. Movement and speed data from the trials showed the infants with CP and DS performed with less amplitude and purpose when compared to the typically developing child. Differences were also noted in the child with CP, displaying the lowest scores in coordination and movement. Asymmetry was also noted in the initiation movements of the children with CP and DS. However, overall test scores improved over time, suggesting that the SIPPC is an effective tool, taking advantage of experience-expectant and experience-dependent characteristics of learning and skill acquisition.

**06.01.15 EFFECT OF VARIOUS CHEMICALS ON THE GROWTH AND REPRODUCTION OF CHAETOMIUM GLOBOSUM, AN INDOOR MOLD.** Dustin Joplin, Charles Biles, David Bales, Reenee Campbell, Terry Cluck, Biology, East Central University, Ada, OK.

Chaetomium globosum is a soilborne fungus that can grow proficiently indoors. Using building materials as a food source the fungus reproduces sexually with perithecia which yield abundant ascospores. The fungus can cause respiratory problems in humans and more severe symptoms in those who are immuno-compromised. Previous experiments indicated that potassium chlorate inhibited perithecia production. Further experiments were conducted to determine the effect of various chemicals on the growth and reproduction of C. globosum. Chemicals used at 4 different concentrations were KClO3, KCl, NaCl, and sodium salicylate. Radial growth was significantly inhibited by sodium salicylate at 0.5 mM concentrations. Significant growth reductions were not seen in KClO3, KCl, and NaCl. Sodium salicylate also inhibited perithecia production, however, not to the extent of KClO3. KClO3 inhibited perithecia production at the 0.5 mM. KClO3 has been utilized as a mutagen to generate Nit mutants. It appears that KClO3 specifically inhibits genes involved in perithecia production.

**06.01.16 DRY- AND WET-SCANNING ELECTRON MICROSCOPY OF CHAETOMIUM GLOBOSUM GROWN IN POTASSIUM CHLORATE AND OF GROUND WATER COLLOIDS.** 1 Desiree Wright, 1 Charles Biles, 2 Rick Wilkin, 2 Tony Lee, 1 McNair Scholars Program, East Central University, Ada, OK. 2 Kerr Research Center/U.S. Environmental Protection Agency, Ada, OK.

Chaetomium globosum is commonly found in damp indoor environments and can be allergenic to humans. Previous experiments indicated that potassium chlorate inhibited the perithecia formation and hyphal growth of C. globosum. Scanning electron microscopy (SEM) with hydrated samples (wet-SEM) has been used recently to investigate microbes under various environmental conditions. In this study, a comparison was made between dry-SEM and wet-SEM using an organic sample of C. globosum and an inorganic sample of ground water colloids. Dry-SEM samples indicated that as the amount of KClO3 increased, the hyphal diameter decreased. No conclusive data was obtained for C. globosum utilizing the wet-SEM technique. Images were obtained of ground water colloids using dry- and wet-SEM. Artifacts were observed and aggregates formed when the sediments were filtered and dried for the dry-SEM mounts. In contrast, the hydrated mounts displayed no artifacts or aggregates. The capsules used for the wet-SEM are delicate and wet-SEM cannot be performed unless the sample is within a distance of 2-3 microns of the membrane. Due to the nature of C. globosum attachment to the membrane, wet-SEM observations were difficult to obtain. In conclusion, dry-SEM showed decrease in hyphae width when C. globosum was grown in 2-15 g/L potassium chlorate medium. Wet-SEM results with colloids were superior to dry-SEM results. Wet-SEM provides a possible method to observe the indoor molds in a hydrated state without further experimentation.

**06.01.17 POPULATION GENETIC STRUCTURE OF THE TEXAS MOUSE (PEROMYSCUS ATTWATERI) BASED ON CYTOCHROME B SEQUENCE DATA.** Justin Lack, Gregory Wilson, Biology, University of Central Oklahoma, Edmond, OK.

The Texas mouse Peromyscus attwateri has a patchy distribution ranging from central Texas, across most of Oklahoma, southern Kansas and Missouri, and northwest Arkansas. To examine the evolutionary and biogeographic history as well as contemporary population genetic structure, phylogenetic analyses were conducted on an 870 base pair fragment of the cytochrome b gene for P. attwateri from 16 localities across the entire geographic range of the species. Preliminary results identified 37 unique haplotypes among the 66 individuals examined, with an overall nucleotide diversity (π) of 0.003 and a haplotype diversity (h) of 0.737. Analysis of molecular variance (AMOVA) results revealed that a greater portion of the overall variation (57.79%) was
attributed to within population variation with a smaller portion (42.21%) attributed to among population variation. Of the 37 haplotypes, seven were shared among populations, with only one of these haplotypes found in more than two populations. This is also supported by a high \( \Phi_{ST} \) value of 0.42215 (\( p < 0.0001 \)).

06.01.18  INTERACTION OF ESCHERICHIA COLI WITH DIPHENHYDRAMINE HCL AND PSEUDOEPHEDRINE HCL. Christal Carpenter, KJ Abraham, Biology, Langston University, Langston, OK.

Microorganisms are capable of transforming a wide range of drugs and environmental contaminants. In the human intestine, microorganisms interact with drugs leading to the transformation of drugs and the production of mutagenic or carcinogenic compounds. Escherichia coli (E. coli) is a bacterium found in humans in places such as the throat, intestine and the colon. The objective of this research was to study the interaction between E. coli and the active ingredients of the allergy drug Benadryl-D, Diphenhydramine HCl and Pseudoephedrine HCl. Small concentrations of the drug was added to liquid cultures of E.coli with Luria-Burton medium. The liquid cultures were separated using organic solvents and analyzed by thin layer chromatography (TLC). Compounds detected on TLC were further analyzed using UV and Infrared spectrophotometers. The presence of a new compound in one of the organic fractions as result of the interaction was noted.

06.01.19  AN INTERDISCIPLINARY APPROACH TO UNDERSTANDING PLANT FUNCTION IN AN URBANIZED ECOSYSTEM. L. Brooke Stabler, Biology, University of Central Oklahoma, Edmond, OK.

The ecology of plants in cities is poorly understood relative to their role in natural and agro-ecosystems. The study of urban ecosystems involves an interdisciplinary approach that considers an interacting triad of social, physical, and biological processes. Data presented summarize portions of a six year, interdisciplinary study of the ecology of plants in the Central Arizona-Phoenix Long Term Ecological Research (CAP-LTER) study area. Methods employed included an extensive field survey of plant populations, field measurements of plant gas exchange, use of GIS technology, mathematical modeling, a sociological survey, and controlled experiments. Plant density and landscape design were influenced by social factors such as land use change and neighborhood homeowner associations. Plant productivity was primarily affected by irrigation, but was also limited by high temperature during summer months. Air temperatures along multiple transects in the CAP LTER study area were negatively correlated to vegetation density. Survey data suggested that landscape design preference might be influenced by the local environment. These data emphasize the interaction of plants, people, and the physical environment and the importance of interdisciplinary approaches to understanding ecological processes in human dominated systems. Similar methods might be used in central Oklahoma to understand how expansion of cities influences local ecology and to promote sustainable development.

06.01.20  A FORK HEAD BINDING SITE CLUSTER FROM THE HEAD INVOLUTION DEFECTIVE GENE OF DROSOPHILA MELANOGASTER DOES NOT FUNCTION AS A GENERAL SILENCER. 1 John de Banzie, 2 Chike Cao, 2 Michael Lehmann, 1 Natural Sciences, Northeastern State University, Tahlequah, OK. 2 Biological Sciences, University of Arkansas, Fayetteville AR.

In Drosophila melanogaster the larval salivary glands regress during metamorphosis. This is mediated by expression of the cell death gene head involution defective (hid). Expression of hid occurs in response to the last of several pulses of the steroid hormone 20\( \Delta^4 \)hydroxyecdysone that precede metamorphosis. It has been suggested that hid expression is blocked during all but the last hormone pulse by the transcription factor Fork head (Fkh). In support of this hypothesis there is a cluster of Fkh binding sites in the hid gene. We tested the hypothesis that this cluster is a Fkh dependent silencer.

Transgenic fly lines were generated containing the Fork head binding site cluster adjacent to the lacZ gene integrated at random locations in the genome. Any line where the construct integrates close to an enhancer may show enhancer-driven tissue-specific expression of beta-galactosidase. This was observed in wandering third instar larvae from ten of thirteen lines. Constructs with Fkh under heat shock control were introduced into a line that showed strong expression in the gut and a line that showed strong expression in the salivary glands. After induction of Fkh by heat shock, RNA was isolated from the expressing tissues and the amount of lacZ mRNA determined by Northern blot. Contrary to the hypothesis that the Fork head binding site cluster acts as a Fkh dependent silencer, no reduction in lacZ mRNA was observed in response to ectopic expression of fkh.

06.01.21  EFFECTS NUTRIENT RECYCLING FROM A DETRITIVORE HAVE ON MULTIPLE TROPHIC LEVELS IN AN AQUATIC ECOSYSTEM. James Morel, Tim Patton, Biology, Southeastern OK State University, Durant, OK.
06.01.22  BIRDS USE UV CUES FOR FEEDING. J.R. Lou, Chris Butler, Biology, University of Central Oklahoma, Edmond, OK.

Some birds use ultraviolet (UV) light reflectance for mate selection, but few studies have examined whether UV affects avian foraging habits. We hypothesized that hummingbirds would use UV cues to find food, while seed-eating birds would not. Six feeders were filled with black oil sunflower seed, and four hummingbird feeders were filled with a sucrose solution. Half of the feeders were painted with UV-reflecting paint, and the feeders were placed in each tank to which growth rates will be determined after an additional month of monitoring. Future experiments will include gut analysis and quantification of nutrient excretion by individual smallmouth buffalo. In this presentation, we will provide preliminary results related to smallmouth buffalo effects on primary production, zooplankton production, and nutrients.

06.01.23  EFFECTS OF BLOOD GLUCOSE LEVELS ON OCULAR ABERRATIONS. Christopher McDaniels, Thomas Salmon, College of Optometry, Northeastern State University, Tahlequah, OK.

Purpose: Changes in blood glucose levels (BGL) can alter the eye’s optical aberrations (OA) and affect vision, due to osmotic forces acting on the crystalline lens. Aberrometry is a new technique that measures small OA. Our purpose was to see if BGL and OA are correlated. If so, aberrometry may provide a new non-invasive way to monitor BGL in diabetics.

Results: BGL change varied among subjects, with some fluctuating between 72 and 329 mg/dL. Four subjects exhibited significant correlations between BGL and Z mode Z(2,0) (spherical defocus; r > 0.900 and p < 0.037). Changes were in the range of 0.03-0.25 Åm (0.05-0.28D). Other Z modes showing high correlations with BGL were Z(1,-1), Z(4,0) and Z(4,2).

Conclusion: In some N and D subjects, aberrometry was able to measure changes in some OA that correlated with BGL. The optical changes were smaller than is measurable by standard clinical refraction. These results warrant further study to see if aberrometry may provide a better way to monitor BGL.

06.01.24  SELENIUM-TARGETED DRUG THERAPIES – A MODEL SYSTEM. Reese Lennarson, R&D, Pure Protein LLC/OCAST, Oklahoma City, OK.

Targeted drug therapies allow for greater precision, effectiveness and safety. Recent studies show that the attachment of certain selenium compounds to a targeting molecule such as an antibody allows for the selective destruction of cells without systemic toxicity. This targeted killing ability is based on the catalytic-generation of superoxide radicals (O2-) by specific organoselenium compounds. The key advantages discovered for selenium arming are: 1) Selenium can be covalently attached to an antibody without affecting the antibody’s ability to bind to a cellular protein; 2) Selenium-armed antibodies do not need to be internalized. The killing mechanism is achieved by binding to cell surface proteins; 3) Selenium-armed antibodies have no effect on non-targeted cells due to the short half-life of the superoxide radical; 4) The dose of selenium on any given molecule can be easily increased or decreased to attain an optimal killing effect; 5) Drug resistance has not oc-
curred nor is it anticipated; and 7) Selenium is a normal constituent of our diet. In this study, data will be presented demonstrating the arming of antibodies with selenium and their effect on specific target cells.

06.01.25 MANAGING A REMNANT GROUP OF AN ENDANGERED SONGBIRD ON PRIVATE LANDS: “DANCING” BETWEEN BIOLOGY AND COOPERATORS. Joseph Grzybowski, College Mathematics and Science, University of Central Oklahoma, Edmond, OK.

Songbirds reaching remnant status require risk management from stochastic biological processes but also sources of support. The new 22-year process of monitoring and managing the northernmost, but remnant, group of breeding Black-capped Vireos elevated the 2 initially-detected pairs to only between 7-14 pairs. Tactics for cowbird control (preventing brood parasitism) evolved (from removing cowbird eggs in vireo nests to cowbird trapping, and/or shooting cowbirds in vireo territories). But, as with habitat management (from maturation and juniper encroachment), success was constrained by terrain, landowner array and chance. For example, single elusive cowbirds could impact up to half of the existing female vireos. In addition, multi-agency collaborations maintained vagaries of funding and politics. The 22-year history depicts markers for impacts of stochastic biological processes (variations in poor-good reproductive success and annual returns, dispersal and impacts of some drought years), with the similarly stochastic processes of agency and landowner interactions (shifting mosaics of agency personnel, expertise, priorities, planning, and funding, with landowner sensitivities). Positively aligning and expanding these processes remains a significant conservation challenge to recovering any remnant group on private lands. Current experience suggests that the best expectations for remnant groups on private lands are extended (if risky) maintenance of limited numbers.

06.01.26 INTRASPECIFIC VARIATION IN FUSARIUM OXYSPORUM POLYGALACTURONASE ACTIVITY. 1 Jessica Clark, 1 Charles Biles, 1 David Bales, 1 Dustin Joplin, 2 Benny Bruton, 1 Biology, East Central University, Ada, OK. 2 South Central Agricultural Research Lab, USDA-ARS, Lane, OK 74555.

Fusarium oxysporum is a well known plant pathogen that causes wilt diseases in several plant species. This fungus also causes a number of human diseases and has been identified as a common indoor mold. Polygalacturonase (PG, EC 3.2.1.15) is an enzyme that degrades the pectin in the middle lamella between plant cell walls, resulting in fruit softening and decay. Plants produce PG along with other pectinases in the normal ripening process of fruit. Fungi produce PG to soften cell walls for further penetration and breakdown polygalacturonic acids as a carbon source. PG has been investigated as a virulence indicator in both bacteria and fungi. Several isolates of F. oxysporum were obtained from the USDA, ARS laboratory in Lane, OK. Proper identification procedures confirmed that the isolates were F. oxysporum. These isolates were grown in pectin/minimal salt broth cultures and compared for PG activity. Variation was observed among the isolates tested. Further research will compare the PG banding patterns of F. oxysporum on electrophoretic gels. Correlation of PG activity and banding patterns to virulence data will be useful in determining the role of PG in the pathogenicity of F. oxysporum.

06.01.27 CHARACTERIZATION OF THE GENE CODING FOR AZOREDUCTASE FROM ENTEROBACTER AEROGENES. KJ Abraham, Biology, Langston University, Langston, OK.

Azo dyes make up a very large collection of industrial dyes used in commercial processing. Azoreductase enzymes are involved in the reductive cleavage of azo groups. 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 research was to study the azoreductase activity in Enterobacter aerogenes and characterize the gene coding for azoreductase in E. aerogenes. E. aerogenes showed azoreductase activity when tested with the azo dye, Direct Blue-15. Genomic DNA was extracted using a standard procedure. Polymerase chain reaction (PCR) analysis with cytochrome P450 primers did not yield positive results. Further work will include use of different PCR primers, DNA sequencing and nucleotide analysis of the azoreductase gene.

06.01.28 EXPRESSION OF ALPHA-SMOOTH MUSCLE ACTIN: GENETIC OR ENVIRONMENTAL?. Sarah Chukwuma, Tara Stevenson, Biology, University of Central Oklahoma, Edmond, OK.

The purpose of this experiment is to determine whether alpha-smooth muscle actin is caused by a genetic or environmental factor, based on its expression in various clone cells. Alpha-smooth muscle actin is a protein found in stress fibers of highly contractile cells in normal wound healing and in Dupuytren’s contracture, a pathology. Cells will be cultured using Fibroblast culture methods. Clones stain similar to the parent population which is caused by an environmental factor. Cells are responsive to environment. How this occurs...
is unknown which leads to basis for future studies.

**06.01.29 BIOINFORMATICS-RELATED CURRICULUM REDESIGN FOR GENETICS.**
Kathi McDowell, Natural Science, Northeastern State University, Broken Arrow, OK.

This curriculum development project fostered a learning-centered approach to the study of bioinformatics. An undergraduate experience should prepare the student for their chosen profession. Students need firm, solid groundwork in their chosen field if they wish to compete in the job market or go to professional or graduate school. Biology majors should graduate with a strong background in the basic principles of biology. In today’s world students who wish to pursue careers in molecular biology need to be familiar with bioinformatics and the modern way in which genomics is studied. Bioinformatics and genomics are the fastest growing areas of biology. Implementation for the new course curriculum addressed class structure, database exploration, assessment of students, and feedback for improving the course. The databases explored included OMIM, GenBank, BLAST, Spidey, BLINK, MMDB, and Primer3. With the use of these databases the students were able to analyze genes responsible for human genetic disorders, design primers for prospective PCR experiments, examine putative proteins for three dimensional structures, explore ramifications shape may have in function, and explore possible affects that mutations may play. In addition, this project enriched the undergraduate experience for these students by providing them with insight into real world applications of genetics. Sponsored by the Oklahoma INBRE program.

**06.01.30 POPULATION GENETIC STRUCTURE OF THE YELLOW-BELLIED MARMOT IN THE CENTRAL ROCKY MOUNTAIN REGION OF NORTH AMERICA.** 1 Gregory M. Wilson, 1 Prianka Rajan, 2 Karen McBeek, 2 Ronald A. Van Den Bussche, 1 Biology, University of Central Oklahoma, Edmond, OK. 2 Zoology, Oklahoma State University, Stillwater, OK 74078.

We used PCR-RFLP analysis of a 2.4-kb fragment encompassing the ND5 and ND6 subunits of the NADH dehydrogenase complex and DNA sequence data from the left domain of the control region of the mitochondrial (mtDNA) genome to investigate genetic and phylogeographic structure in populations of the yellow-bellied marmot, Marmota flaviventris, collected in boreal communities throughout the central Rocky Mountain region. PCR-RFLP and DNA sequence analyses revealed similar results, with the latter providing a clearer resolution. Mean haplotype diversity (h) was high, whereas average nucleotide diversity (π) was low indicating a large number of closely related haplotypes throughout the region. AMOVA revealed significant population substructure (P < 0.001). Most of the diversity occurred within populations, whereas a lower amount of genetic variation was attributed to differences among populations in different mountain ranges. Nested clade analysis revealed a combination of contemporary and historical factors to explain the observed distribution of mtDNA haplotypes. Allopatric fragmentation was inferred for populations in the Bighorn Mountains and Black Hills with other haplotypes from eastern Wyoming and northern Colorado. Allopatric fragmentation also was inferred for populations occurring on either side of Green River and Wyoming Basin. These results indicate that recent ecological circumstances and climate oscillations during the Pleistocene have affected the genetic composition of populations of M. flaviventris.

**06.01.31 ARTHRITIS & IMMUNOLOGY INFLAMMATORY CYTOKINE MONITORING PANEL (ICMP).** Michelle Gambarelly, Biotechnology, Oklahoma City Community College, Oklahoma City, OK.

Advances in the field of cell biology have defined a complex and interdependent set of extracellular and intracellular signaling molecules that control normal cell function. Perturbations in signaling pathways may be important indicators, and possibly the root cause, of many diseases. Therefore, there is a growing interest among clinicians as well as drug discovery groups in monitoring multiple components of signaling pathways simultaneously.

Rheumatoid arthritis is a common inflammatory disease. Optimizing treatment throughout the disease cycle improves outcomes. However, current laboratory test have poor predictive power, delaying the identification of effective treatment.

RiGen has licensed technology for a blood test, denoted the TextInflammatory Cytokine Monitoring Panel (ICMP) that measures the levels of 25 cytokines in RA patient sera.

Our preliminary data suggest that:

1) Cytokine levels measured by the ICMP correlate with disease activity, facilitating identification of patients with more severe disease in need of aggressive therapy.

2) The ICMP identifies specific therapeutic targets on a patient-specific basis, allowing tailoring of therapies.

3) ICMP cytokines profiles of responsive and non-responsive patients are readily distinguishable, information that could limit the time patients receive ineffectual treatment.
These results suggest that serum cytokine profiling with the ICMP can be used to optimize RA treatment design and thereby enhance a rheumatologist’s efficacy and efficiency.

Herein, we propose to study changes in cytokine levels correlated to standard disease activity measured in RA patients treated with methotrexate (MTX).

The aim will allow identification of cytokine profiles associated with RA, with more aggressive disease, response to drugs, and residual disease activity. This database of cytokine response profiles will provide an evidenced-based treatment guideline for physicians using the ICMP.

06.01.32 AN EXPERIMENTAL FIELD STUDY OF ENERGY ALLOCATION TRADE-OFFS IN FEMALE COLLARED LIZARDS. Rory S. Telemeco, Troy A. Baird, Biology, University of Central Oklahoma, Edmond, OK.

Life-history theory predicts a trade-off between energy allocated to growth and egg production in females having iteroparous reproduction. We developed a method for supplementing the diets of reproductively active Eastern collared lizard females in situ to determine how females would allocate extra energy to growth and reproduction. We captured 31 females by noosing every 1-4 days and measured snout-to-vent length (SVL) and total body mass (g). We fed commercially available crickets to 15 of these females for 10-50 days, whereas 16 other females were not fed. All females were released at their precise capture locations following feeding and/or measurement. Fed females had a higher growth rate than non-fed females, but there was no difference in the number of clutches produced between the two groups. Furthermore, we found a trend for age and supplemental feeding to have a synergistic effect on growth, with fed first-year females having higher growth rates than fed 2yr+ females. We also found that, in 2yr+ females, the number of crickets fed per day was positively correlated with growth rates, whereas variation in the number of crickets fed per day in first-year females had no effect. Our data support the hypothesis that mature female collared lizards allocate excess energy to growth rather than to immediate production of additional clutches of eggs.

06.01.33 WHOLE-MOUNT IN SITU HYBRIDIZATION OF 5'-NUCLEOTIDASE GENE IN DICYSTOCELUM DISCOIDEUM. Adarsha Koirala, Biology, Southwestern Oklahoma State University, Weatherford, OK.

Dictyostelium discoideum, commonly known as slime mold consists of only two different cell types, which makes it an interesting model organism. The gene of interest is 5'-Nucleotidase, which has been found to be involved in cell-cell interaction and adhesion activity. Our objective is to localize the gene expression during various stages of Dictyostelium life cycle by the process of in situ hybridization. The 5'-NT gene was amplified from a cDNA clone, identified and subcloned into pSPT18 transcription vector. The 5nt gene was used as a probe to identify the mRNA in whole-mount Dictyostelium structures. The DNA and RNA probes were labeled using DIG labeling method. The labeled DNA was then hybridized to whole mount of Dictyostelium in different developmental stages. The hybridization was detected by immunological techniques. The localization of the mRNA will be compared to that previously obtained by reporter gene activity. Supported by INBRE, Department of Biological Sciences, SWOSU.

06.01.34 PREFERRED HERBACEOUS PLANT STRUCTURES OF CAPTIVE CONVICT CIHLID FISH, CICHLASOMA NIGROFASCIAITUM. Brice Harader-Pate, Erik Terdal, Natural Science, Northeastern State University, Broken Arrow, OK.

Convict cichlids, Cichlasoma nigrofasciatum, are freshwater fish native to Central American streams. Convict cichlids are widely used as model organisms in studies of behavior. Convict cichlids are also popular among aquarium hobbyists. In the wild, convict cichlids are found near large rocks which provide shelter for themselves and their offspring. However, in captivity many hobbyists decorate their aquaria with plant life. A study will be conducted to determine if convict cichlids prefer live plant life to artificial plant life and if they have preferences among plant growth forms. Variations among caulescent, acaulescent and free-floating aquatic plants will be compared using ten, 29 gallon aquariums, each with one fish. Aquariums will be divided into three sections: e.g., artificial plant, no plant and the natural plant. Also, each will be cross repeated with the three plant growth forms. Thus, each fish will be tested 15 times in various combinations of the six plant categories. Time spent in each section of the tank will be monitored and compared with statistical analysis using ANOVA. Pilot studies reported here will guide actual methodology by way of trial and error. Results of this experiment are expected to be obtained by April 2007 and will be used to improve the husbandry of captive convict cichlids.

06.01.35 INFLUENCE OF POPULATION DENSITY ON INTRASPECIFIC COMPETITION AND GROWTH IN HATCHLING COLLARED LIZARDS. Jennifer L. Curtis, Dusti Timanus, Troy A. Baird, Biology, University of Central Oklahoma, Ed-
Hatching collared lizards grow at high rates to reach a size large enough to survive their first winter. Therefore, variation in the intensity of competition for food may have important effects on growth rates and survival. When lizard density is high, there is potential for increased competition for arthropod prey and good perches to scan for prey, as well as increased potential for social interactions which may interfere with effective foraging by sit-and-wait lizard predators. On the other hand, lizards at high density may reduce such social interference by avoiding aggression and foraging over larger areas to minimize competition with conspecifics. We tested these alternatives by measuring growth rates, the frequencies of foraging acts, and social activity (rates of display and aggression), and space use (home range area and dispersal distance) in collared lizard hatchlings during two seasons when density differed markedly. At high density, hatchlings had lower growth rates despite no apparent decrease in foraging opportunities, and a tendency to use larger areas to forage. Hatchlings had more frequent social activity at high density, significantly so for frequency of display. These results suggest that hatching growth rate decreases with increasing density, and the proximate mechanism may be increased agonistic interactions by more densely concentrated hatchlings.

**06.01.37 DEVELOPMENT OF A PORTABLE, TENSION-MAINTAINING DERMAL EQUIVALENT.** Tiffany Palmer, Maverick Mathis, Melville Vaughan, Biology, University of Central Oklahoma, Edmond, OK.

An in vitro model to study wound healing is needed. The purpose of this study is to develop a dermal equivalent that will maintain tension and can be transported. We will use plastic mesh rings to help prevent collagen contraction and maintain tension. Rings of different sizes and depths will be made and dermal equivalents, composed of human fibroblasts and collagen, will be incubated in the presence or absence of the rings. After incubation, dermal equivalents will be prepared for morphological analysis. Tension maintenance will be determined by the presence of stress fibers and other structures associated with tension, like focal adhesions. Once a model with tension and portability is successfully developed we will further develop this dermal equivalent into a skin equivalent by incorporating epithelial cells. Models such as these will be an important tool to study mechanisms of wound healing and may be useful for scientists to study skin aging and cancer progression.

**06.01.36 ISOLATION OF C. ELEGANS MUTANTS DEFECTIVE IN REGULATING CHolinERGIC GENE EXPRESSION.** 1 Dennis Frisby, 1 William K. III Walker, 2 James Rand, 1 Biological Sciences, Cameron University, Lawton, OK. 2 Molecular, Cell & Developmental Biology, Oklahoma Medical Research Foundation, Oklahoma City, 73104.

The cha-1 gene encodes choline acetyltransferase (ChAT), required for acetylcholine biosynthesis, and the unc-17 gene encodes the vesicular acetylcholine transporter (VACHT), which is necessary for synaptic vesicle loading. It was previously shown that these genes comprise a cholinergic “operon” with a novel structure; the unc-17 coding sequence is completely nested within the first intron of cha-1, and the mRNAs for cha-1 and unc-17 are produced from alternative splicing of a common precursor RNA (Alfonso et al., 1994). Our earlier analysis of the common upstream regulatory region revealed a number of highly conserved regulatory sequences required for expression of cha-1 and unc-17 in specific sets of neurons. We are now using the information and the tools we have developed to identify proteins required for regulation of the cha-1 and unc-17 complex by isolating and characterizing EMS generated mutants exhibiting altered expression of a cholinergic reporter gene. The starting strains contain a chromosomally-integrated gfp reporter plasmid, driven by the full or partially deleted versions of the cholinergic promoter. Preliminary analysis of our mutants will be presented.

**06.01.38 AN ALTERNATIVE MODE OF TRANSMISSION FOR WEST NILE VIRUS - RODENT FECES?.** 1 Sherry Meeks, 1 Gregory Wilson, 1 Linda Luna, 2 Charles Baldwin, 1 Biology, University of Central Oklahoma, Edmond, OK. 2 College of Veterinary Medicine, University of Georgia, Tipton, Georgia.

West Nile (WN) virus is a mosquito-borne flavivirus. It is a neuropathogen in humans, horses, and birds and is known to infect other animals. To date, there have been 47 species of mammals other than humans and horses that have tested positive for WN virus; including rodents, primates, bats, rabbits, deer, raccoons and other carnivores. Mosquito-borne transmission of WN virus is the predominant mode of transmission. Animal-to-animal transmission has been documented via ingestion of contaminated tissue (birds and alligators), cloacal shedding of the virus (birds) and direct transmission (birds). Animal-to-human transmission has not been documented, although recent WN infections in Wisconsin farm workers have been linked to contact with infected turkey feces. In 2005, we reported the presence of WN virus antibodies in 5 genera and 9 species of rodents that previously were unknown to
carry the virus. Our study revealed titers ranging from 1:4 to 1:128 suggesting that some of these mammals may not be dead-end hosts (5PFUs/mL), but may serve as potential reservoirs of infection. Blood samples were collected from the postorbital eye sinus. Tissues (i.e. heart, kidney, liver, spleen, and muscle) also were collected from all specimens. Feces were obtained when available. We propose to test available fecal specimens using Polymerase Chain Reactions (PCR) for the presence of WN virus to determine if rodent feces might serve as an additional vehicle of viral transmission.

06.01.39 EFFECT OF N-ACETYL CYSTEINE ON TGF-BETA STIMULATED ALPHA-SMOOTH MUSCLE ACTIN EXPRESSION BY MYOFIBROBLASTS. Edana Robinson, Casey Sullenger, Dr. Melville Vaughan, Biology, University of Central Oklahoma, Edmond, OK.

A series of experiments will be conducted to determine whether n-acetyl cysteine (NAC) can reduce transforming growth factor-beta (TGF-beta) stimulated alpha-smooth muscle actin (a-sma) expression generated by myofibroblasts. Myofibroblasts are cells important in generating contractile force in normal wound healing and in pathological contractures such as Dupuytren’s contracture and also in scarring. The myofibroblast can be identified by its expression of the alpha-smooth muscle isoform of actin. TGF-beta stimulates myofibroblast differentiation and is present in myofibroblast-rich tissues. We will culture normal fibroblasts and Dupuytren’s diseased fibroblasts on coverslips in the presence or absence of TGF-beta to determine effects on a-sma expression. NAC will be administered during the culture period. NAC has been shown to reduce a-sma expression in fibroblast populations. We are going to test if this affects the individual cells or the entire cell population. Future studies will focus on the ability of NAC to reduce tissue contraction associated with a-sma expression. Results from this study will determine NAC’s ability to aid in treatments of pathological contractures. This study is funded by a grant from the Jackson College of Graduate Studies and Research.

06.01.40 VASCULAR PLANT COMMUNITIES ON GYPSUM OUTCROPS IN THE CIMARRON GYPSUM HILLS, NORTHWESTERN OKLAHOMA. Kristi Rice, Gloria Caddell, Biology, University of Central Oklahoma, Edmond, OK.

Gypsum outcrops have long been an overlooked and understudied habitat of arid to semi-arid ecosystems (Meyer and Garcia-Meyer, 1989; Escudero et al., 2000; Romao and Escudero, 2005). They have been characterized as a stressful environment that can be unfavorable to plant establishment (Escudero et al., 2000) and growth (Barber, 1975). They support unique plant communities (Parsons, 1976) of which some species, called gypsophiles, are restricted to gypsum substrates.

We are conducting a study to analyze the plant communities on gypsum outcrops throughout the Cimarron Gypsum Hills of northwestern Oklahoma, and to evaluate how climate and grazing affect community composition. Average annual precipitation in the study area decreases 15 cm from east to west. The land is generally unsuitable for growing crops, but it is commonly used as ranchland. The impact of grazing is well-established for other types of grasslands in the region, but not for the unique type of grassland on gypsum outcrops. At eleven sites in five counties, we established three to six 10 m x 10 m plots near the center of representative gypsum outcrops; these plots will be sampled seasonally. In the summer of 2006, vascular plant species on plots were identified and voucher specimens were collected. We will present a comparison of summer vascular plant community composition among currently-grazed, recently-grazed, and long-ungrazed outcrops across the Cimarron Gypsum Hills.

06.01.41 INTER- AND INTRA-SPECIFIC COMPARISON OF DROSOPHILA MELANOGASTER AND DROSOPHILA VIRILIS USING ISOZYMES. Amanda Norman, Terry Cluck, Biology, East Central University, Ada, OK.

Drosophila melanogaster and D. virilis populations were obtained from biological supply companies, and a population of each was captured in Ada, Pontotoc County, Oklahoma. Native Polyacrylamide Gel Electrophoresis (PAGE) was conducted on protein extracts from a pair of flies from each population. Stains for various isozymes (ADH, GPD, LDH, MDH, etc.) were used on the Native PAGE gels. Banding patterns in the gels revealed interspecific differences for some isozymes. Other isozymes showed intraspecific variation between populations of each species.

06.01.42 INTER- AND INTRA-SPECIFIC COMPARISON OF DROSOPHILA MELANOGASTER AND DROSOPHILA VIRILIS USING RECIPROCAL CROSSES. Bradley Horn, Terry Cluck, Biology, East Central University, Ada, OK.

Drosophila melanogaster and D. virilis populations were obtained from biological supply companies, and a population of each was captured in Ada, Pontotoc County, Oklahoma. Reciprocal crosses were performed between populations of each species to identify whether or not the populations were, in fact, the same species. Reciprocal crosses were also performed between the two different species to determine if hybridization was possible. Preliminary data indicates that both species...
collected locally were able to produce fertile, viable offspring when crossed with the appropriate population from the biological supply companies. Thus, each locally captured population was the same species as the one ordered. There was no hybridization across species.

06.01.43 RELATEDNESS AMONG FOUR POPULATIONS OF DROSOPHILA DETERMINED BY RANDOM AMPLIFIED POLYMORPHIC DNA (RAPD). Meicha Gaddy, Terry Cluck, Biology, East Central University, Ada, OK.

Drosophila melanogaster and D. virilis populations were ordered from biological supply companies, and a population of each was captured in Ada in Pontotoc County, Oklahoma. Random Amplified Polymorphic DNA primers are being used to grow DNA in each of the four populations of flies: Drosophila melanogaster A (from Ada), Drosophila melanogaster B (from a biological supply company), Drosophila virilis A (from Ada), and Drosophila virilis B (from a biological supply company). Banding patterns from agarose gels will be used to infer relatedness among the Drosophila populations.

06.01.44 EFFECTS OF FUNGAL EXTRACTS ON DROSOPHILA MELANOGASTER DEVELOPMENT FROM EGG TO ADULT FLIES. Chad Impson, Terry Cluck, Biology, East Central University, Ada, OK.

Drosophila melanogaster females were placed on food which was prepared with varying concentrations of fungal extract. The number of offspring per female in each concentration and each fungal extract was used as an indicator of the effect of the fungal extract on the development of eggs through larval and pupal stages to adulthood. Mushrooms typically cause a decrease in adult flies. In this study, plant pathogenic fungi are being tested, and preliminary results indicate that most of those tested have decreased the number of adult flies produced per female. However, some fungal extracts have unexpectedly increased the survival rates for the Drosophila melanogaster. Future studies will involve purification of inhibitory agents produced by the fungi.

06.01.45 INTRASPECIFIC PHYLOGEOGRAPHY OF THE TEXAS MOUSE, PEROMYSCUS ATTWATERI, IN NORTH AMERICA. Vagan Mushegyan, 1 Bremen Hall, 1 Gregory M. Wilson, 2 Russell Pfau, 1 Biology, University of Central Oklahoma, Edmond, OK. 2 Biological Sciences, Tarleton State University, Stephenville, TX.

The Texas mouse, Peromyscus attwateri, occurs in portions of Missouri, Kansas, Arkansas, Oklahoma, and Texas. As compared to other species of Peromyscus, the Texas mouse is thought to be more habitat specific and exhibits a more discontinuous and patchy distribution throughout its geographic range. Preferred habitat includes rocky outcroppings in cedar glades and juniper-grass, oak-juniper, oak, and ravine forest plant communities. In order to elucidate how historical and contemporary factors impact patterns of population genetic structure of P. attwateri, we are using DNA sequence data from the control region of the mitochondrial genome from individuals from several populations across the entire geographic distribution of P. attwateri. Preliminary results reveal that the majority of genetic variability is due to variation within populations, whereas lower levels of variability are attributed to differences among populations. Preliminary mtDNA sequence analysis indicated significant population structure throughout the range of P. attwateri.

06.01.46 ALBOLEPTONIA CYLINDROCAPITATA - A NEW SPECIES FROM PANAMA. Clark Ovrebo, 2 Timothy Baroni, 1 Biology, University of Central Oklahoma, Edmond, OK. 2 Biological Sciences, SUNY - College at Cortland, Cortland, NY 13045.

A new species of gilled mushrooms, Alboleptonia cylindrocapitata (Basidiomycotina, Agaricales, Entolomataceae), is described from Barro Colorado Island, Panama. The species is characterized by the cylindrical, capitate cheilocystidia, white, convex pileus, white frosted pubescent stipe, farinaceous odor and taste, and the 5-7 angled heterodiadetric basidiospores. These features distinguish the fungus from other species of Alboleptonia as well as species in Entoloma and Cladopus.

06.01.47 SENSITIVITY OF F+ ESCHERICHIA COLI TO BILE SALTS. 1 Edana Robinson, 1 Jim Bidlack, 2 Philip Silverman, 1 Biology, University of Central Oklahoma, Edmond, OK. 2 Molecular, Cell, and Developmental Biology, Oklahoma Medical Research Foundation, Oklahoma City.

We investigated an unidentified chromosomal mutation that is responsible for bile salt sensitivity in F+ bacteria. The type IV secretion system encoded by the F plasmid can render F+ cells sensitive to certain anionic detergents, such as bile salts, which are located within the mammalian digestive tract. Repetitive monitoring of optical densities consistently demonstrated that, while the growth of both F- and F+ strains was repressed, the F- strain eventually recovered whereas the F+ strain did not. Similar plasmids were also tested. We hypothesize that this is a regulatory adaptation. Viable count tests confirm that cells are not dying and suggest that this phenomenon may be due to a gene locus that regulates bile salt sensitivity. To further test this hypothesis,
other forms of stress, along with combinations of these stresses will be investigated.

06.01.48 FURTHER INVESTIGATIONS OF BILE SALT SENSITIVITY IN ESCHERICHIA COLI. 1 Uduak Williams, 1 Jim Bidlack, 2 Philip Silverman, 1 Biology, University of Central Oklahoma, Edmond, OK. 2 Molecular, Cell, and Developmental Biology, Oklahoma Medical Research Foundation, Oklahoma City.

Additional studies are being pursued to determine if bile salt sensitivity in bacteria can be attributed to a gene locus within the genome. Techniques such as polymerase chain reaction (PCR), agarose gel electrophoresis, and perhaps DNA sequencing are proposed, to track down and identify this gene locus. Currently, an undergraduate student is learning these techniques with new equipment purchased by the UCO Biology Department and through Oklahoma’s IdeA Network of Biomedical Research Excellence (INBRE) program.

06.01.49 HIGH RESOLUTION SEQUENCE BASED TYPING OF HLA-DQA1. 1 Sean Osborn, 2 Kassi Roselius, 2 Steven Cate, 2 William Hildebrand, 1 Biotechnology, Oklahoma City Community College, Oklahoma City, OK. 2 University of Oklahoma Health Science Center,

Class I and Class II Human Leukocyte Antigens (HLA) mediate most adaptive immune responses. Each individual has a different combination of HLA alleles which need to be optimally matched to achieve success in organ transplantation. The HLA-DQA1 site alone has 34 alleles which our lab identifies with DNA typing. This project was to create a strategy to capture the most SNPs in the allele via the best combination of PCR primers across two exons so that DNA sequencing of the PCR product would distinguish most alleles. The DNA sequencing strategy was also optimized by using bidirectional sequencing due to a deletion in the middle of exon 2 for one allele group. The remaining ambiguities were resolved with Pel-Freez SSP (sequence-specific primer).

06.01.50 CISPLATIN PHARMACOKINETIC/PHARMACODYNAMIC FOR TUMOR THERAPY: MODELING AND META-ANALYSIS. George Kpeli, Biology, Langston University, Langston, OK.

There has been significant concern over side effects in tumor chemotherapy. Substantial research has been performed with the aim of reducing complications from toxicity in the treatment. Cisplatin is a main anticancer drug prescribed widely for variety of cancer tumor treatment such as breast, lung, and head-neck carcinoma. Cisplatin is known to kill cancer cells by binding to DNA and disrupting its repair mechanism which eventually leads to cell death. There are serious side effects associated with Cisplatin administration as an anticancer drug, notably renal toxicity, neurotoxicity, bone marrow suppression and hearing loss. Our study is designed to examine the overall Cisplatin pharmacokinetics and pharmacodynamics from the point of infusion of the drug to its distribution to the tumor and surrounding tissues as a method to predict the amount of drug to be delivered to the tumor and the amount of drug that is undesirably distributed to other parts of the body. The focus of this study is to use modern modeling tools such as SimBiology and other model based-tools developed in our laboratory to enable us to estimate the right Cisplatin. This will enable clinicians to alter the dosage based on better predictors of rate of exchange of the drug to the tumor and its overall bioavailability thereby sparing patients from undesirable complications while providing sufficient “killing” power of the tumor. In this study we performed meta-analysis that involved the aggregating a large collection of published articles for which data for our pharmacokinetic modeling software. After a thorough review we classified the articles under disease process and drug types. We have further selected Cisplatin-based articles results to form clusters of information based on disease, drug-potentiating type, and analysis methodology. We further integrate our findings to determine overall pharmacokinetic parameters. The resultant graph gave an indication of orally administered cisplatin. This study improved our insight into how to predict the amount of delivery of drugs to cancer patients by combining literature results with our current empirical data.

06.01.51 CLONING OF THE 7.3 KB NEUROBLASTOMA AMPLIFIED GENE INTO A EUKARYOTIC EXPRESSION VECTOR. Lora Bailey, Carla Guthridge, Biological Sciences, Cameron University, Lawton, OK.

The neuroblastoma amplified gene encodes a 268 kDa protein, NAG. The NAG gene is co-amplified with N-myc in neuroblastomas. This co-amplification of NAG correlates with better prognosis in patients who have neuroblastoma, however its cellular functions are unknown. Using a yeast two-hybrid approach, a COOH-terminal isoform of NAG was shown to interact with interleukin-1 receptor antagonist type 1, a known anti-inflammatory agent. Whether the full-length, 268 kDa form of NAG interacts with icIL-1Ra1 is unknown. To study this interaction, purified full-length NAG must be generated. RNA harvested from the IMR-32 neuroblastoma cell line was used as a template to amplify the 7.3kb mRNA, encoding full-length NAG. The PCR product was cloned into the pcDNA3.1 eukaryotic expression vector, upstream of a V5 epitope. Successful
cloning was demonstrated by PCR and sequencing. Expression will be analyzed in neuroblastoma and keratinocyte cell lines.

06.01.52 CHARACTERIZATION OF P2X RECEPTOR EXPRESSION IN KERATINOCYTES. Kelly Thacker, Carla Guthridge, Linda Ash, Biological Sciences, Cameron University, Lawton, OK.

Purinergic receptor X2 (P2X) has been shown to mediate the extracellular release of intracellular interleukin-1 receptor antagonist type 1 (icIL-1Ra1) from monocytes and endothelial cells. Whether P2X7 receptor plays a role in mediating icIL-1Ra1 release from keratinocytes has not been demonstrated. The A431 keratinocyte cell line, which expresses high levels of icIL-1Ra1, responded to IL-1 and benzoyl ATP by releasing icIL-1Ra1. The KB keratinocyte cell line transfected with an icIL-1Ra1 over-expression vector responded to IL-1 and benzoyl ATP by releasing icIL-1Ra1. A431s express very low levels of P2X7 and KBs express no P2X7, suggesting that the release of icIL-1Ra1 by these cells is mediated by another benzoyl ATP-responsive purinergic receptor. Using RT-PCR the expression of P2X family members by A431 and KB cells was examined.

06.01.53 CONTRIBUTIONS OF TWO CHOLINE ACETYLTRANSFERASE ISOFORMS TO CHOLINERGIC FUNCTION IN C. ELEGANS. 1 David George, 1 Callie Mosiman, 1 Dennis Frisby, 1 Michael Landoll, 2 Jim Rand, 1 Biological Sciences, Cameron University, Lawton, OK. 2 Molecular, Cell and Developmental Biology, Oklahoma Medical Research Foundation, Oklahoma City, OK 73104.

The cha-1 gene, which encodes choline acetyltransferase (ChAT), is required for acetylcholine biosynthesis, and the unc-17 gene, which encodes the vesicular acetylcholine transporter (VACht), is necessary for synaptic vesicle loading. These genes comprise a cholinergic “operon” with a novel structure; the unc-17 coding sequence is completely nested within the first intron of cha-1, and the mRNAs for cha-1 and unc-17 are produced from alternative splicing of a common precursor RNA (Alfonso et al., 1994). We now have evidence for a cha-1-specific promoter, which produces a ChAT isoform (called CHA-1B) with a different N-terminus. The previously identified isoform of ChAT is now referred to as CHA-1A. We are using the recently developed RNAi tools available to the C. elegans researcher to construct transcriptional knockouts of both cha-1A and cha-1B. Eliminating (or reducing) expression of each isoform individually will allow us to examine their independent functions.

06.01.54 CELL COLONIZATION IN THER-
and between families. Jonathan Isaacs, Kenneth Andrews, Micah Isaacs, Department of Biology, East Central University, Ada, OK.

A preliminary analysis of the genome of several testudine taxa was conducted with the collection of samples from five different families (Trionychidae, Emydidae, Cheloniiidae, Kinosternidae, and Chelydridae). Nine different species were examined within these five families. The species included Apalone mutica, Trachemys scripta elegans, Chrysemys picta, Terrapene carolina triunguis, Terrapene ornate, Malaclemys terrapin, Caretta caretta, Sternoterus odoratus, and Chelydra serpentina. Samples were extracted by shell clippings using bone clippers. DNA was extracted from the osseous tissue by using a recently developed protocol for genomic DNA extraction, purification, and amplification from osseous tissues. The protocol makes use of Qiagen™s DNEasy Tissue Kit© with the addition of decalcification and user developed amplification Polymerase Chain Reaction (PCR) cycle times. All primers supplied with the DNEasy Kit were used to allow for the analysis of each primer as a potential with later analysis. This preliminary analysis of the genome of these testudines will allow for the selection of the most efficient primers and purification methods for usage in large scale Testudine analyses.

AN ANALYSIS OF THE EFFICIENCY OF DECALCIFICATION IN THE EXTRACTION OF DNA FROM BONE. Monica Gallo, Kenneth Andrews, Biology, East Central University, Ada, OK.

A novel procedure was developed to extract, purify, and amplify nuclear DNA from testudine carapacial material. This novel method modified and homogenized several different protocols to achieve a unified single protocol that would adequately supply nuclear DNA from small (~25mg) samples of testudine carapacial osseous tissue. A user protocol offered on the Qiagen website for the extraction of DNA from compact bone was used and modified for the decalcification process. This protocol successfully linked itself to Qiagen™s protocol for the extraction of DNA from animal tissues for the purification process. An original protocol for PCR and electrophoresis was developed from user knowledge. This novel method for testudine osseous tissue allows for the non-lethal extraction of tissue from these long-lived organisms for genetic research. A determination within this procedure was needed to determine the amount of time the tissue needed to be decalcified to obtain the best electrophoretic results. This experiment utilized varying times in the decalcification fluid. The most efficient amount of time would be the best results with the shortest amount of time within the decalcification fluid. A single turtle shell was ground into
powder and separated into several different samples. Each sample was decalcified for a differing amount of time to determine the shortest time of decalcification with the best electrophoretic results.

06.01.59 AVIAN COMMUNITIES IN THE FRAGMENTED HABITATS OF THE LOWER RIO GRANDE VALLEY. Kenneth Loeey, Chris Butler, Biology, University of Central Oklahoma, Edmond, OK.

Habitat fragmentation is a leading contributor to the decrease in biodiversity in areas that have been developed by humans. In the Lower Rio Grande Valley of Texas >90% of the original habitat has been modified. We examined the effects of habitat fragmentation on avian communities in Cameron County, TX. We conducted point transects from dawn until 0900 during May through July 2006 and used a laser rangefinder to record the distances to all birds seen and/or heard. A total of 119 point transects were visited (with each transect being visited twice). We input the distance data into program DISTANCE to estimate bird density parameters, and used ArcGIS and FRAGSTATS to analyze habitat fragmentation.

06.01.60 A SURVEY OF FRESHWATER MACROINVERTEBRATES AND THEIR HABITATS IN DOMINICA. David Bass, Biology, University of Central Oklahoma, Edmond, OK.

A survey of macroinvertebrates inhabiting freshwater habitats of Dominica was conducted during December 1995, January 1996, June 1996, May 2001, and March 2005. Qualitative collections were made by sweeping a dip net through the water column, agitating the bottom substrate, and by hand examination of rocks, plants, and debris submerged in both standing and flowing bodies of water across the island. In addition water temperature and elevation were recorded at each site. Ecological conditions were generally suitable to support many groups of freshwater macroinvertebrates, although high water temperatures, low dissolved oxygen concentrations, and low pH values at some sites may have limited some populations. These collections yielded at least 65 taxa, many of which are reported for the first time from Dominica. Dominant taxa collected included gastropods, ephemeropterans, odonates, hemipterans, trichopterans, and dipterans. Generally the freshwater macroinvertebrate fauna of Dominica is sparse, most likely due to the oceanic origin of the island and periodic disturbances impacting its aquatic habitats.

06.01.61 DETECTING EPISTASIS IN HUMAN LUPUS: APPLICATION OF MULTIFACTOR DIMENTIONALITY REDUCTION (MDR).

Gabriel Vidal, Mathematical Sciences, Cameron University, Lawton, OK.

Background “Lupus is a complex multifactorial autoimmune disease with poorly known etiology. The genetic basis of lupus is well established. Since the disease phenotype is determined by the presence of many factors, gene-gene and gene-environmental interactions are obvious. Identifying these interactions are currently facing the major statistical and computational challenges. When trying to detect epistasis it is easy to run into the dimensionality problem, often referred to as the “curse of dimensionality”. As the number of parameters increase, the number of interaction terms grows exponentially.

Objectives “Our hypothesis is that those interactions among genes can be identified through MDR and EMDR. Our study focused on the samples with European Americans ethnic background.

Data and Methods “Our sample contained a total of 2033 European American individuals that consisted of 705 cases and 1328 controls. We selected 105 SNPs from 37 genes that were thought to be of relevance to lupus. In order to assure that results were not based on the order that data was given to MDR, the dataset was divided into different groups, and different MDR parameters were used. The Extended MDR was also used to assure MDR accuracy.

Results “We selected a 4-factor model with EMDR in order to see what SNPs would give the best model. We compared our results between MDR and EMDR and optimized the model parameters. The models have clarified some of the expected gene-gene interactions in lupus.

Conclusions “We concluded that MDR and EMDR are both valuable tools in data reduction analysis. We have seen interactions among a few genes that were thought to play a role in lupus. Our next step will be to include all ethnicities contained in our larger sample.

06.01.62 ANATOMIC EXAMINATION OF THE DERMAL-OUTGROWTHS ON THE MARGIN OF THE EAR OF TADARIDA BRASILIENS. Daniel Sparks, Matt Skaley, Melville Vaughan, William Caire, Biology, University of Central Oklahoma, Edmond, OK.

Recent studies have shown that certain bat species utilize more that just echolocation for flight and maneuvering. Antrozous pallidus and Eptesicus fuscus have raised domes on their wings, which contain concentrations of Merkel receptor cells that are crucial for skilled maneuvering and flight. We have observed that Tadarida brasiliens, a migratory bat from the Molossidae family might have similar structures located on
the ear. We hypothesize these Merkel cell receptors can also be found on the ears of the Tadarida brasiliensis. The small projections on the ear could be involved in flight, aerodynamics and/or sensory-cognition between parent and offspring. We plan to study the specific morphology of these structures, while utilizing histological staining and protein expression-recognition techniques to distinguish the types of tissues present.

06.01.63 THE MAYFLIES (EPHEMEROPTERA) OF OKLAHOMA. Peter Grant, Andrew Nelson, Anna Nelson, Biological Sciences, Southwestern Oklahoma State University, Weatherford, OK.

Areas with diverse habitat tend to harbor larger numbers of species. Given the number of ecocregions in Oklahoma, one would expect the state to be above average with respect to species diversity. With the many lakes and streams in Oklahoma, this expectation would be extended to the aquatic fauna, too, including mayflies. Recent studies on mayflies in eastern Oklahoma support this view. We have begun a plan to systematically collect mayflies from all areas of Oklahoma with three goals: (1) develop a list of species for the state, (2) estimate their abundance, and (3) analyze their distribution.

06.01.64 REPLICATIVE SENESCENCE MORPHOLOGY OF IN VITRO SKIN EQUIVALENTS. Matthew Skaley, Melville Vaughan, Biology, University of Central Oklahoma, Edmond, OK.

Replicative senescence suggests deficient telomere lengths instruct cells in culture to quit dividing and this may impact aging. The purpose of this study was to characterize the effects of skin keratinocyte senescence using an in vitro model called the skin equivalent. Our in vitro model was constructed of keratinocytes, fibroblasts, and collagen. This unique construct reduces the number of variables, and allows use of senescent cells. After culturing, the tissues were histologically prepared, and immunohistochemistry was conducted to specifically examine the protein expression with respect to proliferation, differentiation, and structural stability. The presence of p63, BrdU, K14, and involucrin were all proteins associated with contributing to a marginal difference between young and old cells. Tissue staining positive for p16 identified senescent cells from differentiated cells. Collagen IV showed a colossal distinction between young and old, therefore it is imperative to analyze the distribution of this protein. Future studies using this model hope to identify whether senescent cells could secrete proteins that enhance aging and promote morphological characteristics. Establishment of missing or decreased expression of proteins from old cells of the in vitro model could provide an opportunity in the future to understand the entire process of human skin aging. This study was supported by a grant from the Jackson College of Graduate Studies and Research.

06.01.65 REPRODUCTIVE HABITAT PREFERENCES OF THE ENDANGERED AMERICAN BURYING BEETLE. 1 Amy Smith, 1 Craig Clifford, 2 Daniel Howard, 1 Natural Sciences, Northeastern State University, Tahlequah, OK. 2 Biological Sciences, University of Tulsa, Tulsa.

The reproductive habitat preferences of the endangered American burying beetle (Nicrophorus americanus Olivier) were examined at nine established habitat types at Camp Gruber Army Training Facility in Muskogee County, Oklahoma. Two 200 gram carcasses (Rattus norvegicus) were made available for burial at two replicate locations for each of the nine habitats (18 total locations) from May 30th-June 8 2006. Buried carcasses were covered with a mesh enclosure to trap departing N. americanus parents and newly exlosed offspring. Nine carcasses were successfully buried at six different habitat locations within a 72.39 kilometer2 study area. Within this area the mean distance between all baited sites was 6.39 kilometers, while the mean distance between the six active sites was 4.35 kilometers. N. americanus moved carcasses a maximum of 1.0 meter. Only four newly eclosed N. americanus emerged from one rat. This carcass was shared with congener N. marginatus. The successful site was a known area of high beetle densities in a big bluestem/little bluestem habitat. Soil samples at all sites are being analyzed to determine if reproductive success correlates with soil compaction, moisture, pH, temperature, nitrate, phosphate, or organic content.

06.01.66 MUTAGENESIS STUDY OF THE PORE-FORMATION BY ANTI-APOPTOTIC BCL-2. 1 Michael Landoll, 2 Jialing Lin, 2 Jun Peng, 2 Olga Nikolaeva, 2 Zhi Zhang, 1 Chemistry, Cameron University, Lawton, OK. 2 Biochemistry and Molecular Biology, University of Oklahoma Health Sciences Center, Oklahoma City, OK 73014.

Both anti-apoptotic Bcl-2 and pro-apoptotic Bax form pores in the mitochondrial membrane after activated by tBid. While Bax forms large pores which release cytochrome c, Bcl-2 forms small pores that inhibit the large pore formation by Bax. Interestingly the potential pore-forming helices of Bax contain more positively charged residues than those of Bcl-2. To determine whether these charged residues cause the functional difference between Bax and Bcl-2, we replaced the three negatively charged glutamate residues in the Bcl-2 pore-forming helices individually with a positively charged lysine residue. These mutants are
named E152K, E160K, and E165K for the position of the individual mutation. The Bcl-2 mutants were cloned into a bacterial expression vector and tested for protein expression and purification. Although all mutants were expressed, only E165K was soluble and successfully purified. The purified E165K protein showed a higher pore-forming activity than the wild-type Bcl-2 protein, which could be further enhanced by tBid. In fact, the mutation has converted the anti-apoptotic Bcl-2 to an active pro-apoptotic Bax-like molecule.

**06.01.67  EFFECTS OF RECREATIONAL DISTURBANCE ON COMMON WATER WILLOW OF THE ILLINOIS RIVER.** Stacy Dunkin, Amy Smith, Natural Sciences, Northeastern State University, Tahlequah, OK.

The objective of this study was to determine the impact of recreational disturbance on macrophytes in the Illinois River by quantifying the changes in stem density and bed coverage between the impacted and non-impacted areas. Data was collected using a modified transect survey method. Two five mile sections of river, one in the impacted area (treatment) and one in the non-impacted area (control), served as the sample areas. Five randomly selected sites were surveyed during each sampling episode by measuring ten meters upstream and ten meters downstream to form a cross section or quadrant of the river. Within each quadrant, macrophyte beds were mapped. Bed coverage was determined by visually estimating the percent coverage. Stem density of each bed was determined using a 0.25 m² frame placed, one, two and three meters from the bank. Canopy density was estimated using a densiometer. Macrophyte coverage varied significantly between study areas (p=0.009). Impacted areas had a total of 62.4 m² or 0.60% of the 10,410 m² sampled. The non-impacted areas had a total of 62.4 m² or 2.77% of the 10,160 m² sampled. Canopy density and wetted width of the non-impacted area (control) served as the sample areas. Five randomly selected sites were surveyed during each sampling episode by measuring ten meters upstream and ten meters downstream to form a cross section or quadrant of the river. Within each quadrant, macrophyte beds were mapped. Bed coverage was determined by visually estimating the percent coverage. Stem density of each bed was determined using a 0.25 m² frame placed, one, two and three meters from the bank. Canopy density was estimated using a densiometer. Macrophyte coverage varied significantly between study areas (p=0.009). Impacted areas had a total of 62.4 m² or 0.60% of the 10,410 m² sampled. The non-impacted areas had a total of 62.4 m² or 2.77% of the 10,160 m² sampled. Canopy density and wetted width were not significantly different (p=0.15 and 0.43 respectively). Stem density analysis showed no statistical difference (p=0.31). There appears to be a relationship between declining macrophyte coverage and recreational activity. Stream width and canopy density appear to be unaffected.

**06.01.68  AN INVESTIGATION INTO THE HELMINTH PARASITES OF TESTUDINES OF SOUTHERN OKLAHOMA.** Carol Bratt, Don Lee, Kenneth Andrews, LeeAnn Bowerman, Biology Department, East Central University, Ada, OK.

Testudines are a heavily parasitized group of poikilotherms and are commonly host to multiple species infections. There is a paucity of current data on the helminth parasites of Oklahoma Testudines. Much of the available data is in excess of fifty years old. Our findings show much needed information on parasites of Oklahoma Testudines and adds to the current knowledge. This will provide data for further studies.

In this study, a total of fifty red-eared slider turtles, Trachemys scripta elegans, were collected from five counties in Southern Oklahoma as well as two counties in Eastern Texas. These were dissected, size and sex recorded, and all organs were inspected for parasites. Parasites were preserved in a formalin solution. Representative samples of each type of parasite were stained and histologically prepared for study.

We are currently identifying these representative parasites to a specific level. Upon completion of identification, density of each species within Trachemys scripta elegans will be tabulated. Data will also be tabulated to provide information on parasite prevalence and frequency with relation to age and sex of the Testudines as well as a regional correlation of species. This data will be compared with previously recorded information to show changes in parasite density, abundance, prevalence, and incidence. We also expect to be able to show differentiation of the parasitic community of Trachemys scripta elegans based on the geographical location of the host.

**06.01.69  INTRASPECIFIC AND INTERSPECIFIC VARIATION OF THE SCLERAL OSSICLES IN TWO SPECIES OF CRYPTODIRAN TESTUDINES.** Leane Coppick, Kenneth Andrews, Department of Biology, East Central University, Ada, OK.

Scleral ossicles are plates of bone that overlap to form a ring in the anterior section of the eyes of testudines. Eyes of 399 organisms from 54 species were extracted from the specimens and cleared and stained. The ossicle rings were counted, overlap pattern determined and recorded, measurements of widths of the ossicles at widest and narrowest points recorded, and analyzed for intraspecific and interspecific variation in this data. Overlap was recorded as a positive ossicle (+) for an ossicle that overlapped both of its neighboring ossicles, a neutral ossicle (0) for an ossicle that overlapped one of its neighbors and was overlapped by the other neighbor, and negative ossicle (-) for an ossicle that was overlapped by both of its neighbors. Overlap patterns were counted clockwise in the right eye and counterclockwise in the left eye to represent the contralateral aspect of the head development. A morphological analysis was conducted to determine if a pattern could be discerned for the overlap pattern, width of the ossicles at widest and narrowest points, and general shape of each ossicle. The ossicles were used examined heavily within two species from two
different families to determine the variability within each species and the variation between these species.

06.01.70  **SURVEY OF PARASITES OF TRACHEMYS SCRIPTA ELEGANS OF PONTOTOC COUNTY.** Beau Carter, Chris Barnett, Duane Bergeron, Kenneth Andrews, Michael Moore, Biology, East Central University, Ada, OK.

Testudines are a heavily parasitized group of poikilotherms and are commonly host to multiple species infections. There is a paucity of current data on the helminth parasites of Oklahoma Testudines. Much of the available data is in excess of fifty years old. Our findings show much needed information on parasites of Oklahoma Testudines and adds to the current knowledge. This will provide data for further studies.

In this study, three red-eared slider turtles, Trachemys scripta elegans, were collected from Pontotoc County. These were dissected, size and sex recorded, and all organs were inspected for parasites. Parasites were preserved in a formalin solution. Representative samples of each type of parasite were stained and histologically prepared for study.

We are currently identifying these representative parasites to a specific level. Upon completion of identification, density of each species within Trachemys scripta elegans will be tabulated. Data will also be tabulated to provide information on parasite prevalence and frequency with relation to age and sex of the Testudines as well as a regional correlation of species. This data will be compared with previously recorded information to show changes in parasite density, abundance, prevalence, and incidence. We also expect to be able to show differentiation of the parasitic community of Trachemys scripta elegans based on the geographical location of the host.

06.01.71  **POSSIBLE SEROEPREVALENCE OF WEST NILE (WN) VIRUS IN AN ENDANGERED PREDATOR, SWIFT FOX (VULPES VELOX) IN OKLAHOMA.** 1 Linda Luna, 1 Sherry Meeks, 2 Kimberley Freel, 3 Mason Reickard, 1 Biology, University of Central Oklahoma, Edmond, OK. 2 Department of Geography, Oklahoma State University, Stillwater, OK. 3 Department of Veterinary Pathobiology, Oklahoma State University, Stillwater, OK.

West Nile (WN) was first identified in the U.S. in 1999 and has since been found in mosquitoes, birds, and mammals (including humans) in every state. WN virus, an encephalitic arbovirus, is transmitted by mosquitoes and birds. However, many mosquito species feed both on birds and mammals. WN infections have been reported in 34 species of mammals besides horses and humans representing 8 orders including bats, reindeer, squirrels, wolves, bears, dogs, cats, and monkeys. Mammals were thought to be incidental, dead-end hosts, not able to transmit the disease. Yet evidence of ingesting infected animals and infected mosquitoes exists and has been implicated in other serious or fatal cases in other vertebrates-implying another possible transmission route.

In 2005, we reported 12 of 16 rodent species captured in Oklahoma demonstrated antibodies for WN with viremia titers ranging from 1:4 to 1:128. This confirms other reports that small mammals (rodents) can become infected. Swift fox (Vulpes velox) populations are now 90% endangered in their historical range. Reduction in populations can be attributed to habitat destruction, trapping, shooting, poisoning, predation, and disease. Knowledge of mortality factors is important in enacting any species conservation plan. Animals sufficiently weakened by the infection may be subject to other natural stresses that contribute to a decline in fitness and perhaps death. Since rodents constitute (49%) of the swift fox diet, we propose to test for the seroprevalence of WN antibodies using PCR techniques and serum neutralization assays in 80 fox blood samples from western Oklahoma.

06.01.72  **CONSTRUCTION OF A MYCOBACTERIUM MARINUM LYTR MUTANT.** Christopher Pritchett, Biology, Northeastern State University, Tahlequah, OK.

Mycobacterium marinum is a pathogen of humans and poikilotherms. In humans, lesions are characterized by the formation of granulomas, similar to the pathology seen during Mycobacterium tuberculosis infection. Previous investigations have suggested that the lytR gene may encode a virulence factor. We have begun to investigate the role of mycobacterial lytR as a virulence gene. To begin these investigations, we have constructed a M. marinum lytR mutant. We successfully amplified a 2.7 kb fragment from M. marinum genomic DNA and cloned this into the pCR BluntII Topo vector. The vector was then restricted to eliminate a NotI site in the vector. The cloned construct was then restricted with NotI and a xylE gene controlled by the L5 promoter, saeB, which encodes levansucrase. Merodiploids were detected after electroporation by selecting for kanamyacin resistance. This vector also contains a counterselectable marker, sacB, which encodes levansucrase. Merodiploids were detected after electroporation by selecting for kanamycin resistance on 7H10 supplemented with 30 μg/ml kanamycin. Homologous recombinants were selected for by growing the merodiploids without selection for 3 days and plating on 7H10 containing 10% sucrose.
The mutation was confirmed using PCR. In addition, a Southern Blot will be performed to ensure that no illegitimate recombination has occurred. This mutant will be assayed in the zebrafish model of mycobacterial pathogenesis to determine if this gene is involved in the virulence process.

06.01.73 CONSTRUCTION OF A MYCOBACTERIUM MARINUM LBP MUTANT. Tommy Woosley, Christopher Pritchett, Biology, Northeastern State University, Tahlequah, OK.

Mycobacterium marinum is a human and poikilo-therm pathogen. The close genetic relationship of M. marinum and Mycobacterium tuberculosis makes M. marinum a good model to investigate mycobacterial pathogenesis. Another pathogenic mycobacterium, Mycobacterium leprae produces a 21-kDa cell wall protein that is involved in the binding of laminin, a surface exposed protein found on Schwann cells. Homologues of this laminin binding protein (LBP) are found in M. marinum and M. tuberculosis. However, the role of LBP in the virulence of M. marinum and M. tuberculosis is not known. Our goal is to construct an M. marinum LBP mutant. We have amplified a genomic fragment from M. marinum using PCR. This amplified fragment was cloned into the Topo vector pCR Blunt4 Topo. The cloned construct was restricted with SmaI to cut within the coding region of the M. marinum lbp. A xylE gene controlled by the L5 promoter was then blunt cloned into the SmaI site. The mutant construct was sequenced and we are in the process of moving the mutated construct into a suicide vector. Once we have the mutated construct cloned into the suicide vector, we will electroporate M. marinum with this construct and finish the construction of an M. marinum lbp mutant. Once we have obtained the lbp mutant, we will then be able to investigate whether or not LBP plays a role in M. marinum virulence.

06.01.74 FACTORS THAT AFFECT DNA TRANSFORMATION EFFICIENCY DURING ELECTRO-COMPETENT CELL PREPARATION. 1 Bizuayehu Kebede, 1 Wondwessen Kebede, 2 George Acquaah, 3 Kanyand Matand, 3 Ning Wu, 1 Biology, Langston University, Langston, OK. 2 Agriculture and Natural Resources, Langston University, Langston, Oklahoma. 3 Research & Extension, Langston University, Langston, Oklahoma.

Electroporation is the most efficient way for plasmid DNA transformation and involves many impact factors. This study was to assess the impacts of cell preparation wash time and cell-DNA amount to transformation efficiency. A single bacterial colony was inoculated and grown overnight and re-inoculated into 1 little media and incubated at 37 C until the OD600 had reached 0.2-0.25. The cells were harvested and followed by a series of washes with 10% Glycerol (1 to 3 times wash). The final cell pellets were resuspended in different volumes of 10% Glycerol based on cell numbers (0.4 â€“ 1.0x10^10 cells)determined by OD600 readings. A cell suspension aliquot of 100 Âµl was applied for electroporating different plasmid pUC19 DNA amounts from 10 to 80 pg. Transformed cells were recovered under 37 C for 1 hour and plated in LB/Amp plates incubated at 37 C overnight. The plate colonies were counted next day and the transformation efficiency was determined. The increase of glycerol wash times resulted in a significant enhancement of cell efficiency. By comparing 1 time with 3 times washes, with the same cell number, the transformation efficiency increased by more than 6 folds. On the other hand the increase of transformed DNA amount resulted in low transformation efficiency. The electroporation with the cell number of 0.5x10^10 resulted in higher transformation efficiency for a wide range of DNA amount (from 10 to 40 pg). Therefore, thorough washes of competent cells was a critical factor to cell competency. Because of the variability in DNA amounts for transformation in real experiments, the cell number of 0.5x10^10 with the maximum transformation efficiency in this study could be the optimal choice for the general electro-competent cell preparation procedure.

06.01.75 CONFIRMATION OF THE SPORE-COAT GENE MODIFICATION IN DICTYOSTELIUM DISCOIDEUM. Mandrin Shima, Biochemistry and molecular biology, Northwestern Oklahoma State University, Alva, OK.

Dictostelium discoideum is a unicellular slime mold, which develops a multicellular life cycle. When challenged with adverse conditions such as starvation, individual unicellular Dictostelium aggregate to form multicellular fruiting bodies. These fruiting bodies consist of a stalk and a sorus that contains the dormant spores. A modified cell wall, known as the spore coat, surrounds each dormant spore of the sorus and is essential for spore protection. The spore coat consists of three layers forming a âœpolarized molecular sandwichâ with a cellulose middle layer surrounded by inner an outer protein rich layers. Cellulose fibrils are the major components of cyst walls of the parasitic Acanthamoeba spp, the water mold Achlya ambisexualis, the soil amoeba Hartmanella gelbace, and the green alga Acetabularia. Understanding the mechanism of the spore coat formation in Dictostelium might provide insight into how to disrupt cyst wall formation in several pathogens. Spore coat formation involves multiple steps. 1) Early synthesis of the protein precur-
sors, which are stored in the PSV (pre-sporo vesicle) together with a Galactose-rich polysaccharide (GPS). 2) Delivery of these precursors to the cell surface by exocytosis of the PSV. 3) deposition of cellulose fibrils by cellulose synthase. Experiments indicate that there might be an additional step, in which the protein SP65 is synthesized late and delivered to the cell surface by a separate pathway. This conclusion was based on the analysis of strains whose SP65 locus (cot.E) was genetically modified by using homologous recombination to introduce a blasticidin resistance marker in the middle of the coding region, or a green fluorescent protein (GFP) domain at the 3â€™-end of the coding region. My work has involved the design and execution of experiments to verify the expected genetic modifications using PCR studies. In addition, I have been involved in the analysis of mutant spores to understand better, how the disruptions of the SP65 gene affect spore function as expected if SP65 is a true spore coat protein.

06.01.76 CONSTRUCTION OF A MYCOBACTERIUM MARINUM TWO-COMPONENT SYSTEM MUTANT. William Stenberg, Christopher Pritchett, Biology, Northeastern State University, Tahlequah, OK.

Mycobacterium marinum is a pathogen of humans and poikilotherms. Like Mycobacterium tuberculosis, M. marinum resides intracellularly. One question that still has not been answered is what genes are expressed inside the host. We know that there are several systems present in bacteria that allow them to sense their environment. One group of sensory systems are two-component systems. These systems are composed of a membrane sensor histidine kinase and an intracellular response regulator. Eleven of these systems are found in pathogenic mycobacteria including M. marinum and M. tuberculosis. Rv3765c in M. tuberculosis has not yet been studied. In order determine what this two-component system regulates we have begun to construct a mutation in this gene. A 2.6kb genomic fragment was amplified and cloned into the Topo pCR Blunt 4 vector. We have made a mutant construct by cutting the M. marinum homologue with restriction enzymes and inserting a xylE gene controlled by the L5 promoter. This construct will be cloned into a suicide vector and electroporated into M. marinum. Analysis of this mutant will provide information as to what this two-component system regulates.

06.01.77 FUNCTIONAL CHARACTERIZATION OF THE VACUOLAR POTASSIUM CHANNEL KCO5. Mindi Howe, Gerald Schoenknecht, Kasturi Ghatak, Botany, Oklahoma State University, Stillwater, OK.

Potassium (K+) is an essential mineral nutrient for plants. Its main function is to generate plant growth by driving cell expansion. In order to understand plant cell growth, one must understand the transport of K+ across the vacuolar membrane. There is, however, a lack of knowledge regarding plant vacuolar ion channels. Here we describe the functional characterization of the vacuolar K+ channel KCO5 in the model plant Arabidopsis thaliana by a combination of molecular biology and physiological assays. To unravel the physiological function of KCO5 we isolated plant lines that do not express KCO5 α+ so-called knock-out mutants (kco5). Based on available collections of arabidopsis T-DNA insertion lines, homozygote KCO5 insertion lines were isolated. For this we isolated DNA, run PCRs with KCO5-specific primers, and analyzed the products by agarose gel electrophoresis. In a next step, mRNA was isolated and RT-PCR was used to demonstrate the absence of KCO5 mRNA. Surprisingly, kco5 knock-out mutants looked identical to wild-type plants, which do not express KCO5 α+ there is no phenotypic difference. Seeds from kco5 knock-out mutants and wild-type plants were grown on agar plates under a large variety of different growth and stress conditions and examined for a phenotypic difference. As an alternative approach to a kco5 knock-out we begun to construct arabidopsis plants that overexpress KCO5, i.e. make much more of this vacuolar K+ channel than wild-type plants do.

06.01.78 LONGTERM 3-DIMENSIONAL CULTURES OF HEK-293 CELLS DEMONSTRATE CLEAR EVIDENCE OF TISSUE-LIKE DIFFERENTIATION. Travis Cordie, Timothy Lyden, Biology, University of Wisconsin - River Falls, River Falls, WI.

During the past 2 years, our laboratory has focused on the application of fundamental tissue-engineering methods to study cellular differentiation and tissue development in vitro. In this presentation, we report the long-term growth of HEK-293 cells on 3D collagen-like scaffolds as well as evidence of distinct phenotypic shifts during culture. In these studies, we have maintained HEK-293 artificial tissues for more than 5 months in 3D cultures. These cells displayed characteristic behavior which contrasted from the normal monolayer culture of HEK-293. This included early extension of the scaffolding in essentially cylindrical monolayers, followed by development of multiple cell layers and eventual filling-in of large scale openings within the scaffolds. Later cultures displayed structures which developed at the terminal ends of scaffolding fibers and consistently formed very large rounded features. After approximately 2 months, these structures began to show significant evidence of tubu-
lar features around the periphery. When some of these features became dislodged and essentially explanted on the culture well floor the structures disassembled and clearly showed the presence of a true tubular architecture. In some cases, this characteristic was then maintained and even repeated in the resulting monolayer cultures. These observations strongly suggest that the change in cellular behavior observed in these studies is an example of differentiation induction/selection by culturing these cells on 3D scaffolds. These studies illustrate that the contribution of cellular interactions to tissue development can be studied in-vitro with rudimentary tissue-engineering methods.

**06.01.79 PRIMARY NERVOUS TISSUE GROWTH AND POTENTIAL DEVELOPMENT IN 3D CULTURES..** Tory Schaff, Chris Wenig, Michelle Willette, Tim Pearson, Timothy Lyden, Travis Cordie, Biology, University of Wisconsin - River Falls, River Falls, WI.

Recent studies in our laboratory have focused on the application of basic tissue engineering methods and techniques to evaluate the behavior of cells in tissue-like 3-dimensional culture conditions. With several continuous epithelial cell lines we have established long-term cultures which display clear evidence of cellular differentiation in the 3-D context of these methods. Now we report on similar studies which have employed a complex collagen-like tubular scaffolding to grow primary chick embryonic neural cells. In these studies we are seeking to evaluate the relative plasticity of chick neuronal cells and tissues at several stages of development. It is well established that embryonic brain tissue is extremely dynamic and is constantly undergoing restructuring throughout the gestational period and beyond. These studies seek to make use of this plasticity to develop methods of study for neural tissues in vitro that will more naturally reflect the brain’s normal 3-dimensional architecture. Results of preliminary work indicate that our methods are applicable to primary cells as well as continuous lines and strongly suggest that tissue-like features develop in these cultures as well.

**06.01.80 ARTIFICIAL “TISSUE” DEVELOPMENT IN 3D CULTURES LEADS TO STABLE PHENOTYPIC CHANGES WITHIN HUMAN TROPHOBLAST CELLS..** Chris Wenig, James Grosek, Michelle Willette, Timothy Lyden, Travis Cordie, Biology, University of Wisconsin - River Falls, River Falls, WI.

During the course of normal human placental development, the major cellular interface between fetus and mother is made up of a lineage called the trophoblast. This critical cell type has its developmental origin in the outer surface of the pre-implantation embryo. This original trophoblastic layer is the first cell type to differentiate in the embryo. Eventually these cells give rise to a pair of distinctive cell lineages, the villus and extra-villus pathways. In this presentation we report on recent studies which sought to evaluate the effect of 3-dimensional substrates and basic tissue engineering methods on trophoblast cells in vitro. This work has revealed that two distinctive cellular phenotypes result from growth of trophoblast cell lines on each of two 3-D conformations. On branching tubular scaffolds, BeWo cells (a trophoblastic model cell line) form clearly villus-like structures and cells harvested from these scaffolds form distinct colonies with villus trophoblastic characteristics. This differs considerably from results obtained with planar collagen sheet scaffolds where BeWo cells behave very differently and eventually digest the scaffolding in a unique display of extra-villus phenotypic behavior. Colonies harvested from these cultures display several distinctively extra-villus characteristics.

**06.01.81 TESTING OF SYNTHETIC COMPOUNDS FOR APOPTOSIS-INDUCING CAPACITY REVEALS THE USE OF A SPECIFIC PROGRAMMED CELL-DEATH PATHWAY..** 1 Timothy Lyden, 1 Amanda Miller, 1 Caroline Martin, 1 Nicole Salwasser, 1 Tracy Nelson, 2 Brianna Zemke, 2 Karl Peterson, 1 Biology, University of Wisconsin - River Falls, River Falls, WI. 2 Chemistry, UWRF,

In collaboration with the UWRF Department of Chemistry, studies have been ongoing to evaluate the potential apoptotis-inducing effect of a library of synthetic N-Phenethylpyridinecarboxamides. These compounds are closely related to others which have previously been reported to induce apoptosis in leukemic cell lines and primary spleen cells of mice. The selective activity reported for those compounds suggests a direct and specific interaction with one or more components in the overall programmed-cell death pathways leading to apoptosis. Based on our preliminary data from earlier studies, it is hypothesized that our compounds also induce cellular components that lead to specific forms of programmed-cell death and that these may be selectively expressed in cancer cells. The extension of this hypothesis leads directly to the possibility that these compounds preferentially effect cancer cells and lead to disproportionate cell death in those populations. However, our early data has also suggested that the form of cell death observed is somewhat distinct from classical apoptosis. As a result, additional new studies have been conducted to further qualify the nature of the effects produced by our compounds on cervical
carcinoma (Hela) cell cultures. Data generated in recent studies strongly suggest that the these compound actually induce a recently defined form of programmed-cell death called ❝mitotic catastrophe❞. In this form of cell death, the process of mitosis essentially stalls and is followed by a restructuring that eventually leads to more classic apoptosis or renewed cell cycling following DNA repair. These new observations have been made and evaluated with phase contrast, time-lapse and fluorescent microscopy.

06.01.82 MOLECULAR DISSECTION OF ARCBP2 GENE SHANNON GIPSON, DR. STEVEN D. HARTSON. DEPARTMENT OF BIOCHEMISTRY AND MOLECULAR BIOLOGY OKLAHOMA STATE UNIVERSITY, STILLWATER, OK 74078. Shannon Gipson, Biology, Langston University, Langston, OK.

Comparisons of the DNA sequences for gene encoding HBPI6(ARCBP2) shows that the protein is composed of two structural “domains”(functional modules encoded on a single linear chain of amino acids). Research shows that HB16 (ARCBP2) binds several other protein partners. HBPI6 (ARCBP2)is a chaperone-binding protein that binds HSP90 and the mammalian TRi/CCT chaperonin. HSP90 also plays a role in cancer by supporting oncogenic proteins. The objective of this experiment is to dissect ARCBP2 into its structural domains and to assay the individual domains to determine which domains bind with partners. The initial observation of this experiment indicated that the ARCBP2 gene could indeed be dissected into two domains; each domain specify a certain partner. An extended study is required to identify which domain of the ARCBP2 gene binds HSP90 and other partners.

06.01.83 TRABECULAR MESHWORK: A MODEL SYSTEM TO EVALUATE GLUCOCORTICOID INDUCED PHAGOCYTOSIS AND CALCIUM SIGNALING. Cherie Ognibene, Biology, Langston University, Langston, OK.

To date millions of people worldwide have been diagnosed with glaucoma, the most common type being open-angle. The build up of pressure due to the lack of drainage causes the normal intraocular pressure to be elevated leading to damage of the optic nerve head and thus eventually leads to total vision loss. Glucocorticoids can exacerbate the effects of open-angle glaucoma by increasing the intraocular pressure. Glucocorticoids alter the ability of trabecular meshwork (TM) cells to phagocytose extracellular material and thus can increase the resistance to aqueous humor outflow. Glucocorticoids change the expression of a number of genes in TM cells and alter their performance. Dexamethasone (DEX) is a type of glucocorticoid that has shown to inhibit the ability of trabecular meshwork cells to phagocytose. Thus, our hypothesis is that cultured cells form glaucoma patients and from patients without glaucoma treated with DEX would ingest fewer beads then untreated cells. Ultimately, GTM520-05 cells were more sensitive to the DEX treatment than NTM174-04 cells. To determine the effect of endothelin-1 (ET-1) on calcium homeostasis in TM cells, BQ610 and BQ788, two ET-1 receptor antagonists were used to block ET-A and ET-B respectively. It can be concluded that ET-1 induced calcium influx in TM cells is mediated mostly by ET-A compared to ET-B since BQ610 was able to completely block ET-1 effects. The NIH grant number 2T35HL007786-13 supported this abstract.

06.01.84 ROLE OF ALPHA-SMOOTH MUSCLE ACTIN IN MYOEPITHELIAL CELL FUNCTION. Kariel Ross, Biology, Langston University, Langston, OK.

Myoepithelial cells are proposed to generate the contractile force responsible for lactation in mammary glands. Myoepithelial cells are characterized by alphasmooth muscle actin (ASMA). The objective of this study was to investigate whether ASMA is indispensable in the contraction of myoepithelial cells in mammmary glands. Myoepithelial cell contraction in mammary gland in ASMA-null and ASMA-WT mice was analyzed. Pups were taken away from the mothers 6 hours prior to the beginning of the in vivo and in vitro experiments. In the in vitro experiment mammary tissue was obtained, placed in various concentrations of oxytocin and fixed and examined using rhodamine phaloidin staining. For the in vivo experiment, the mothers were injected with oxytocin and after 15 minutes mammary tissue was fixed and examined. Preliminary results show that in the in vitro essay myoepithelial cells from ASMA-WT and ASMA-null mice contract similarly. In contrast, the results of the in vivo assay show that the contraction of ASMA-WT myoepithelial cells is greater than ASMA-null myoepithelial cells. These results support the hypothesis that myoepithelial cell function is altered in ASMA-null mice. Supported by NIH grant R01 GM60651in vivo vivo.

06.01.85 A PREVENTION PROGRAM ON REDUCING THE RISK OF TYPE II DIABETES IN HISPANIC FAMILIES FELICIA EKPO*, DR. JIMENEZ, DR. ROJAS UNIVERSITY OF NORTH TEXAS HSC. Felicia Ekpo, Biology, Langston University, Langston, OK.

Obesity has become a growing problem throughout the United States, and is also the cause of 112,000 deaths per year. Obesity is also the leading cause of
Diabetes 2, Metabolic Syndrome, and Cardiovascular Disease. Overweight and obesity is most prevalent in minorities. Research has shown that obesity is the result of genetics, culture, environment, and socioeconomic factors. There are high rates of Obesity in Hispanic children. The purpose of the study was to provide an in depth assessment, counseling, and referral of nuclear families with overweight or obese children at risk for Type 2 Diabetes. The study provided early detection of the risk of Type 2 Diabetes, Coronary heart disease, and metabolic disorders, counseling on risk factors, nutrition and physical activity, and the opportunity to participate in the preventive intervention through the “Promotora Program”.

06.01.86 INTERMITTENT HYPOXIA CURBS OXIDATIVE HARM TO BRAIN MITOCHONDRIA IN ETHANOL INHIBITED RATS ATKINSON B, SIMPKINS J, MALLER R, DONNEY F, WILSON A, JUNGS M. UNIVERSITY OF NORTH TEXAS HSC AT FORT WORTH. Brittanie Atkinson, Pharmacology and Neuroscience, Langston University, Langston, OK.

We hypothesized that intermittent hypoxia conditioning (IHC) protects against toxic effects of ethanol withdrawal (EW) on brain mitochondria. This hypothesis is based on previous findings that IHC protects against the cardiovascular disorder and EW perturbs mitochondria integrity. Young adult ovariectomized rats with or without 17B-estradiol replacement received a 5 week-control dextrin or ethanol diet (6.5%). Twenty days prior to the end of the diet, rats received IHC. Twenty-four hours after termination of the ethanol diet, rats were tested for physical signs of EW and immediately sacrificed. Mitochondria from the cerebella were processed to assess the levels of carboxyls and malondialdehyde as indicators of protein oxidation and lipid peroxidation, respectively. Functional damage to mitochondria was assessed by measuring the activity of an essential mitochondrial enzyme, cytochrome C oxidase and mitochondrial permeability transition pore of which excess pore opening dysregulates the passage of specific molecules across the mitochondrial membrane. Compared oEW rats without IHC, EW rats with IHC showed significantly lower levels of protein carboxyls, lower levels of malondialdehyde, a higher activity of cytochrome c oxidase, and less mitochondrial permeability transition pore opening. 17B-estradiol replacement increased the effects of IHC on these parameters. Results suggest IHC counteracts EW-induced oxidative and functional damage to brain mitochondria of female rats.

06.01.87 HONEYBEE FORAGER RESPONSE TO DIFFERENCES IN FLOWER HANDLING TIMES AND REWARDS. Tomica Blocker, Biology, Langston University, Langston, OK.

Previous to our studies, it has been found that honeybees are intelligent enough to solve single dimension problems. Testing has been done to prove that when honeybee foragers visit a flower they can learn to determine whether the energy cost is maximizing, or whether the reward in the flower is profitable. These studies have led to our attempt at determining whether the two separate criteria can be used together. To do this we traveled to Bursa Turkey, at Uludag University, to use their on-campus honeybees. Our results showed that, although bees are able to solve single dimension problems (as was already found to be true previous to our studies), they are unable to solve more complex, two dimensional problems. We found that bees solve the problem of which flower to forage from, each by their own criterion. Some determine their foraging activity by the color of the flower; others determine their foraging activity by the profit the flower contains; and others determine their foraging activity by the cost of energy to visit the flowers.

06.01.88 ETIOLOGY OF INHERITED ATAXIA. Davia Holland, Biology, Langston University, Langston, OK.

At least 28 distinct loci are responsible for forms of spinocerebellar ataxias (SCA), neurological disorders characterized by incoordination of limbs, gait and speech. Moreover, the majority of the genes responsible for SCAs are still unknown. Several SCA subtypes are caused by the expansion of a CAG triplet repeat in the coding region of specific genes, which causes an abnormally long, toxic stretch of polyglutamines. These disorders are inherited in an autosomal dominant manner and they result in the phenomenon of anticipation, i.e., the disease in the subsequent generations presents with earlier onset and more severe phenotype. We analyzed DNA samples from 12 families that display ataxia of autosomal dominant inheritance with anticipation, in whom none of the previously described mutations have been found. We hypothesized that CAG expansion in a novel gene may be the cause of ataxia in those patients. We designed a PCR based array that allows us to amplify each of the coding CAG triplet repeats present in the human genome. I selected 10 candidate genes, which presents the following characteristics: (a) contained 10 or more tandem CAG repeats in the coding sequence, (b) mapped with genes that are expressed in the brain, and (c) the repeat sequences were polymorphic. I searched for a CAG expansion in the 10 candidate genes in the 12 families. To define the normal range, I also performed the analysis on 35 normal con-
trol individuals. All genes presented different degrees of polymorphism. Since the allelic range in patients overlaps with those in controls, it is unlikely that the variant bands I detected are responsible of disease.

06.01.89 VEGETATIVE COMMUNITY TYPE ON RECLAIMED COAL STRIP-MINED SITES IN ROGERS COUNTY, OKLAHOMA. Amanda Hess, Mathematics and Science, Rogers State University, Claremore, OK.

This paper is an observational study of the revegetation of selected reclaimed strip mines in Rogers County, Oklahoma. The study looks at what kind of vegetation the reclaimed sites support to enable conclusions to be drawn about the overall health of the sites. Specifically the study investigates three areas, 1) a hayed reclaimed site 2) an unreclaimed site and 3) a fallow reclaimed site. By comparing the different reclaimed sites to the unreclaimed site the study endeavors to show differences between the two under different management regimes. Vegetative communities are investigated using quadrants to determine frequency, density and importance values of the species present. The values show the dominant species that in turn can give clues to the health, longevity and environmental implications of the area. The sample population was three 100 sq. meter ranges with 5 sq. meter sampling quadrants consisting of 1129 individuals plants. Statistical t-Tests were performed on the richness and densities of plots. The areas sampled indicated a dominance of Sericea Lespedeza in all of the plots with a variety of others as the plots were compared, and a high richness of species in the hayed site in comparison to the fallow site. The study is a baseline study of the vegetation of reclaimed sites and accomplishes the goals of observational science.

06.01.90 POPULATION GENETIC STRUCTURE OF THE CAVE MYOTIS. Gregory M. Wilson, Amber L. Hueppelsheuer, Courtney D. Young, Justin B. Lack, Kimberly L. Koppan, Miranda J. Rivera, Paul M. Walker, Biology, University of Central Oklahoma, Edmond, OK.

The cave myotis, Myotis velifer, is an insectivorous bat which occurs in cave and man-made structures from Kansas to southern Nevada and southeastern California southward through Mexico to Honduras. Individuals that comprise populations in Kansas and Texas appear to be permanent residents, hibernating in caves during the winter. Both sexes of cave myotis hibernate in the same localities in the winter, but disperse to separate maternity and bachelor roost caves during the spring and summer. Recent studies conducted at the Selman Cave system in northwestern Oklahoma reported that cave myotis begin arriving in their hibernaculum in October and continued to increase in number until December when population densities reached a high. However, after December, densities of bats began to decrease due to relocation of individuals to other cave localities for the remainder of the winter. Our goal is to use DNA sequence data for the control region of the mitochondrial genome (mtDNA) to examine how gene flow impacts the population genetic structure of cave myotis. The utilization of DNA sequence data of the control region will allow us to perform rigorous tests of prior hypotheses regarding how natural history and ecological factors have contributed to the contemporary relationships of populations of cave myotis. Whole genomic DNA will be extracted from spleen or muscle tissue. A portion of the left domain of the control region of the mtDNA genome of cave myotis will be amplified via the polymerase chain reaction (PCR). Successful amplicons will be purified and sequenced using a 310 automated DNA sequencer. DNA sequence data will be analyzed using a number of computer-based statistical packages. Based on the degree and pattern of differentiation among populations of cave myotis, it will be possible to better understand movement patterns and frequency of dispersal of individuals among cave localities.

06.01.91 PRESENCE/ABSENCE OF CONJUNCTIVAL LYMPHOID FOLLICLES IN NEW WORLD RODENTS. 1 Gregory M. Wilson, 1 Aileen A. Cunliffe, 1 William Caire, 2 James Chodosh, 2 Roger A. Astley, 1 Biology, University of Central Oklahoma, Edmond, OK. 2 Ophthalmology, University of Oklahoma Health Sciences Center, Oklahoma City, OK 73104.

We report the detection of conjunctival lymphoid follicles (CLF) in the eyes of eight species of New World rodents. These follicles are dense collections of leukocytes in the conjunctiva substantia propria with a thinned overlying epithelium lacking in goblet cells. Although the precise location of CLF within the conjunctiva varied from species to species, all CLF were found in the fornix of the conjunctival sac. In general, size and complexity of CLF varied with the size of the eye; the larger the eye, the larger and more complex the CLF. CLF are present in humans and thought to play a significant role in cell-mediated immune response to invading viral and bacterial pathogens. Previous finding suggest it may be beneficial to investigate the presence/absence of specialized lymphoid tissue in species which may serve as a laboratory animal model to better understand potential health care impact upon society, the study of the presence/absence of CLF also might have phylogenetic importance in the greater comprehension of the relationship between New and Old.
World rodents. Current strains of laboratory rodents are of Old World origin and lack the presence of CLF. Our findings also reveal that some species of New World rodents, like the majority of Old World rodents examined in this and previous studies, might lack CLF. Consequently, the presence/absence of CLF at this point might be informative for phylogenetic comparisons.

**06.01.92 THE EFFECTS OF NORNICOTINE ON THE ORGANIZATION OF THE CYTOSKELETON IN GINGIVAL FIBROBLASTS.** Fernando Alonso, Zoology, University of Oklahoma, Norman, OK.

Smoking influences the progression and outcomes of periodontitis. NorNICotine is a highly toxic, tobacco alkaloid delivered directly to the body through smoking and generated as a product of nicotine metabolism. Since nornicotine has significantly longer plasma half life (7.2-8.5 hr) than nicotine (2hr), it has been suggested that nornicotine may contribute to the development of periodontal disease. I used primary cultures of human gingival fibroblasts and video microscopy to observe possible effects of nornicotine on cell motility, which is mainly responsible for the ability of cells to move to the wound space. My results show that nornicotine has an effect on the cell motile activity at a concentration of 1mM. At concentrations of less than 1mM, no immediate effects could be seen; whereas the fibroblasts showed signs of blebbling, a precursor to cell death, at 5mM. I am currently studying cell migration using an in vitro wound model. I examined migration of human gingival fibroblasts into the wound space in the presence or absence of various nornicotine concentrations. My preliminary results show that population of the wound space is affected by higher concentrations of nornicotine (1mM and 2mM). In addition, proliferation of fibroblasts exposed to different concentrations of nornicotine show higher proliferation in low concentrations (0.2-20uM) and low proliferation in high concentrations (1-2mM).in vitro

**06.01.93 HOW CELLS SELECTIVELY DEGRADE PROTEINS VIA THE UBIQUITIN-PROTEASOME SYSTEM.** Robert Sheaff, Nacuci Lucas, Chemistry and Biochemistry, University of Minnesota, Minneapolis, MN.

The ubiquitin-proteasome system tags and degrades selected eukaryotic proteins. E3 ubiquitin ligases like SCFSkp2 play an essential role in this process by covalently attaching the small protein ubiquitin to specific substrates so they can be degraded. Two key substrates of SCFSkp2 are the cell cycle inhibitors p21 and p27, which help control cell division by inhibiting Cyclin-Dependent-Kinases (CDKs). SCFSkp2 is thought to ubiquitinate bound inhibitor and target it to the proteasome, where it is subsequently dissociated from cyclin-CDK and degraded. Here we show that SCFSkp2 dissociates p21 and p27 from cyclin-CDK much earlier in the pathway. The novel dissociating function of SCFSkp2 is separable and distinct from its ubiquitin ligase activity, yet the two functions are coordinated to ensure efficient substrate degradation. Thus, inhibitor dissociation rather than proteolysis may be the physiologically relevant step in cyclin-CDK activation by the ubiquitin-proteasome system. Furthermore, the structural and functional conservation among different E3 families suggests they may also dissociate their substrates.

**06.01.94 MOLECULAR CLONING OF 5NT GENE INTO AN EXPRESSION VECTOR.** Michael Johnson, Biology, Southwestern Oklahoma State University, Weatherford, OK.

A fragment of approximately 1500 bp of 5α-NT gene was amplified by PCR from a cDNA clone and then cloned in the pBR322 vector. The immediate next step is to digest the fragment from pBR322 by EcoRI, then gene clean it and ligate it in-frame in the expression vector pET32 c in EcoRI restriction site. After that the vector will be ready for protein expression. The gene will be induced with IPTG, and the protein will be isolated.

**06.01.95 THE EFFECTS OF SHORT-CHAIN FATTY ACIDS ON HUMAN GINGIVAL FIBROBLAST WOUND HEALING IN VITRO.** Jeffrey McBride, Barbara Saffiejo-Mrocza, William Ortiz Leduc, Department of Zoology, University of Oklahoma, Norman, OK.

Periodontitis is a chronic oral disease characterized by the development of periodontal pockets, inflammation, and tissue and bone destruction. The interaction between the microorganisms and the hosts’ oral tissue are among the important relationships studied in the pathogenesis of periodontal disease. Anaerobic bacteria produce a variety of virulence factors such as proteases, lipopolysaccharide, and short-chain fatty acids (SCFAs) that can negatively affect the healing process. SCFAs are produced in significantly higher quantities in patients with periodontitis when sugars in the gingival crevicular fluid undergo bacterial fermentation. We measured gingival fibroblast wound healing rates in vitro in the presence of various short-chain fatty acids, such as acetic, lactic, propionic, and butyric acids. Furthermore, since many diabetic patients develop chronic periodontal disease, we tested varying glucose levels in vitro, ranging from normal to hyperglycemic, to determine any potential modulating effects of glucose on
fibroblast wound healing in the presence of SCFAs. We found that butyric acid had the most inhibitory effect on fibroblast wound healing in vitro, and this effect seemed only partly due an acidic pH effect. Furthermore, it appears that, except for butyric acid, hyperglycemic conditions do not have significant, negative synergistic effects with SCFAs on wound healing rates of human gingival fibroblasts in vitro.

06.01.96 INVESTIGATION OF A SYMBIOTIC RELATIONSHIP BETWEEN BACTERIA ATTACHED TO THE HETEROCYSTS OF AN ANABAENA SP.. Cherilyn Ewert, Bradley Stevenson, Paul Smith, Botany/Microbiology, University of Oklahoma, Norman, OK.

Heterotrophic bacteria commonly form close associations with cyanobacteria in aquatic ecosystems, some of which can result in increased growth and nitrogen (N2) fixing potential for the cyanobacteria. The work reported here focused on a heterotrophic bacterium attached to the heterocystous cells of a filamentous, N2 fixing cyanobacterium (Anabaena sp. SSM-00). These two organisms were originally isolated from a brackish marsh in Woods Hole, MA in autotrophic medium. The epibiotic bacterium has subsequently been cultured independently of the Anabaena sp. in heterotrophic media. In this symbiosis, the Anabaena sp. provides a source of carbon and nitrogen for the epibiotic bacterium, and in return this bacterium reduces the concentration of oxygen around the heterocystous cells, the site of oxygen-sensitive N2fixation. The epibiotic bacterium is a member of the order Rhizobiales (Rhizobium sp. WH2K), related to the novel marine bacteria Hoeflea marina and H. phototrophica. Attachment experiments with these bacteria, Anabaena sp. SSM-00, and several closely related cyanobacteria indicate that attachment and symbiosis is species specific. Rhizobium sp. WH2K and H. phototrophica attach to the heterocystous cells of Anabaena sp. SSM-00, but H. marina does not. None of the heterotrophs attach to the other cyanobacteria, Rhizobium sp. WH2K and related Hoeflea spp. share several life history units. Links between these traits and symbioses are currently under investigation.

06.01.97 DIAGNOSIS AND TREATMENT OF INCLUSION BODY DISEASE IN A BALL PYTHON (PYTHON REGUIS). Whitney Johnson, Biology, University of Central Oklahoma, Edmond, OK.

Abstract: Many snakes are susceptible to a disease called inclusion body disease. Some of the symptoms include dehydration, increased susceptibility to internal parasites, lack of appetite and emaciation. After acquiring a Ball Python (Python regius) thought to have the disease, tests were run to determine if he had contract-ed the disease. The test results were inconclusive but symptoms were sufficiently severe to merit treatment. At first, a subcutaneous liquid medication was administered, with no response to medication, a second, more invasive method was chosen. Along with a different subcutaneous medication, oral fluids and pureed foods were administered. After three months of this regimen a white laboratory mouse (Mus musculus musculus) was introduced multiple times a day for three consecutive days. After rejecting the white laboratory mouse, a male colored gerbil (Meriones unguiculatus) was introduced and accepted. Although Inclusion Body Disease was not confirmed, subcutaneous medication and oral food with fluids were sufficient to treat the symptoms. His weight prior to treatment was 0.98 Kg and weight post-treatment was 1.64Kg. Most Inclusion Body Disease cases result in certain death of the specimen, but if caught early can be treated as necessary.

06.01.98 EXPLORING THE HONEY BEE’S ABILITY TO SOLVE MULTI-DIMENSIONAL PROBLEMS. 1 L. Lisa Pham, 1 Ashley Cro, 1 Dr. John Barthell, 1 Sky Checotah, 2 Dr. Ibrahim Çakmak, 3 Dr. Harrington Wells, 4 Tomica Blocker, 5 Brice Hadrer-Pate, 6 R. Tyler Reidenbaugh, 1 Biology, University of Central Oklahoma, Edmond, OK. 2 Agricultural Sciences, University of Uludağ, Bursa, Turkey 16059. 3 Biological Sciences, University of Tulsa, Tulsa, OK 74104. 4 Biology, Langston University, Langston, OK 73050. 5 Natural Sciences, Northeastern State University, Tahlequah, OK 74464. 6 School of Medicine, Loma Linda University, Loma Linda, OK 92350.

The focus of this study was to test the ability of honey bees (Apis mellifera) to solve multi-dimensional problems when foraging. The study took place in Turkey where honey bees are native and diverse. Artificial flowers were used to control rewards and effort required to obtain nectar. Reward difference was created by varying sucrose molarity. Difference in effort required to obtain a reward was created by varying flower handling time. Flower handling time difference was created: 1) by varying corolla tube length, and 2) varying stamen length. Deep corollas and long stamens increased flower handling time. Differences in reward and/or handling time were associated with flower color difference (blue versus white flowers). Two single-variable problems were initially presented to foraging bees. First, only an energy reward difference existed in the flower patch (2M versus 0.5M sucrose solutions). Second, only a handling time difference between blue and white flowers existed (either shallow versus deep corollas or short versus long stamens). Next, foragers were presented a two dimensional problem where both reward and effort varied simultaneously. Bees were offered the higher re-
ward in the flower type with the higher handling time. Higher energy reward (2M) and shorter handling time (both corolla length and stamen length) were preferred by worker bees in one dimensional foraging problems. However, when these two variables were combined the results differed from expectations derived from optimal foraging models (where the ratio of cost to reward is minimized). When effort was based on corolla length, bees consistently favored short corolla flowers with lower reward. This could be a result of bees overestimating costs or being unable to combine cost and reward into a single value (e.g. calories/sec.). When effort was based on stamen length, foraging behavior was specific to individual bees. Some bees made choices based solely on reward, some only on effort, and some just on flower color. This suggests that honey bees did not combine reward and cost values into a single variable. Rather, each individual bee utilized its own single dimensional standard, in visiting artificial flowers.

**06.01.99 DISENTANGLING AN INVASION: COMPARATIVE ECOLOGICAL INFORMATION FROM AMERICAN AND EURASIAN ECOSYSTEMS.** 1 Dr. John F. Barthell, 1 L. Lisa Pham, 2 Dr. İbrahim Çakmak, 3 Dr. Wells Harrington, 4 Dr. Robbin W. Thorp, 5 Dr. Theodora Petanidou, 6 R. Tyler Reidenbaugh, 1 Biology, University of Central Oklahoma, Edmond, OK. 2 Agricultural Sciences, University of Uludağ, Bursa, Turkey 16059. 3 Biological Sciences, University of Tulsa, Tulsa, OK 74104. 4 Entomology, University of California, Davis, California 95616. 5 Environmental Studies, University of the Aegean, Mytilene, Lesvos 81100. 6 School of Medicine, Loma Linda University, Loma Linda, California 92350.

The roles of competition and mutualism during invasions are increasingly debated in the literature. For several years we have studied the role of mutualism in the invasion of the invasive, Eurasian weed yellow star-thistle, Centaurea solstitialis, on the Santa Cruz Island, California. We found that the honey bee (Apis mellifera), another Eurasian invasive species, benefits from the pollination activities of the honey bee. Subsequent to this work, the varroa mite (Varroa destructor) was released as a biological control agent on the island in 1993 with the result that no colonies have been detected there since 1996. In the absence of honey bees we studied the ability of C. solstitialis to compete for pollinators with the native gumplant, Grindelia camporum. We did so by removing C. solstitialis from a large hillside region inhabited by the gumplant and then re-introducing the thistle in a pairwise fashion next to gumplants. Seed set of nearby gumplant flower heads (as estimated by flower head weight) was then determined for flower heads blooming before and after the removal of thistle plants from the study plot. As an ancillary effort, we traveled to locations in Turkey (city of Bursa) and Greece (island of Lesvos) to begin investigating C. solstitialis and its pollinator guild in their native environment. We compare the results of our previous work on Santa Cruz Island with our preliminary findings from Turkey and Greece.

**Chemistry**

**06.02.01 “SIGNAL AMPLIFICATION BY REDOX CYCLING AT AN INTEGRATED MICROELECTRODE ARRAY IN A MICROCHANNEL DEVICE”.** Leethaniel Brumfield, III, Chemistry, Langston University, Langston, OK.

The interest in the development of automated devices that can perform multiple steps for the analysis of samples using small volumes has generated research involved in developing new ways of incorporating electrochemical detectors with these lab-on-a-chip (LOC) devices. A new device that integrates a poly(dimethylsiloxane) (PDMS) microchannel with a microelectrode array for electrochemical detection of a sandwich type immunosorbant assay (ELISA) was fabricated and characterized. The PDMS channel was adhered to a glass slide containing the electrode array and the channel was closed by clamping the PDMS covered glass slide with a piece of plain or gold coated silicon wafer. The electrode array used contained 20 individually addressable electrodes. The working electrodes were 50 mm wide and 500 mm long, separated by 25 mm gaps. Its length was defined by the 500 mm wide and 29 mm deep channel. This device was used to investigate the signal amplification effects of generation/collection (redox cycling) experiments and the advantages of this type of electrochemical detection for use in detecting para-aminophenol (PAPR), the electroactive species generated in the mouse IgG sandwich type ELISA model system. Instrumentally-induced (or active) redox cycling resulted in amplification factors as high as 1.65 V for the closed channel, internal 3-electrode setup. The observable detection limit of PAPR was determined to be 4 mM. Preliminary results for the detection of PAPR, generated by incubating para-aminophenolphosphate (PAPP) with the immunoassay, indicated at this device was an effective detector for the mouse IgG model system. Future work will involve determining the optimal electrode dimensions, interelectrode spacing, and electrode configuration for achieving the highest signal amplification. Once the device is perfected, it can be used to optimize the mouse IgG model system. Even lower detection limits are expected because smaller in-
tere electrode spacing and smaller electrodes enhance the effects of redox cycling. The mouse IgG model system can later be applied to developing assays for the detection of other biological species of medical interest, such as paralytic shellfish toxins.

06.02.02  THE ANTIOXIDANT ACTIVITY OF THE SAND PLUM. C. Mattea McClain, Carroll L. Ramos, College of Pharmacy, Southwestern Oklahoma State University, Weatherford, OK.

The sand plum, Prunus angustifolia, grows in dense thickets and produces a small, red fruit that matures in early to midsummer. Although the sand plum can be found in a number of states, the plant is abundantly distributed in Oklahoma and Texas. A common practice in rural and Native American communities is to preserve the sand plum fruit as a jelly. The antioxidant activity of fruits, including grapes, pomegranates, berries, and domestic peach and plum varieties, is well established. The objective of this study was to investigate the relative antioxidant activity of the sand plum as represented by free radical scavenging ability and total polyphenol content. The radical scavenging ability of sand plum methanolic extracts was assayed using the stable free radical DPPH and expressed as Trolox equivalents. The total polyphenol content was determined by the Folini-Cioccalteu micro method using gallic acid as a standard. Our results indicate that the radical scavenging ability and polyphenol content of the sand plum fruit is comparable to red wine, which is a common benchmark for relative antioxidant activity.

06.02.03  FOLLOWING NATURE’S LEAD: POSITIONING INTRINSIC SENSORS OF LONG-RANGE ALLOSTERY. Tara Newton, Jason Johnson, Chemistry and Physics, Southwestern Oklahoma State University, Weatherford, OK.

Carbamoyl phosphate synthetase (CPS) catalyzes the synthesis of carbamoyl phosphate for assimilation into either arginine or the various pyrimidines. Extraordinarily, the reaction involves three distinct active sites spanning over 100Å… of the protein. The mechanism is thought to initiate within the large subunit via the reaction of ATP and bicarbonate to form carboxyphosphate. By a purported, inter-subunit, allosteric impulse, carboxyphosphate formation is correlated with a 1000-fold enhancement in the rate of glutamine hydrolysis within the small subunit, which releases ammonia to tunnel into the carboxyphosphate domain. There, ammonia and carboxyphosphate react to produce carbamate, which itself tunnels into a third active site, reacts with a second ATP, and forms carbamoyl phosphate. Little is known about the nature of or trigger for the conformational changes thought to be propagated between subunits to initiate active site coordination. Here, we have genetically engineered individual tryptophans within the small subunit of E. coli CPS to serve as fluorescent sensors of such allostery. To minimize the likelihood of disrupting normal allosteric response, sites for tryptophan substitution were based upon a ClusterW alignment of all known bacterial CPSs. Selected positions corresponding to tryptophan within at least 20 other species were: H76, F92, F150, and Y101. The four single-tryptophan constructs now await expression, purification, and characterization.

06.02.04  FORENSIC SCIENCE AT THE UNIVERSITY OF CENTRAL OKLAHOMA: THE UNDERGRADUATE PERSPECTIVE. David von Minden, Dana Rundle, Robert Bost, Chemistry, University of Central Oklahoma, Edmond, OK.

The undergraduate degree program in forensic science at the University of Central Oklahoma has been in existence for over 30 years. It has grown from a small start of a few students initially to becoming the largest major in the Department of Chemistry. In this presentation, changes in the undergraduate curriculum will be described. One factor of curriculum change is the Accreditation Program of the American Academy of Forensic Sciencesâ€™ Forensic Science Education Programs Accreditation Commission (FEPAC). A second factor involves one of our stakeholders, the Oklahoma State Bureau of Investigationâ€™s Forensic Science Laboratory, which is constructing a state-of-the-art forensic laboratory adjacent to the university campus. The success of the UCO undergraduate degree program will be described by relating the success of our graduates in obtaining employment in the forensic science community in Oklahoma and the United States and the success of our student organization, the Student Academy of Forensic Sciences.

06.02.05  MOLYBDENUM OXIDE AND TUNGSTEN OXIDE AS PROMISING REAGENTS FOR THE REMEDIATION OF HEAVY METAL-CONTAMINATED WATER. 1 Mo. Chehbouni, 2 Allen Apblett, 1 Chemistry, Computer and Physical Sciences, Southeastern OK State University, Durant, OK. 2 Chemistry, Oklahoma State University, Stillwater, OK.

The ability of molybdenum trioxide to absorb heavy metals from water was investigated. It was found that MoO3 is a highly selective reagent for the absorption of heavy metals and actinides. The metal uptake occurs via the reaction of MoO3 with the metal salts to generate insoluble molybdate salts. The products gained are in form of AMoO4 when the metal, A, is Mn, Co, Zn, Cd, Pd, Ca, Sr, and Ba. These can be used as heterogeneous catalysts for several oxidation processes. In addition,
a cyclic process for removal and concentration of actinides and other heavy metals from aqueous solutions using MoO3 has been developed. Tungsten trioxide is believed to behave similarly to molybdenum oxide. In the light of the results, tungsten trioxide, WO3, was applied to the removal of lead from water. The product gained from the reaction of lead acetate with tungsten oxide was lead tungstate (PbWO4) which is known as the mineral stolzite.

**06.02.06 THE EFFECTS OF MICROWAVE IRRADIATION ON THE POLYMERIZATION OF STYRENE AND METHYL METHACRYLATE USING VARIOUS INITIATORS.** Deborah Snell, Spence Pilcher, Natural Science, Northeastern State University, Tahlequah, OK.

The free radical polymerizations of both styrene and methyl methacrylate were conducted in microemulsions using stearyltrimethylammonium chloride (STAC) as the surfactant (surfactant/monomer = 1). Microwave irradiation and a fiberglass heating mantle were used as the respective heat sources at 60°C and 70°C employing the use of three water-soluble thermal initiators, namely, potassium persulfate (KPS), 2,2'-azobis(2-methylpropionamidine) dihydrochloride (V-50), and 4,4'-azobis(4-cyanovaleric acid), along with one oil-soluble initiator, 2,2'-azobisisobutyronitrile (AIBN). Percent recoveries of the polymer were measured at 5, 15, 30, and 60 minute time intervals after the addition of the water-soluble initiators and at 30 and 60 minute time intervals in trials conducted using the oil-soluble initiator. When comparing the amount of polymer recovered from a conventional-heating trial to the amount of polymer recovered from the same set in a microwave-heating trial, reactions run using a water-soluble initiator predominantly showed a higher percent recovery of the polymer in the microwave trials compared to the trials using a conventional heating method. Additionally, the increases in percent recoveries of poly(methyl methacrylate) seen with the microwave trials were more significant. However, when comparing the results of the polymerizations using the oil-soluble initiator, AIBN, a noteworthy difference was not found.

**06.02.07 MICROWAVE POLYMERIZATION OF STYRENE AND METHYL METHACRYLATE IN MICROEMULSIONS: CONVERSION STUDY AT VARIABLE POWER.** Dustin Little, Spence Pilcher, Natural Science, Northeastern State University, Tahlequah, OK.

Microwave irradiation was used as the thermal energy source for the free radical polymerization of both styrene and methyl methacrylate in microemulsions using stearyltrimethylammonium chloride (STAC) as the surfactant (surfactant/monomer = 1). Each polymerization was performed for 30 minutes at 60°C using potassium persulfate (KPS) as the initiator. Comparisons were drawn between the percent conversions of each polymer sample (estimated from the percent recoveries of each polymer) and the power settings of the microwave. The percent conversion for both polystyrene and poly(methyl methacrylate) increased with increasing power settings up to a certain optimum point afterwards the percent conversion decreased slightly. The optimum power setting according to these preliminary findings was determined to be 300 W with a 600 W ramp time. Attempted polymerization of styrene using a power of 100 W failed to produce any polymer.

**06.02.08 A DENSITY FUNCTIONAL STUDY OF LIGAND SUBSTITUTED EFFECTS ON ENERGETICS OF ETHYLENE POLYMERIZATION MEDIATED BY ZIRCONOCENE CATALYSTS.** Paritosh Das, Danny McGuire, Don Becker, Physical Sciences, Cameron University, Lawton, OK.

The effects of ligand substituents on the performance of cationic zirconocene systems, [Xn-CpCH2Cp-Xn]ZrR+, as catalysts for ethylene polymerization have been studied using detailed ab initio computations (DFT/B3LYP). Energetics for chain propagation and termination by α-hydrogen transfer to monomer have been determined. The stereoelectronic nature of fluorof (F) and methyl (CH3) substituents on the cyclopentadiene (Cp) ligands manifests itself in dramatic effects on the differences in barriers of the two processes. The electron-donating CH3 group significantly lowers the activation barrier for propagation and raises the activation barrier for termination, while the electron-withdrawing F substituent has an opposing effect. The computed data provide strong evidence that the polymer chain length can be controlled via substituent effects and should be useful in developing catalytic systems for the production of narrow-band polyethylene with molecular weight varying over a wide range. The result endorses experimental verification/exploitation and further computational exploration of the effects on tuning molecular weight of polymers.

**06.02.09 CONFIGURATIONALLY RESTRICTED BIS-AZAMACROCYCLES: CHEMOKINE RECEPTOR ANTAGONISTS.** 1 Randall Maples, 1 Tim Hubin, 2 Danny Maples, 3 Abid Khan, 3 Adam Bridgeman, 3 Chris Empson, 3 Graeme McRobbie, 3 Leigh Madden, 3 Stephen Archibald, 4 John Greenman, 1 Chemistry, Southwestern Oklahoma State University, Weatherford, OK. 2 Chemistry, Oklahoma State University, Stillwater, OK. 3 Chemistry, University of Hull,
Hull, UK. 4 Medical Research Laboratory, University of Hull, Hull, UK.

AMD3100, is a drug molecule that interacts with a cell surface protein (CXCR4) via hydrogen bonding interactions or more effectively as the metal complex via coordinate bonds with aspartate residues. On metal complex formation, the tetra-aza macrocyclic rings in AMD3100 show multiple configurations in solution. Configurationally fixed analogues would have the advantage of presenting only one configuration in solution for coordinate bond formation on binding to the protein. Our study aims to produce a series of configurationally fixed complexes and show the key importance of the coordination interaction for drug binding. We also wish to validate the general strategy of configurational fixing as a route to improve the activity of metal containing drugs.

06.02.10 WATER TRANSPORT PROPERTIES OF SULFONATED POLY(ETHER SULFONE). 1 Josh Gibson, 2 Hossein Ghassemi, 2 Thomas Zawodzinski, 2 Tom Kalapos, 1 Department of Chemistry, University of Central Oklahoma, Edmond, OK. 2 Dept of Chemical Engineering, Case Western Reserve University, Cleveland Heights, OH.

The search for a membrane to substitute Nafion is important in the endeavor to economize fuel cells. Although it remains a superior proton exchange membrane due to its high acidity (pKa ~ -6.0) and fluorinated backbone, Nafion costs $500 - $1000/m2, according to the California Exchange Commission. Another membrane, Sulfonated Poly-Ether Sulfone (SPES), has been developed and its water transport properties can be compared to those of Nafion. Random monomers within SPES have been sulfonated, but no more than 40% because this leads to total hydrophilicity and causes the polymer to dissolve in water. Four types of SPES membranes with different degrees of sulfonation (DS%) were examined after equilibrating at 25%, 50%, 75%, and 100% relative humidity, and immersed in water, exclusively at 30\degree C: SPES 750 (DS 35%), SPES 1000 (DS 24%), SPES 1500 (DS 17%), and SPES 15000 (DS 0.02%). First, the water uptake of the four SPES types under these five aquatic environments was measured. Then, using Pulse Field Gradient Nuclear Magnetic Resonance, the rate, at which all protonated molecules (predominately water) flowed through each membrane, except for SPES 15000, was obtained.

06.02.11 DIFFUSION KINETICS OF VOCS ACROSS DIFFERENT MEMBRANES FOR UST SITE SAMPLING. 1 Whitney Tabler, 2 Cynthia J. Paul, 1 McNairs Scholars Program, East Central University, Ada, OK. 2 Kerr Research Center/ United States Environmental Protection Agency, Ada, Oklahoma.

Understanding transport of volatile contaminants in ground water and the vadose zone of, particularly those associated with underground storage tanks, requires a detail knowledge about the depth-dependant distribution of chemical species in the subsurface. A risk assessment of the movement of vapors of volatile organic contaminants from ground water through the unsaturated zone and into living spaces usually involves a transport and fate model such as the Johnson and Ettinger model. The concentration of volatile organic contaminants in ground water is needed to calibrate these models. EPA recommends that ground water samples should be obtained from the uppermost portions of the ground water and/or capillary fringe. Historically, samples have not been obtained from these zones. Generally, water samples have been acquired from conventional wells screened across the water table. A conventional well produces a composite sample. The average concentrations across the screened interval may not be representative of the concentration at the top of the aquifer or in the capillary fringe.

The primary objective of this project was to evaluate different membrane materials for use in diffusion samplers within monitoring wells. These data will be used to calibrate diffusion samplers to allow monitoring of MTBE, benzene, and xylene profiles in vapors. Laboratory batch experiments were conducted to determine the minimum time diffusion samples must be left within a monitoring well to achieve equilibrium. By determining the kinetics of diffusion for certain contaminants, field sampling costs may be lowered by decreasing the amount of time samplers are left in wells, thereby allowing field personnel to install and retrieve samplers during the same field trip. Results showed no significant differences between Supor and Versapor membrane types. MTBE and o-xylene results were very linear, however, benzene doesn’t equilibrate as rapidly as MTBE or o-xylene. No significant differences were seen between room temperature and 4 degree Celsius. Data represent preliminary calibration curves to understand the effect of temperature and residence time and water solubility on the performance of passive diffusion monitors. Passive diffusion samplers can be inserted in permanent monitoring wells in order to predict analyte concentrations in water at equilibrium with the vapors. Experiments will be continued to determine equilibrium time for benzene.

06.02.12 NOVEL ZIRCONOCENE DICHLOORIDE COMPOUNDS. Karisa Beacham, Clint Bryan, Danny McGuire, Jesse Wilson, Michael Landoll, P. K. Das, Physical Sciences, Cameron University, Lawton, OK.
Previous calculations conducted by Das et al. at Cameron University showed that by placing electron withdrawing groups onto the cyclopentadienyl ligands coordinated to zirconium would significantly increase the activation barrier for propagation and lower the activation barrier for termination. This shows the feasibility in designing a catalyst that could be used to produce varying types of oligomeric to high-molecular weight polyethylene. This research involves the synthesis and characterization of zirconocene complexes that contain cyclopentadienyl ligands with electron withdrawing substituents. The first of these complexes that was synthesized was bis(pentachlorocyclopentadienyl)zirconium dichloride. This complex will be compared to other zirconocene analogs to experimentally determine the efficacy of this catalyst toward ethylene polymerization. These results will determine future exploration toward synthesizing other zirconocene dichloride analogs containing electron withdrawing groups and their catalytic activities toward the synthesis of low molecular weight polymers.

06.02.13 EVALUATION OF CAFO LAGOONS FOR VARIABILITY IN CHEMICAL AND MICROBIOLOGICAL PARAMETERS. 1 Sabrina Scroggins, 2 Stephen Hutchins, 1 McNair Scholars Program, East Central University, Ada, OK. 2 Kerr Research Center/United States Environmental Protection Agency, Ada, Ok.

Concentrated animal feeding operations (CAFOs) have been around for many years to yield higher productivity of foods for human consumption. The high quality of animals confined to restricted living spaces has raised issues on handling the high amount of wastes generated from these operations. Most operations use lagoons to collect the waste or runoff, and then land application to dispose of the water and sludge from the lagoons. While surface water contaminations are highly regulated, there is little to no regulations to protect the groundwater from contamination from land application of the wastes. It is believed that proper land application of lagoon wastes will not contaminate groundwater, but this has not been confirmed. To assess possible groundwater contamination, lagoon chemical content must first be established. The overall study examines chemical variability within specific lagoons and between different types of lagoons. Extensive chemical characterization was performed for a variety of parameters, including nutrients, metals, dissolved gases, cations, antibiotics, estrogens, stable isotopes, etc... This poster reports on part of the overall study and focuses on a variety of chemicals including, but not limited to, NH4, NO2, NO3, CH4, N2O, Na, K, Ca, and Mg. Research has linked some of these chemical ratios and stable isotope ratios to source tracking of nitrate. Total fecal coliforms and fecal Enterococci were also examined. Dairy, chicken, beef, and swine lagoons were each sampled by pumping lagoon waste from three sites on each lagoon. Preliminary results will be presented.

06.02.14 MICROWAVE-PROMOTED POLYMERIZATIONS OF STYRENE AND METHYL METHACRYLATE IN MICROEMULSIONS. Bradley Holland, Spence Pilcher, Natural Science, Northeastern State University, Tahlequah, OK.

Samples of polystyrene (PS) and poly(methyl methacrylate) (PMMA) were prepared in microemulsions using cetyltrimethylammonium bromide (CTAB) as the surfactant (surfactant/monomer = 0.5) via free radical polymerization using a constant (1.0 wt.%) ratio of initiator (potassium persulfate, KPS) to monomer. Each polymerization took place at 50oC, which is below the normal thermal initiation temperature (60oC) for polymerizations involving KPS, to examine specific microwave effects. Percent recoveries of polystyrene prepared in microemulsions using microwave irradiation were 8%, 26%, 32%, and 82% at 5, 15, 30, and 60 minutes after the addition of the initiator. The percent recoveries for poly(methyl methacrylate) samples prepared using microwave irradiation were lower being 0.5%, 4%, 6%, and 67% for each respective time. These results will be compared to the yields of polymer produced using a conventional conductive heating method as the thermal energy source for the polymerization.

06.02.15 RESEARCH AND DEVELOPMENT OF AN ANTIBODY BASED BIOSENSOR FOR THE IDENTIFICATION OF VIRUSES. 1 John Bowen, 1 Bill Wilson, 2 James Mecham, 3 Kaley White, 3 Lena Rhia, 1 Chemistry, University of Central Oklahoma, Edmond, OK. 2 ARS/ABADRL, USDA, Laramie, WY. 3 Science, Edmond North High School, Edmond, OK.

Preliminary research into the eventual development of a facile method for the identification and differentiation of closely related strains of viruses in humans and animals is presented. For this study, the goal was to determine if an immobilized antibody based biosensor could easily individually identify between two closely related viruses. The viruses chosen were Bluetongue virus (BTV) and Epizootic Hemorrhagic Disease virus (EHDV) which are closely related serogroups of orbiviruses. The biosensor surface consisted of antibodies for either BTV and EHDV isolated by the USDA Arthropod Borne Disease Laboratory, that were immobilized onto a metalized surface. The method for detecting the antibody-virus interaction used was Surface Plasmon Resonance (SPR) spectroscopy. Results indicated that
biosensor surfaces easily identified the target virus, but were unresponsive to the non-target virus. The total time of analysis was eight minutes, with positive identification capable at four minutes.

**06.02.16 MIMICKING SYNCHRONIZATION SIGNALS IN CARBAMOYL PHOSPHATE SYNTHETASE.** Andrew Nelson, Dr. Jason L. Johnson, Chemistry and Physics, Southwestern Oklahoma State University, Weatherford, OK.

Carbamoyl phosphate synthetase coordinates multiple substrates, intermediates, and active sites during catalytic turnover. Bicarbonate-dependent hydrolysis of ATP initially produces carboxyphosphate within the large subunit. Subsequently, glutamine hydrolysis within the small subunit releases ammonia, which is channeled between subunits to react stoichiometrically with carboxyphosphate to form carbamate. Finally, carbamylated substrates into a final active site and reacts with a second ATP to produce carbamoyl phosphate. The synchronization of carboxyphosphate production with glutamine hydrolysis presumably derives from an inter-subunit, allosteric signal. The trigger for this coordinating impulse may derive from substrate, transition state, or intermediate occupancy of the carboxyphosphate active site. To distinguish in part between these possibilities, we report here a kinetic assessment of the ability of nonhydrolyzable nucleotide analogs to (a) competitively bind within the carboxyphosphate domain and (b) allosterically promote glutamine binding and/or hydrolysis. If was found that both AMP-PNP and AMP-PCP associate with the target domain, but neither mimic ATP’s enhancement of amidotransferase activity.

**06.02.17 MEASUREMENT OF GREEN RUST SURFACE AREA BY NITROGEN ADSORPTION METHOD.** 1 Adam Campbell, 2 Chunming Su, 1 McNair Scholars Program, East Central University, Ada, OK. 2 Kerr Research Center/ United States Environmental Protection Agency, Ada, OK.

Iron oxide minerals such as Green Rust (GR) are important in attenuation of groundwater contaminants. The kinetics for contaminant removal by GR may be affected by the specific surface area of GR. In literature, different techniques have been used yielding different values of the specific surface area. The technique applied in this research is nitrogen adsorption. We prepared each sample in a glove box and transported it in an anaerobic chamber. Varying out-gas times and temperatures were used to degas the sample followed by a five point BET analysis to determine the specific surface area. XRD analysis determined if degradation had occurred. The variables in the above procedure found to affect sample quality were exposure time to atmosphere during sample transfer and out-gas times and temperatures. Exposure time to the atmosphere was a variable that could not be eliminated and only minimized to an average total time of 45 seconds. XRD analysis of samples out-gassed at temperatures of 150, 120, 101, 90, and 80 degrees Celcius showed that all samples out-gassed at temperatures greater than 80 degrees Celcius were degraded. Out-gas temperature also inversely affected the time the sample experienced elevated temperatures, or the time the temperature was ramped to the time the sample was back at room temperature (elapsed time). The elapsed time was not controllable due to the instruments programming. The specific surface area was determined to be 28.4 m2g-1 at 80 degrees Celcius with an out-gas time of 15 minutes (elapsed time ∼ 195 minutes).

**06.02.18 CATION-ANION INTERACTIONS IN LIPF6-BASED ELECTROLYTES FOR LITHIUM RECHARGEABLE BATTERIES.** 1 Chris Burba, 2 Roger Frech, 1 Natural Sciences, Northeastern State University, Tahlequah, OK. 2 Chemistry and Biochemistry, University of Oklahoma, Norman, OK.

Lithium hexafluorophosphate (LiPF6) has become a standard solute for non-aqueous lithium battery electrolytes. Therefore, it is important to understand how this compound behaves when it is dissolved in non-aqueous solvents. In particular, the formation of neutral ion pairs in solution is known to affect the conductivity of the electrolyte, and hence impact battery performance. Infrared and Raman spectroscopy can provide critical insight into the ion-ion interactions that occur in solution. Thus, a series of LiPF6-based electrolytes was investigated with infrared absorption spectroscopy. The spectral intensity of the nondegenerate $\nu_1$ mode of the PF6- anion was found to be sensitive to ion pairing. Although the $\nu_1$ mode of an isolated anion is only Raman-active, coordination of Li+ to PF6- destroys the octahedral symmetry of the anion and results in $\nu_1$ becoming simultaneously IR and Raman active. When the dielectric constant of the solvent is increased, the IR-intensity of the $\nu_1$ band decreases because ion pairing is not favored in high dielectric solvents. Spectroscopic studies of solutions containing LiPF6 in 2-methoxyethyl ether (hereafter called diglyme) show that ion pairing is also affected by specific cation-solvent interactions. The diglyme-containing solutions have significantly fewer ion pairs than expected based on the solvent’s dielectric constant. It is thought that diglyme:LiPF6 solutions consist mostly of $\nu_1$ (PF6-) anions because the sixfold coordination of Li+ by two diglyme molecules hinders ion pairing. This study suggests that spectroscopic investigations of $\nu_1$(PF6-) are an effective way to monitor ion-pairing in LiPF6-
based electrolytes

**06.02.19**  THE ANTIOXIDANT ACTIVITY OF OKLAHOMA WINES. Sarah F. Mahdy, Ashley D. Rowe, C. Mattea McClain, Carroll L. Ramos, College of Pharmacy, Southwestern Oklahoma State University, Weatherford, OK.

There is great interest in the potential beneficial effects of natural products rich in polyphenols. The positive effects of polyphenols in health and disease prevention appear to be due to the free radical scavenging activity of these compounds. Wines, particularly red wines, contain a high concentration of polyphenols. Oklahoma has an emerging wine industry that includes local cultivation of a variety of viniferia. The objective of this study was to investigate the relative antioxidant activity of wines produced from grapes grown in Oklahoma. Red wines, including Cabernet Sauvignon, Merlot, and Syrah/Shiraz, and white wines, including Chardonnay, were examined along with similar California wine samples. The free radical scavenging ability was determined using the stable free radical DPPH and expressed as Trolox equivalents. The total polyphenol content was determined by the Folin-Ciocalteu method using gallic acid as a standard. Our findings demonstrate that the overall antioxidant capacity of Oklahoma wines is comparable to California wines of the same vinifera.

**06.02.20**  SENSIO, A NEW COST EFFECTIVE PLATFORM FOR BIOMOLECULAR INTERACTION ANALYSIS USING SURFACE PLASMON RESONANCE. Jeffery Havard, Aaron Martin, Chemistry, University of Central Oklahoma, Edmond, OK.

A Surface plasmon resonance-based biosensing platform has been developed. The semi-automated flow injection analysis system includes surface chemistry, microfluidics and control/analysis software. The biosensor has been tailored for kinetic and affinity analysis and employs real-time reference curve subtraction. A model protein-protein interaction has been employed to evaluate the system. The interaction of soluble antibody with immobilized protein A was studied and the kinetic and affinity constants were determined. The affinity constant determined from solid phase affinity data was in agreement with the affinity constant determined from kinetic analysis. In addition, high quality data with excellent sample reproducibility was demonstrated.

**06.02.21**  CHARACTERIZATION OF LIMESTONES AND DOLOMITE FROM ACID-INSOLUBLE RESIDUE. Bob Neman, Chad Impson, Vanessa Canfield, Chemistry, East Central University, Ada, OK.

Natural minerals such as limestone (CaCO3) or dolomite(MgCa(CO3)2always have certain natural impurities such as silica, clay, and pyrite in them. By destroying the soluble fraction of the mineral with suitable strong acid, it is possible to estimate and characterize the purity of the mineral by examination of the insoluble residue. Natural minerals such as limestone (CaCO3) or dolomite(MgCa(CO3)2always have certain natural impurities such as silica, clay, and pyrite in them. By destroying the soluble fraction of the mineral with suitable strong acid, it is possible to estimate and characterize the purity of the mineral by examination of the insoluble residue. The insoluble fraction is examined by XRF, microscopy, and petrography to determine mineral and elemental content and thereby help define the purity of the host rock and even its geological source.

**06.02.22**  METAL-CARBON SIGMA BOND METATHESIS: REACTIONS OF DIALKYL -PLATINUMCYCLOOCTADIENE WITH THIOLS. Arib Rahman, Fazlur Rahman, Joshua Choi, Chemistry, Oklahoma School of Science and Mathematics, Oklahoma City, OK.

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ABSTRACT: The protonation reactions of dialkyl-platinum cyclooctadiene with various soft acids such as thiols, amino acids and benzoic acids gives alkane and biologically important thiolate metal complexes. Reactions of thiols with dialkyl platinum cyclooctadiene give initially an oxidative addition product (A) and upon heating give either a disproportionate product (B) or a reductive elimination product (C) depending on the thiol. Compounds of type A, B and C has been characterized by X-ray crystallography. A B C During the presentation the X-ray structural features of A, B and C will be discussed along with a possible reaction mechanism.

**06.02.23**  INTERACTION OF SOLID ZINC OXIDE WITH WATER VAPOR AT ELEVATED TEMPERATURES. Audrey Myers, Dwight Myers, Department of Chemistry, East Central University, Ada, OK.

Formation of volatile hydroxides at elevated temperatures is an important mechanism for corrosion of metal alloys or oxides in combustion environments. We are studying the reaction of zinc oxide with water vapor in the temperature range 600-900˚C. Zinc oxide is
placed in a quartz transpiration apparatus and a flowing stream of inert gas and water vapor is passed over the sample. Volatile zinc hydroxide species are transported downstream and collected in the cooler collection tube for analysis. The water is also collected and analyzed for zinc content. Variation of the partial pressure of water vapor allows the determination of the vaporizing species. Measurements over a range of temperatures will permit determination of the enthalpy for the reaction at the average temperature of the experiments. Results to date will be discussed.

06.02.24  THE CHARACTERIZATION OF MONOVALENT CATION ADSORPTION ONTO THE SURFACE OF BACILLUS SUBTILIS . 1 James Henderson, 2 Daniel Alessi, 2 Jeremy Fein, 1 Chemistry, University of Central Oklahoma, Edmond, OK. 2 Civil Engineering and Geological Sciences, University of Notre Dame, 156 Fitzpatrick Hall, Notre Dame, IN 46556.

Presently, many natural systems have become contaminated by heavy metals; and once these heavy metals are introduced, these highly charged particles interact with natural consortia. By investigating these interactions we can better develop processes for bioremediation. Heavy metal adsorption to the surfaces of bacteria has been well studied and characterized as a means to describe the mobility of heavy metals in geological settings. Virtually all experimental investigations of bacterial adsorption have been conducted in the presence of a monovalent salt electrolyte in order to buffer ionic strength. These studies assume that the monovalent ions present in the electrolyte are inert to adsorption onto the bacterial cell wall, and the thermodynamic stability constants for bacterial surface complexes are calculated based on this assumption. If monovalent cation adsorption occurs to a significant extent, then these stability constant values would be inaccurate. In this study, we measured the adsorption of Li and Rb on the gram-positive bacteria Bacillus subtilis in the presence of sodium perchlorate (NaClO4) electrolyte as a function of pH and electrolyte concentration in order to determine if monovalent cations adsorb to the bacterial surface and if they compete significantly with other cations for cell wall adsorption sites. We measured adsorption over the pH range 5 - 9, in solutions with buffered ionic strengths of 10-3.6, 10-3, 10-2, and 10-1 M NaClO4. Under these conditions, adsorption was dependent on ionic strength instead of the pH. As ionic strength was decreased, the adsorption was observed to be significantly higher. Our experimental findings suggest that monovalent cation adsorption onto bacterial cell wall sites occurs to a lower extent than does the adsorption of higher charged cations. Qualitative observations revealed that when monovalent cations were present in conjunction with higher charged species, the higher charged cations adsorb relatively unimpeded by the monovalent cations.

In the near future, thermodynamic stability constants for monovalent cation complex formation with bacterial cell wall surfaces will be determined so as to better formulate geological systems and their interactions with pollutants.

06.02.25  VAPORIZATION STUDIES OF METAL OXIDES AT HIGH TEMPERATURES. Meicha Gaddy, Dwight Myers, Chemistry, East Central University, Ada, OK.

As part of a larger program of studies of metal oxide stability in corrosive and high temperature environments, we have performed a study of the volatility and reactivity of metal oxides at elevated temperatures. Cobalt sesquioxide (Co3O4), and tungsten(VI)oxide (WO3) were heated to 1273K in air for extended periods. Mass loss for both samples continued after more than 40 hours of heating. In the case of the cobalt oxide, some evidence of vapor transport by water vapor from the furnace atmosphere was observed. SEM-EDX data show evidence of surface reaction occurring on the cobalt oxide particle surface. SEM data show evidence of sintering on the tungsten oxide surface.

06.02.26  RECONSTITUTION OF CYTOCHROME P450 3A4 ACTIVITY IN A LIPID FREE SYSTEM. 1 Christina Lindsey, 2 Dmitri Davydov, 2 Harshica Fernando, 2 James Halpert, 1 Department of Chemistry, University of Central Oklahoma, Edmond, OK. 2 Department of Pharmacology and Toxicology, University of Texas Medical Branch, Galveston, TX.

Cytochromes P450 are heme-thiolate proteins acting as terminal monoxygenases found in animals, plants, and bacteria. These enzymes catalyze the oxidation of various hydrophobic compounds such as steroids and drugs. Cytochrome P450 3A4 (CYP3A4) is the most abundant P450 in human liver and metabolizes ~50% of clinically used drugs. The routinely used approach to measure the activity of the enzyme is based on a micellar reconstituted system with phospholipids and cytochrome P450 reductase (CPR), which provides two electrons for the oxidation reaction. In this study we sought to develop and optimize conditions for reconstitution of a soluble lipid free reconstituted system of debenzylation of 7-benzyloxy-4-(trifluoromethyl)co umarin (7-BFC) with a nonionic detergent in order to study protein-protein interactions of CYP3A4. For the initial optimization process the CYP3A4:CPR ratio was kept at 1:1. Optimization for the lipid free system included varying the protein concentration, the detergent concentration (Triton N-101 reduced) and the tempera-
Ferrocenylketene can be generated by the UV photolysis of 1,2-diazaacetylferrocene via the Wolff rearrangement. Once formed, the ketene, which is highly reactive, can be trapped by alcohols and amines to form esters and amides, respectively. Thermolysis of the diazoketone can also be used to generate the ketene, but side reactions that appear to involve nucleophilic trapping of a carbene intermediate are a significant problem. Photolysis, on the other hand, produces only trace amounts of products from these undesired side reactions. The [2+2] cycloaddition reaction of ferrocenylketene with unsaturated ketenophiles such as alkenes and enamines has the potential to be an effective method for preparing novel cyclobutane derivatives. Initial cycloaddition studies using cyclopentadiene as a ketenophile have been unsuccessful, possibly due to side reactions of cyclopentadiene.

**06.02.27** FLEX-HETS INHIBIT NADH OXIDOREDUCTASE ACTIVITY IN MITOCHONDRIA ISOLATED FROM HUMAN OVARIAN CANCER CELLS. Niba Nchotu, Cammi Valdez, David Supeck, Lance Gill, William Kelly, Department of Chemistry and Physics, Southwestern Oklahoma State University, Weatherford, OK.

Flexible heteroarotinoids (Flex-Hets), a novel class of retinoid anti-cancer drug, induce apoptosis in multiple types of cancer cells with little effect on normal cells. Apoptosis occurs with increased generation of reactive oxygen species. Since many types of cancer cells have increased metabolism, their mitochondria may be more sensitive to the effects of Flex-Hets. Targeting of mitochondria may explain the differential effects of Flex-Hets on cancer versus normal cells. The effect of drug on mitochondrial function was assessed using mitochondria harvested from A2780 ovarian cancer cells. Mitochondrial NADH-oxidoreductase (Complex I) activity was assayed spectrophotometrically in mitochondria isolated from cells incubated for five hours with/without drug. Results show that Flex-Hets are non-competitive inhibitors of mitochondrial Complex I. Michaelis-Menten parameters for $V_{\text{max}}$ in crude mitochondrial preparations are lowered in a dose-dependent manner upon treatment with drug, while $k_m$, a measure of substrate binding, is unchanged. This suggests that inhibition of Complex I by Flex-Hets does not occur by interaction with the NADH binding site. Addition of UQ1 is able to reverse Complex I inhibition by Flex-Hets in a dose dependent manner. This suggests that the drug may act as a UQ10 antagonist, occupying the UQ10 binding site. Increasing the concentration of UQ1, a structural analog of UQ10, effectively competes with the Flex-Het and reverses Complex I inhibition.

**06.02.28** CHEMICAL TRAPPING OF FERROCENYLKETENE BY ALCOHOLS, AMINES AND KETENOPHILES. John Ferguson, Christina Lindsey, Chemistry, University of Central Oklahoma, Edmond, OK.

The relative scarcity of iron in the ocean limits the growth of microorganisms including phytoplankton and heterotrophic bacteria in the high-nitrate-low-chlorophyll (HNLC) regions of the oceans. Most aerobic bacteria produce high affinity ferric-ion specific chelators called siderophores to acquire iron under iron stress conditions. Two structural themes have emerged from the siderophores identified from marine bacteria: (1) the presence of photoreactive moiety such as alpha-hydroxycarboxylic acids when coordinated to Fe(III), and (2) suites of amphiphilic siderophores differing only in the nature of the acyl appendage. We report here studies of new amphiphilic siderophores produced by the marine alpha-proteobacterium Ochrobactrum sp. SP18.
This bacterium produces a suite of at least three cell-associated siderophores that vary only in the identity of the fatty acid appendages. The photolysis reactions and membrane partition coefficients are also reported.

**06.02.31 SIDEROPHORES PRODUCED BY MARINE FUNGUS CUNCHAMILLA ELLEGANS ATCC36112.** Colt Golden, Jeannifer Swift, Jessica Martin, Department of Natural Sciences, Northwestern Oklahoma State University, Alva, OK.

Iron is required for growth of most microorganisms. The insolvibility of iron at near neutral pH under aerobic conditions is thought to limit growth of microorganisms in vast areas of the oceans. Like their terrestrial counterparts, the marine bacterial species studied thus far have been shown to produce low-molecular-weight iron-binding compounds called siderophores to acquire iron. The three published studies of marine fungal siderophores report production of iron-binding compounds by these strains, but do not structurally characterize the putative siderophores. Thus, this study seeks to identify the structures of siderophores produced by the marine fungus Cunninghamamella elegans ATCC36112.

**06.02.32 DYNAMIC COUPLING IN PSEUDOROTAXANES OF CUCURBITURIL.** James Dechter, Kim Pham, Department of Chemistry, University of Central Oklahoma, Edmond, OK.

Supramolecular structures are held together by intermolecular forces rather than chemical bonds. They are of interest for purposes ranging from the construction of the various components of molecular machines in nanotechnology, to the study of the self-assembly of molecules. Our interest in nuclear magnetic resonance (NMR) studies of the dynamic coupling of supramolecular structures has led us to investigate “rotaxanes”, which derive their name from their description as a rotor molecule threaded onto an axle molecule. Our interest is to probe the effect of the diameter of the rotor molecule on the dynamic behavior of the axle molecule - an effect called dynamic coupling. We have chosen a series of cyclic polymers given the common name cucurbiturils as the rotors. The series with 5-8 monomer units are commercially available, and the specific polymer is designated by the n in cucurbit[n]uril. The axes we have chosen are spermidine trihydrochloride (SPD.3HCl) and spermine tetrahydrochloride (SPM.4HCl). Evidence will be given for the formation of rotaxanes between the axle SPM.4HCl and the two rotors, cucurbit[6]uril and cucurbit[7]uril. Preliminary results for the dynamic coupling experiments for these systems will be presented.

**06.02.33 COVALENCY IN IONIC COMPOUNDS.** Heath Stotts, Jo Conceicao, Natural Science, Northwestern Oklahoma State University, Alva, OK.

The generalization that metals and non-metals react to form ionic compounds is not without exceptions. Numerous ionic compounds have lower melting points and solubilities than their counterparts. Fajans’ rules have been used extensively over the past decades to explain these discrepancies in terms of the degree of covalency developed in the ionic bond. A systematic study of covalency in ionic bonding, using ab initio quantum mechanical methods, is undertaken here; Two dimensional electron density contour maps and natural bond orbital (NBO) analysis is performed. Comparisons to predictions of Fajans’ rules are made. Similarities and discrepancies are discussed.
Benzodiazepines, a class of minor tranquilizers, are sometimes found in aircraft fatalities. Currently at the Toxicology Laboratory of the FAA Civil Aerospace Medical Institute, each individual benzodiazepine has its own method for detection and quantitation. Some require liquid-liquid extractions, which can be tedious when done for large batches of samples. A protocol was developed to create a single method that could be used to detect and quantitate all benzodiazepines. This method can be used to quantitate 13 different drugs simultaneously by forming trimethylsilyl derivatives and using gas chromatography/mass spectrometry for analysis. This method also uses solid phase extraction, a relatively simple extraction procedure.

**06.02.36 DEVELOPMENT OF MICROWAVE-ASSISTED DERIVATIZATION TECHNIQUES FOR THE DETECTION AND QUANTIFICATION OF DRUGS OF ABUSE.** Beau Burton, David von Minden, Chemistry, University of Central Oklahoma, Edmond, OK.

In the analysis of drugs of abuse by gas chromatography/mass spectrometry, it is often advantageous to form volatile derivatives of the analytes in order to improve their gas chromatographic characteristics or to increase the number of intense fragment ions in their mass spectra. Historically, these derivatization reactions occur at high temperatures (80-100 degrees Celsius) for extended periods of time (30-45 minutes). A new technique of using microwave radiation to facilitate these derivatization reactions is presented. A comparison of results using traditional methods and the microwave technique is given, showing decreased reaction times and increased yields for the preparation of pentafluoropropionate derivatives of amphetamines and opiates, as well as trimethylsilyl derivatives of opiates.

**06.02.37 TOWARDS MOLECULAR WEA VING.** 1 James M. McClain II, 1 Kaushal Patel, 1 Timothy Hubin, 2 David Cockriel, 1 Chemistry & Physics, Southwestern Oklahoma State University, Weatherford, OK. 2 Chemistry, University of Kansas, Lawrence, KS.

Woven polymeric materials are the stated goal of a number of chemistry research groups within the area of supramolecular chemistry. Approaches based on catenanes and rotaxanes have systematically increased the size of discrete mechanically interlocked molecules, but this approach has not produced the desired woven polymeric materials. Other researchers have produced impressive molecular grids, racks, and helices using the self-assembly of linear oligomeric ligands around multiple metal ions. Yet, these molecules lack the mechanical bonds associated with weaving. This presentation describes a project based on an approach for achieving woven structures from the self-assembly of linear oligomeric ligands having the interlacing requirement of weaving designed into them. As a first step, a simple tridentate amide-containing ligand with one pyrazine arm and one pyridine arm was synthesized in order to determine if the required meridional orientation of two such binding sites would occur around an octahedral metal ion. The cobalt(III) complex of this ligand was synthesized and structurally characterized, demonstrating that the required geometry was realized. In addition, two of these octahedral complexes are linked via the uncomplexed nitrogen of the pyrazine arms, which bind a third cobalt ion. This complex structure is evidence that the use of metal ions to produce a weaving structure is possible. Next, a rigid, ditopic ligand utilizing a pyrazine core to ensure metal ion binding on opposite sides of the ligand has been synthesized and structurally characterized. In order to make larger oligomeric ligands possible with similar chemistry, the simple amide linking reaction has also been used to assemble the ditopic ligand. Complexation of the ditopic ligand to octahedral metal ions and potential syntheses of tritopic or larger analogues will be presented.

**06.02.38 THE USE OF AA SPECTROSCOPY TO DETERMINE CONCENTRATION: ANALYSIS OF MAGNESIUM AND CALCIUM IN URINE.** Janisel Hau Chung, Carolina Nova, Jenna Deaton, Rosanna Kammerer, Chemistry - Quantitative Analysis Lab, University of Central Oklahoma, Edmond, OK.

The purpose of this project was to determine the concentrations of Mg and Ca in a urine sample after taking Centrum, a multivitamin. The experiment was conducted by making two sets of urine samples and the preparation of standard solutions for the Beer’s Law Plot. Urine set A consisted of ordinary urine without incorporating the multivitamin Centrum. On the other hand, urine set B had incorporated daily tablets of Centrum. The sets of urine were brought to Flame Atomic Absorption Spectroscopy (FAAS) instrument to be read. Based on the readings, Ca and Mg had the best absorbance values.

The next part of the experiment was to create a cation exchange column to filter the cations present in the urine sample. The cation exchange column was used in order to create a blank standard solution of urine without metals in it. A series of dilutions were prepared containing the different concentrations of Mg and Ca to create a Beer’s law plot of the standard solutions. The graph for the standard addition method was prepared by making five different dilution series contain-
ing an amount of the unknown sample of urine and the known concentrations of Mg and Ca. The samples were diluted to the line using the blank urine with no cations instead of water. The different aliquots were read by the FAAS. The concentrations of Mg and Ca in urine samples before taking a multivitamin were determined to be 0.9539ppm Mg and 34.5ppm Ca. After the pill was taken, the concentrations were 1.545ppm Mg and 52.5ppm Ca.

**06.02.39  HEME DEFICIENCY DOWNREGULATES EXPRESSION OF EXOCRINE PANCREAS GENES IN ZEBRAFISH.** Cammi Valdez, Chemistry and Physics, Southwestern Oklahoma State University, Weatherford, OK.

Uroporphyrinogen decarboxylase (UROD), the fifth enzyme in the heme biosynthetic pathway, catalyzes the sequential decarboxylation of the four acetylases of uroporphyrinogen I and III, to yield coproporphyrinogen I and III, respectively. UROD deficiencies are known to cause porphyria cutanea tarda (PCT) and hepatoerythropoietic porphyria (HEP). Our microarray and in situ hybridization analyses determined six down-regulating exocrine genes, try, tyl, rtnb1, trnl, ela2l, and cpa in zebrafish yquem/urod (-/-). Here we investigate whether downregulation of the exocrine pancreatic zymogens is caused by UROD deficiency per se or heme deficiency. To test this hypothesis, we examined expression of trypsin in sau/ala2 (-/-), another zebrafish heme deficient mutant, as well as in hemin-treated yquem/urod (-/-) and sau/ala2 (-/-) larvae. Using in situ hybridization we found that trypsin and ptf1a were downregulated in both yquem/urod (-/-) and sau/ala2 (-/-) mutants. We also found hemin treatment is able to rescue trypsin and ptf1a expression in both yquem/urod (-/-) and TB223/ala2 (-/-) mutants. Taken together, our results suggest that heme deficiency, rather than UROD deficiency per se, caused downregulation of exocrine genes and heme regulates the development of the zebrafish exocrine pancreas.

**06.02.41  STUDY OF REACTIONS OF MODEL COMPOUNDS LEADING TO SYNTHESIS OF DERIVATIVES OF CARBON NANOTUBES.** Kelly Thacker, E. Ann Nalley, Physical Sciences, Cameron University, Lawton, OK.

Single-wall carbon nanotubes (SWNT) can be considered one of the building blocks for nanoscale science and nanotechnology. They exhibit exceptional chemical and physical properties that have opened a vast number of potential applications especially in the areas of electrical and biological systems. Chemical functionalization of SWNTs is a prerequisite for many of the possible applications. The derivatized tubes differ from the pristine nanotubes in both solubility and chemical reactivity. SWNTs can be functionalized with para substituted anilines by reacting the SWNT with the aniline derivative in the presence of isoamyl nitrite in a solvent free atmosphere. This reaction proceeds through a diazonium salt which introduces a para substituted phenyl group as a functional group on the side walls of the SWNT. The goal of this research project was to functionalize SWNTs with 4-aminothiophenol. Isoamyl nitrite reacts with thiol derivatives to produce sulfate esters. In this research alternate methods of synthesizing diazonium intermediates were tested to determine their suitability in preparing derivatized carbon nanotubes. Reactions of various model aromatic compounds and their relationship to the SWNT reactions will be discussed.

**06.02.42  PERFORMANCE TESTING OF BIOBALLS.** 1 David Weinheimer, 1 E. Ann Nalley, 2 Dwight Fulton, 1 Physical Sciences, Cameron University, Lawton, OK. 2 Halliburton Energy Services, Duncan Technology Center, Duncan, OK.

BioBalls is an aqueous soluble perforation ball sealer. They are composed of the organic compound collagen, which is the most fibrous protein found in living organisms. BioBalls are now in the third generation of improvements as operators and service companies around the world have successfully utilized them as a substitute for conventional ball sealers. Unlike conventional rubber ball sealers, which are difficult to remove or drill out, BioBalls dissolve in any aqueous-based fluid, and the dissolution rate can be determined by adjustments in fluid pH and temperature. The newest BioBall product has high mechanical stability, superior high-pressure performance and improved seating efficiency. They can withstand differential pressures in excess of 5,000psi and are routinely tested to 3,000psi for quality control. In this research three different types of BioBalls were subjected to dissolution and extrusion tests to determine their suitability for use in oil field production. Methods used for testing and the results of the tests will be described.

**06.02.47  DETERMINATION OF ACTIVE SITES AVAILABLE FOR ATTACHMENT OF CHEMICAL MODIFIERS TO CHITOSAN FILM USING GLUTARALDEHYDE AS A MEDIATOR.** F. N. Albahadily, Kazutaka Tomioka, Chemistry, University of Central Oklahoma, Edmond, OK.

The ultimate goal of our research activities is to chemically attach enzymes to electrode surfaces using chitosan and glutaraldehyde. Conventional electrodes such as platinum or graphite are coated with a film of chitosan to which glutaraldehyde is attached followed
by the attachment of enzymes. The work reported here describes our effort to estimate the number of active sites available for enzyme attachment on the chitosan/glutaraldehyde film. Estimation of the available active sites is based on measuring the absorbance of 5-aminol-1,10-phanathroline/iron (II) complex to the chitosan/glutaraldehyde film. The complex is expected to attach itself to the same active sites available for enzyme attachment. Fourier transform infra-red (FTIR) will be, also, used to aid in the estimation process.

06.02.48 BIPOLAR DISORDER IN AFRICAN-AMERICAN AND NATIVE AMERICAN WOMEN RESULTING IN SUBSTANCE ABUSE. Monique Robinson, Chemistry, Langston University, Langston, OK.

Bipolar disorder (BPD) is a chemical imbalance of neurotransmitters in the brain, which causes dramatic mood swings characterized by episodes of elation and high activity alternating with periods of low mood and low energy. The Oklahoma Governor’s and Attorney General’s Blue Ribbon Task Force on mental health, substance abuse, and domestic violence stated in 2005 that a minimum of 8 billion dollars annually is spent to minimize the impact of “untreated, under-treated, and under-served” mental illness, substance abuse, and domestic violence. Scientists predict that by 2020, depression will be the second greatest disease burden worldwide (Murray and Lopez, 1996). The purpose of this research is to investigate genetic factors that predispose minority and under-treated women to BPD resulting in two of the leading health indicators of alcoholism and/or drug abuse; and to determine whether genes implicated in susceptibility to BPD and substance abuse co-mutate in African-American and Native American women as compared to Caucasian women age 21 and older; to generate a genetic profile for diagnostic purposes. This research is important since it will address health disparities among minority and underserved women.

06.02.49 CHARACTERIZATION OF TN917 MUTANTS THAT SHOW ENHANCED BIOFILM PHENOTYPE COMPARED TO WILD-TYPE ENTEROCOCCUS FAECALIS E99. 1 Jason Chandler, 2 Arto Baghdayan, 2 Nathan Shankar, 2 Phillip Coburn, 1 Chemistry, Langston University, Langston, OK. 2 Department of Pharmaceutical Sciences, University of Oklahoma Health Science Center, Oklahoma City, OK.

Enterococcus faecalis has emerged as a leading cause of infections acquired in the hospital setting that are notoriously difficult to treat due to resistant to multiple therapeutic agents. An important trait among a variety of these strains is the ability to form biofilms. Biofilms are bacterial communities attached to a biotic or an abiotic substrate and encased in a polysaccharide matrix. To understand the biofilm-forming characteristics of E. faecalis, we studied a previously characterized Tn917 mutant bank in a high-biofilm-forming strain, E99. In preliminary experiments, three mutants P11B11, P9E1, and P63E10 were identified that possessed an increased capacity to form biofilms relative to E99. In the current study, these strains were characterized further to confirm the increased biofilm-forming phenotype relative to E99, and to map the location of the Tn917 insertion in each of the mutants. Biofilm assays using crystal violet staining revealed that while these three mutants demonstrated marginally higher biofilm-forming abilities than E99, these differences were not statistically significant. Inverse PCR and DNA sequencing revealed that Tn917 is inserted in approximately the same location in all three strains, namely the replication control region of a pTEF2-like plasmid element. Future work employing other methodologies for quantifying biofilm formation will be needed in order to definitively conclude whether differences exist between E99 and these three mutants.

06.02.50 BLACK LOCUST (ROBINIA PSEUDOACACIA) AND MIMOSA (ALBIZZIA JULIBRISIN) AS AGRO FORESTRY FEED. Calvin Hawkins, Chemistry, Langston University, Langston, OK.

Purpose: The goal of our experiment was to analyze the Black Locust tree (Robinia pseudoacacia) and the Mimosa tree (Albizia julibrissin) for the potentially toxic agents, robinin and mimosine, respectively. These trees would be used for agro forestry feed due to their rapid growth. This biomass has not been widely used because of potential toxicity. These trees are known to grow in some of the contiguous United States and in some European and Asian countries. These trees can be used as ornamental trees, shade trees, or fence posts. Samples were provided from ARS USDA, Booneville, AR and were harvested in July, August and September of 2005. Each sample was extracted and analyzed by HPLC with a UV detector. Results: Robinin had a retention time of 21.432 min and had UV absorptions of 265.8 nm and 346.5 nm. Robinin standards between the concentration of 1.00 mg/mL, 0.10 mg/mL and 0.01 mg/mL were used to develop a calibration curve. The equation y=9.754E+06x + 4462.5 was developed from the data gathered. Each sample of black locust was tested against this standard and no robinin was observed. A standard for mimosine was tested and had the retention of 3.255 min and had UV absorptions of 216.4 nm and 281.2 nm. Each sample of the mimosa tree was tested; no mimosine was detected. Conclusions: Robinin was not detected; therefore, the toxicity of black locust is
not a result of robinin. Further research on other aspects of the tree is necessary to verify this assumption. A test for the lectin robin may also prove helpful since it may be confused with the flavanoid robinin. Mimosine was not detected in the mimosa foliage or bark extract; hence, the toxicity cannot be linked to the presence of mimosine. In the future we may be able to verify the presence of toxic compounds with the use of a mass spectrometer. Funded by: George Washington Carver Project

06.02.51 THE EFFECT OF MDMA ON THE EXECUTIVE FUNCTION IN RATS. Danny Terry, Terry, Chemistry, Langston University, Muskogee, Ok.

The executive function of the brain can be defined as the complex process by which an individual goes about performing a novel problem-solving task from its inception to its completion. Executive function is the process that includes: the awareness that a problem exists, an evaluation of the particular problem, an analysis of the conditions of the problem, the formation of specific goals to solve the problem, the development of a set of plans that determine which actions are needed to solve the problem, and modification of the plan if it has not been effective. MDMA is known to impair the executive function in humans. MDMA has been hypothesized to impair functions in the frontal cortex of the brain. The frontal cortex is known to be implicated in executive function and is associated with the loss of serotonergic terminals in the brain. MDMA is widely used in the United States and its use is growing more and more with each passing year. The goals of this project are to test the hypothesis that MDMA impairs the executive function in rodents. Rodents were given doses of MDMA to represent heavy use in humans. Then the rats are tested to see if the MDMA has any effects on the rat’s executive function.


The purpose of the study was to find which dose of vitamin C was most effective in reversing age-related declines in psychomotor functions in C57BL/6 mice and in decreasing oxidative damage in the cerebellum. When 21 months of age, the mice were assigned to one of the following treatment groups: vehicle (water), 100-, 400-, or 600 mg/kg/day of vitamin C. A group of 3-month-old mice was used as a young control group receiving the vehicle. The mice were gavaged for two weeks prior to the start of behavior testing. The behavior tests measuring psychomotor functions lasted for 3 weeks after which the mice were euthanized, brain regions were dissected and lipid and protein oxidation analyses were performed on the cerebellum. There was no significant effect on weekly weight and food consumption by any dose of vitamin C. Overall higher doses of vitamin C seemed to have a deleterious effect on psychomotor functions as observed on the wire suspension and bridge tests. Furthermore, lipid peroxidation levels were increased in the cerebellum of the mice receiving the highest doses. Some of the trends in the data did show treatment effect, however, small experimental groups and large variances prevents most significant differences from being observed.

06.02.56 MONITORING THE FORMATION OF INCLUSION BODIES DURING OVEREXPRESSION OF INTERLEUKIN 10 IN ESCHERICHIA COLI. Charles Loftis, Chemistry, Langston University, Langston, OK.

This study is aimed at understanding the overexpression of interleukin-1α (IL-1 α), a cytokine, in Escherichia coli (E. coli). IL-1 α is overexpressed as inclusion bodies in E. coli. Alteration of the conditions of bacterial growth is found to share little effect on the overexpression of IL-1 α accumulate maximally 9 hours after initiation of bacterial bodies of IL-1 growth. Mass spectroscopy data suggests that formation of inclusion bodies of proceeds via coalescence of misfolded monomeric intermediate states. A novel Congo red based staining method has been developed to specifically detect the formation of inclusion bodies in bacterial cells.

06.02.58 MOLECULAR MECCANO: CONSTRUCTION OF [2]CATENANE BUILDING BLOCKS AND PYROMELLITIC DIIMIDE-BASED CYCLOPHANES. Andrew Long, Jason Moore, Ronald Halterman, Chemistry and Biochemistry, University of Oklahoma, Norman, OK.

Research in our group is focused on the investigation of noncovalent interactions in supramolecular assemblies and the implementation of these assemblies towards the development and design of molecular scale devices. One specific area of study in our group involves the development and design of molecular receptors and mechanically interlocked molecules such as catenanes and rotaxanes. As part of this work the modular construction of [2]catenanes and the synthesis of pyromellitic diimide-based cyclophanes will be discussed.

06.02.59 SPECTROSCOPIC INVESTIGATION OF CUCURBIT[7]URIL INCLUSION COMPLEXES WITH FLUORESCENT DYE MOLECULES.
Krystle Yakshe, Jason Moore, Ronald Halterman, Tami Martyn, Wai-Tak Yip, Chemistry and Biochemistry, University of Oklahoma, Norman, OK.

Research in our group is focused on the investigation of noncovalent interactions in supramolecular assemblies and the implementation of these assemblies towards the development and design of molecular scale devices. One specific area of study in our group involves the development and design of supramolecular fluorescent probes based on host-guest inclusion complexes between cucurbit[7]uril and cationic fluorescent dyes. Cucurbit[7]urils are stable macrocyclic host molecules which form inclusion complexes with cationic organic guests through a variety of noncovalent interactions including ion dipole, hydrogen bonding, and hydrophobic interactions. As part of this work the complexation behavior and effects of cucurbit[7]uril on the photochemical properties of fluorescent dye molecules will be discussed.

06.02.60 DERIVATIZATION OF FLUORESCENT DYES FOR SUPRAMOLECULAR FLUORESCENT PROBE DESIGN. Kevin Woodson, Jason Moore, Ronald Halterman, Chemistry and Biochemistry, University of Oklahoma, Norman, OK.

Research in our group is focused on the investigation of noncovalent interactions in supramolecular assemblies and the implementation of these assemblies towards the development and design of molecular scale devices. One specific area of study in our group involves the development and design of supramolecular fluorescent probes. As part of this work the synthetic derivatization of fluorochrome dyes for utilization in the construction of supramolecular fluorescent probes will be discussed.

06.02.61 PHOTOCHEMICAL RING OPENING OF PHENYL AZIRIDINES. Paritosh Das, Physical Sciences, Cameron University, Lawton, OK.

Employing pulsed laser excitation and nanosecond kinetic spectrometry, we have carried out a time-resolved study of ring opening in phenyl aziridines in solutions under various conditions, namely, direct photoexcitation (\( \text{ex} = 266 \) nm), triplet excitation transfer from acetone (\( \text{ex} = 308 \) nm), and reversible electron transfer sensitization by 1,4-dicyanonaphthalene singlet (\( \text{ex} = 337 \) nm). In all cases, the ring-opened azomethine ylides have been observed and characterized as transient species in solutions. This paper will present kinetic data for reactivity of azomethine ylides toward maleic anhydrides (dipolarophile) and acetic acid (protonating agent), and will compare the photochemical ring opening characteristics of phenyl aziridines with those of phenyl oxiranes.

06.02.62 MOLECULAR MOTION IN [2]CATENANES. Jessica Evans, Hillary Harwell, Ronald Halterman, Xingang Pan, Chemistry and Biochemistry, University of Oklahoma, Norman, OK.

Scientists and engineers strive to generate ever-smaller devices to utilize energy, often beginning with a large-scale model and persistently attempting to reduce its size. Our project proposes to build the device at the molecular or “nano” scale, as the physicist Richard Feyman suggested, “from the bottom up,” assembling molecules through deliberate placement of reactive groups.

Our molecular device design is based on J. F. Stoddart’s work on catenanes—essentially two interlocked rings that freely rotate around each other given natural thermal energy. We seek to ascertain whether the incorporation of a “molecular gate” can generate unidirectional movement from random motion. In this model, a bipyridinium-based ring is threaded with a crown ether. The theory can be validated by fashioning and comparing standards to determine the rate of passage of the crown ether ring over a biased or a non-biased pathway.

06.02.63 MULTI-SCALE MODELING OF ADSORPTION MONOMER PARTITION BETWEEN SOLUTION AND ADSORBED MONOLAYER. NAGA RAJESH TUMMALA, ALBERTO STRIOLO, School of Chemical, Biological and Materials Engineering, University of Oklahoma, Norman, OK.

The adsorption of surfactants has been industrially and scientifically exploited for detergency, surface modification and for nano-patterns. It has been recently shown that the adsorption of nano-patterned solid surfaces leads to the synthesis of nano-structured with potential applications for the production of nano-batteries, and for quantitatively study cell adhesion and motility [1]. The features of the resultant nano-structured materials strongly depend on the pattern dimensions. Pillars are obtained when small (~100 nm in diameter) patterns used, honeycombs when larger patterns are used (~200 nm or larger). To control the morphology of the final product, we require fundamental understanding of the molecular mechanisms involved in the adsorption of surfactants and proteins on nano-patterned surfaces. We implemented a combination of Monte Carlo (MC) and molecular dynamics (MD) simulation techniques for these purposes. Within our MC simulations, we employed a previously developed coarse-grained model [2] to study the adsorption of surfactants and proteins on nano-patterned surfaces. The attractive surface is covered by repulsive masks with different geometrical features. We will discuss the results obtained from the variety of scenarios that replicate relevant experimen-
Most roads throughout the world are paved with asphalt. The issue with asphalt is it begins to age along with environmental factors is fatigue cracking and stripping. Because of these factors tax payers pay billion of dollars to repave roads every year. In this research, we will test the effectiveness of anti-stripping additives in mixtures of asphalt. We hope to observe how different additives and aggregates improve the sturdiness of asphalt. The manner used to accomplish our objective is the use of Fourier Transform Infrared (FTIR) spectroscopy to analyze asphalt binder samples with and without the anti-stripping additives. The FTIR revealed a relationship with the unaged dynamic shear rheometer (DSR) test. The following anti-stripping additives of Perma Tac Plus and Adhere HP had alkyl peaks in a spectra at 2920 cm-1 and 2851 cm-1 when 0.50% and 0.75% was added. The PG 64-22 data suggest that a decreasing the alkyl groups up to a certain point allowed for increased DSR values.

06.02.65 THE USE OF HIGH ENERGY PARTICLES IN MEDICAL PHYSICS. Tony Bridgewater, Chemistry, Langston University, Langston, OK.

My research was in the field of High Energy Medical Physics. It is important because we were studying the effects of high energy particles i.e. radiation, in different parts of the body, using a simulation program. The purpose of the research is to find ways to optimize cancer treatment, through the use of higher concentrated and more localized radiation. Our hopes were to create a program that would successfully simulate the process of sending particles through various mediums and relate the data. We used Fortran 77 and the Monte Carlo simulation method to create a program that would allow the testing of high energy particles through various mediums and give feedback as to the effectiveness they penetrate in that area. The simulations showed that the program worked fairly well with one type of medium. The next task was to change the simulated medium. I did not complete this part of the program. With the development of the program and further testing it is our goal to increase radiation doses, while minimizing damage to healthy cells and thus more effectively treat cancer.

06.02.66 EFFECTIVENESS OF ADDITIVES IN MIXTURES OF ASPHALT. Sabrina Sandoval, Chemistry, Langston University, Langston, OK.
water in contact with graphite and SiO2. The results not only provide a molecular interpretation for the experimental data, but also allow us to identify the driving forces responsible for the surfactant self-assembly. By conducting test simulations for SDS-like surfactants in which we suppressed surfactant head–counter ion electrostatic interactions we proved that the hemicylindric structure forms because of the condensation of counter ions near the hydrophilic SDS surfactant heads. The water-graphite and water-SiO2 systems were simulated to examine the structure of water in contact with solid surfaces. Our simulation results successfully confirmed that a stable water monolayer forms parallel to the graphite surface. When compared to the results for water near SiO2 (obtained from cristobalite crystal) our simulations confirm that the surface chemical structure strongly influences the structure of adsorbed water.

**06.02.68 FUNCTIONALIZING AND CHARACTERIZING SINGLE WALLED CARBON NANOTUBES (SWNTS).** 1 Christopher Brammer, 2 Donna Nelson, 1 Chemical Engineering, University of Oklahoma, Norman, OK. 2 Chemistry, University of Oklahoma, Norman.

Single walled carbon nanotubes (SWNT) potential applications include using functionalized nanotubes for drug delivery and in the development of new electronic materials. A reliable method of characterizing SWNTs would increase general applicability and fully understand SWNT functionalization would be useful in SWNT synthesis quality control. To address the inherent difficulty in characterizing the functionalization, we report using a number of spectroscopic methods to characterize SWNT functionalization. Functionalizing SWNTs and their model compounds, and the use of IR, NMR and Raman to characterize the products will be discussed.

**Computer Science**

**06.03.01 OK-RMSP-2006-COP : THE OKLAHOMA RURAL MATH AND SCIENCE PARTNERSHIP’S COMMUNITY OF PRACTICE.** 1 Warren Moseley, 1 Brian Campbell, 1 Matt Thomason, 2 Amy Bymaster, 1 Computer Science, Southwestern Oklahoma State University, Weatherford, OK. 2 Secondary Teaching, Amber Pochasset School District, Amber, Oklahoma.

This paper represents a pattern in the development of the state of practice in distance learning and electronic collaboration in rural Oklahoma in Math, the Hard Sciences and the Computing Sciences. The Oklahoma State Department of Education through the Darlington Public Schools sponsored a program called OK-RMSP: Oklahoma Rural Mathematics and Science Partnership. The program focus is to increase content knowledge, expand the information technology readiness, the creation of standards based mathematics and science lessons for K-12 teachers in rural western Oklahoma. This paper reports on the extension of the partnership to include an electronic community dedicated to exchange of ideas and teaching support for math, chemistry, biology, physics and exercise science right along with computer science. Some of the technological area that are addressed are electronic groups, wiki, and blogs.

**06.03.02 EXPERIENCES IN A DISTANCE LEARNING ENVIRONMENT USING VIDEO BASED FACE RECOGNITION.** Warren Moseley, Caleb Briggs, Computer Science, Southwestern Oklahoma State University, Weatherford, OK.

In this poster session the application of the camera mouse as a means of providing universal access to different aspects of distance learning in a rural Oklahoma environment will be featured. This poster session will demonstrate the use of the Camera Mouse System and suggest applications that are suitable for use with the camera mouse and situations that require a different setting. Studies were done to determine if the Camera Mouse provided a feasible alternative to more expensive user interface mechanisms. Included in this study was a time and motion study to determine if a third party could determine if the user on the other end of distance learning projects was a physically challenged person using the Camera Mouse or a non-physically challenged person using regular pointing devices. In addition this research investigated the applicability of using a severely challenged person in a collaborative setting. All of these aspects will be demonstrated.

**06.03.03 CLOCKIT A TIMED CLOCK APPLICATION.** Rick Matzen, Cassandra Althaus, Mathematics and Computer Science, Northeastern State University, Tahlequah, OK.

The ClockIT software suite is a stand-alone time clock application for companies to use to record employee time records. The software suite has a graphical user interface that allows employees to type in a three digit employee number to clock in and out. The primary motivation for this project was to create an application using the Rapid Application Development methods. Previous exposure to Visual C# and SQL provided the background needed to create an application using these languages. Also high demand for Visual C# developers in the marketplace made the decision to use Visual C# an easy one. Visual Studio .NET 2003 was the primary
development tool used to create this software suite. In Visual Studio there are several different programming languages to choose from. C# is the language this software suite was built on. Windows programming techniques were used in creating the suite. The Windows programming is seen in the different forms that make up the graphical user interface. Microsoft Access was used to create the database that the suite uses for employee time records. SQL was used to shuttle data between Access and ClockIT.

06.03.04  THE MARKETING CONNECTION. Rick Matzen, Jason Bailey, Computer Science and Mathematics, Northeastern State University, Tahlequah, OK.

This program was designed to help a company market their services and network with other companies. The company is DJ Connection and they are the 2nd largest mobile DJ Company in the United States. The main function of this program is to manage a database that houses every vendor and company that DJ Connection works with. At DJ Connection there are office personnel assigned to a specific list of these vendors and it is the office personnel’s job to keep track of how the relationship is going with each vendor. Before this program there was no other system in use. It was merely a list of vendor names with an office personnel’s name next to it signifying responsibility. There was no organization in doing things, which led to relying on the office personnel’s memory to get things done. With this computerized system a person can enter the vendor information into the database and it becomes searchable by Company Name, Contact Name, Phone Number, Location, etc. Instead of filing through papers the person can open the program and search instantly for the data. This will save valuable time that would have been wasted looking through files. This software was built using Microsoft Visual Basic, Microsoft Access, and SQL. The Visual Basic Packaging tool was used to finalize the software which makes the project able to run on a machine without Visual Basic, Access, or SQL installed.

06.03.05  XTREME INTERNET WORK ORDER SYSTEM. Rick Matzen, Rachel Davis, Mathematics and Computer Science, Northeastern State University, Tahlequah, OK.

Xtreme Internet is an Internet Service Provider (ISP). Currently, the only way they have to process work orders is a sheet of paper taped to the customer’s machine; once the work is finished, the paper is stacked with other service sheets for the month then scanned at the end of the month into a PDF file. Xtreme Internet needed a better more efficient way to track the work done, track how much is owed for parts and labor, and have better inter-office communication. This project investigated a powerful new web framework and used it to build an automated, web based work order system. The language used for this project is Ruby; the Framework used is Ruby on Rails (Rails). Ruby is an incredibly simple, clean, and efficient language that is fully object oriented (absolutely everything is an object, no exceptions (even primitive data types). Although Ruby is a scripting language that is interpreted, it has all the power of high level language such as Java or C/C++. Ruby was designed to focus on the programmer, causing less work than other languages. Rails is a framework that creates web pages rapidly and takes the grunt work out of connecting to a database. It allows you to quickly generate working web pages that interact with a database with very little configuration overhead. It is a highly productive environment that claims to increase productivity by at least ten times.

06.03.06  NORTHEASTERN STUDENT GOVERNMENT ASSOCIATION WEBSITE. Rick Matzen, Brandon Raper, Mathematics and Computer Science, Northeastern State University, Tahlequah, OK.

In an effort to be better connected to the students of Northeastern State, the Northeastern State Student Government Association (NSGA) proposed the creation of a website. The primary reason for the web site is to find efficient way to deliver the information from the NSGA to the senators in a timely manner. The secondary purpose of the NSGA website is to eliminate the redundant efforts of the NSGA Secretary of State and each individual senator. Previously, it was necessary to: 1) print a copy of the Senator Information Form and the Organization Form, 2) fill these documents in by hand, 3) turn the forms in to the Secretary, 4) who would then have to re-type the information provided into a spreadsheet. This methodology introduced the potential for errors, caused duplication of work, and did not allow any other NSGA executive to view, update or use the document. The need for a better solution grew out of this problem. Phase 1 of the project grew out of the limitation of the Northeastern State University’s computer software and systems, particularly the lack of a MySQL database. This phase consisted of acquiring a computer on which to install Linux, Apache, XHTML, CSS, MySQL, PHP, Mojavi, and Mediawiki. Phase 2 was proposed to address this need by replacing manual steps 1 through 4 above by having each organization Senator enter the information directly into a webpage that has connectivity to a database. The database becomes a centralized repository for Senator and Organization information, available to authorized NSGA executive staff, rather than a single
document controlled by a single individual. This was accomplished using PHP enabled forms to pass the data to the MySQL database.

06.03.07 ALUMDENT ONLINE POSTING SYSTEM: STUDENT / ALUMNI COMMUNICATION. Rick Matzen, Andy Reibenstein, Mathematics and Computer Science, Northeastern State University, Tahlequah, OK.

As students prepare to graduate, many fail to look beyond this point and may miss significant opportunities that are just waiting to be found. There is an incredible opportunity for students and alumni alike to find jobs with great ease if they just had a new way to look for open opportunities or available potential employees. With the Alumdent Online Posting System, students can login to find any job opportunities that are available and alumni can login to find any students that have the necessary skills for their wanted help. This collection of forms and scripts allows for a student to login and post announcements as well as describe their specific skills and knowledge. An alumnus can login and post announcements as well as any personal skills they have or any job opportunities their respective companies may currently have available. The alumnus also has the opportunity to update his or her personal information for the use of the University to keep track of alumni. Website administration plays an important part as moderator as well as announcement and job poster. As moderators, the administrators have the ability to delete any user, announcement, or job post that they see fit.

06.03.08 HOME BUDGET SYSTEM: CREATING AN INPUT BUDGET SYSTEM THAT CONNECTS TO A DATABASE. Rick Matzen, Russel Smith, Mathematics and Computer Science, Northeastern State University, Tahlequah, OK.

A Home Budget System is something applicable to all of us. I made a budget application that connects to a database and makes updates to the budget accounts. There are two database tables in the access database, Contacts and AccountInfo. The Contacts table holds basic information: ContactID, Name, Address, PhoneNo, Website and Email. The AccountInfo table holds more sensitive information: ContactID, Name, Balance, AmountDue, DateDue, and DatePaid. The ContactID is the primary key in both tables. The Budget System can be run on any computer that is running Windows. The General tab allows the user to personalize the System. It allows the user to add a picture and comments to the system. The Account Contacts tab allows the user to select a ContactID and general information is displayed. Then an account can be Edited, Deleted or a new account can be Added. The Account Info tab allows the user to select a ContactId and the balance information will be displayed. From this point the user can Edit, Delete or Add a new account. A forth option is Amount Paid/ Adjust Balance. When this button is pushed the balance will change dependent on the Amount Paid input. Any edits, deletions or additions are reflected on the Budget System but also in the database tables.

06.03.09 INVENTORY TRACKING SYSTEM. Rick Matzen, Brett Wiseley, Mathematics and Computer Science, Northeastern State University, Tahlequah, OK.

Companies in today’s business world are always looking for better ways to manage their inventory. This is especially important for smaller companies because they cannot afford the labor to take care of inventory management. This software can be used to assist the smaller companies that cannot afford to lose the manpower that is required in daily operations of a company. Businesses need to have access to their inventory at all times; this program will allow them to regulate employee access and to update, add, delete, or change inventory. This will help the workers and the employees know what items they have in inventory at any time so it makes their jobs much easier for their day to day operations. The employee can enter the program at any time and search, add, update, delete, and change current inventory in the system. This allows the user to speed up its transactions to make the user’s job and the consumer’s visit much easier. This software is a C# program that was developed in Microsoft Visual Studio.net 2003. It allows the developer to add in the graphical interface to the project along with Microsoft Access 2003 database software.

06.03.10 THE CONSTRUCTION OF AN ONLINE SHOP USING PHP. Gang Qian, Bishal Shrestha, Naresh Karn, Pranaya Shrestha, Computer Science, University of Central Oklahoma, Edmond, OK.

Businesses today cannot solely rely on physical locations. With more competition in the market and the increasing use of internet technologies, e-commerce has become an integral part of today’s society. Among different programming languages being developed for e-commerce, PHP has been proven to be an entry level but powerful web development language. In this project, we have developed a basic online shop with all the necessary elements using PHP. It also uses the MySQL database management system at the backend, which checks and maintains the integrity of the inputted data.

06.03.11 TRAINING SCHOOL DATABASE TRACKING SYSTEM. Rad Alrifai, Gary Jennings, Math and computer Science, Northeastern State University, Tahlequah, OK.
This software system is developed to assist a cheerleading school in supporting their overall business operation. By moving the information from papers to computers, the software will enhance the workflow and improve the efficiency of the overall operation of the school. Thus enabling the school to adapt and update its practices to sustain success.

Since data forms a critical component in supporting the various school activities, software applications that utilize databases are essential ingredients in supporting these activities. Due to this reason and the need to develop safe and efficient solutions, C++ .Net is selected for developing this project. The software is developed to be easy to use, where users can perform most of their activities on the system with as little as five key strokes.

The software is created using a combination of C++.Net and Microsoft Access database management system. Also, SQL statements are used to create, read, update and delete any field in the database.

**06.03.12 RESPONSIBILITY DRIVEN DESIGN (RDD) AND PHOTOREALISTIC CHARACTERS FOR 3D VIRTUAL WORLD ANIMATIONS.** Gail Wilcox, Warren Moseley, Department of Computer Science and Information Systems, Southwestern Oklahoma State University, Weatherford, OK.

Poser is a three dimensional rendering and animation program specialized for the modeling of the human body. Bryce is a three dimensional package for the development of realistic landscapes. Both packages allow for the use of lighting and material texture to give 3D virtual worlds realistic characteristics. This project was designed to explore the newer features of both packages to give photorealism a new perspective. Animated feature films are becoming a large market today and these animations are going to get more and more real and more and more doable as the cost of 3D tools become more realistic. However, having real looking characters still leaves a lot to be desired in the construction of virtual worlds. In this project we used a proven design technique from Object Oriented Systems called Responsibility Driven Design (RDD). RDD was used not only to construct the 3D figures but to allow the user to explore the responsibility of these objects in the in the context of a virtual world. We are exploring the concept of using objects to teach objects. Up until now objects have been some abstract representation in some arcane programming language. This project was designed to bring figures to life and to give them roles and responsibilities in their virtual society. Our ability to visualize the human form in perspective in our head is not strong enough for some of the artwork. A combination of 3D programming knowledge helps create digital manikins for realistic 3D worlds.

**06.03.13 ASSET TRACKING SYSTEM.** Rad Alrifai, Chris Johnson, Math and Computer Science, Northeastern State University, Tahlequah, OK.

In today’s ever-changing business world, a company’s data is changing just as fast. Therefore, it is crucial to keep that data organized and efficient. This was the primary motivation for designing an Asset Tracking System for a major oil company in Oklahoma. The software system is simple, yet robust. It tracks information about previous and current employees of the company, and manages information about the various assets of the company such as computers, vehicles, office equipments, printers, and various networking components. In addition, the software creates relationships among all afore mentioned entities.

This software was developed in Microsoft Access 2003 along with Visual Basic for Applications (VBA). The software design is based on the client-server architecture. Thus, the database resides on the server, while the client program resides on the end-user’s computer. The client software is custom tailored to fit individual user’s needs and to enforce all security requirements.

In addition to storing all the data that pertains to every asset that the company tracks, the software system will also generate several custom reports based on the stored data. This software development will increase the efficiency of storing corporate data and simplify its management.

**06.03.14 BOARDFINDER - WEB-BASED SIMPLIFIED SEARCH ENGINE AND EXTRAS.** Rad Alrifai, Todd Forrest, Math and Computer Science, Northeastern State University, Tahlequah, OK.

Boardfinder is a Web-based Simplified Search Engine. It helps users to easily and quickly find the right wakeboard based on information about manufacturer, weight, or skill level. The key of this project is to create a simple wakeboard search engine for helping novice wakeboarders in identifying the right wakeboards before purchasing them. Another goal is to create an informative and professional looking website for wakeboarders in the Oklahoma area.

Today there are countless search engines on the web to find a toy or to locate information about the Great Wall of China, but there are few search engines specialized in wakeboards. Typical search engines require from their users to input information about wakeboards manufacturer, model, weight range, skill level, price range, size, etc. However, most beginning wakeboarders don’t know what some of these options are. Thus, Boardfinder is intended to benefit the entire
spectrum of wakeboarders, including the beginners, in overcoming these challenges.

This project involved researching and utilizing the best practices in ASP, SQL, Flash/ActionScript coding, and applying a few tricks in JavaScript. Most of the JavaScript code was used for popup windows and mouseover buttons. The majority of the ASP/SQL components were developed from scratch. Also, the entire Flash/ActionScript user interface portion was developed from scratch. However, the database connections (global.asa) were implemented in Microsoft FrontPage.

**06.03.15  NSU INFORMATION EXCHANGE WEBSITE.** Rad Alrifai, Inoue Nobuko, Math and Computer Science, Northeastern State University, Tahlequah, OK.

The NSU Information Exchange website is designed to help students in communicating with each other. The website provides a mechanism for NSU students to exchange information about classes, events, and community-related activities.

The website is divided into several categories; announcements, housing, books, transportation, and classes. Each category is organized into subcategories to provide easy access to hosted information. System users can post messages, delete messages, read other people’s messages, and search for messages based on keywords. However, to delete messages, students are required to key in their names and passwords. Each webpage displays up to ten messages at one time. In developing this project, MySQL was used to store the messages and other information, while the rest of the code was developed in HTML and PHP.

**06.03.16  PROGRAM PROOFS USING AXIOMATIC METHODS.** Marion Magee, Bill Walker, Computer Science, East Central University, Ada, OK.

Millions of people use computer programs to solve everyday problems. Most of these people assume the answers given are correct because the computer gave the answer. This assumption is flawed because computers do only what a program tells it to do. These programs are written by people, programmers, who often make mistakes. This brings up the point: How does one write a computer program and insure that it will function in a prescribed manner? In a 1969 paper titled “An Axiomatic Basis for Computer Programming”, C.A.R. Hoare explored the notion of axioms in relation to computer programming. This paper shows that, using these techniques, a computer program can be proven to be “correct”.

**06.03.17  THE DESIGN OF A MICROARCHITECTURE FOR MULTIPLE MOTOR CONTROLLER TO MEET THE DEMANDS OF OUT-DOOR RUGGED AUTONOMOUS ROBOTS.** 1 Dennis Ferron, 1 Warren Moseley, 2 Dean Hougen, 1 Computer Science, Southwestern Oklahoma State University, Weatherford, OK. 2 Computer Science, University of Oklahoma, Norman, Oklahoma.

This research concerned development of a control system for large autonomous land-roving robots. It was part of ongoing work on a six wheeled FIDO-class interplanetary rover and expanded to include the control system design for a four wheeled rover. Therefore the control system design will be general enough to work on multiple different types of robot chassis and must scale from four to twelve motors. The FIDO-class chassis the control system will be used in uses unique air-core motors which have a lower inductance than standard motors, leading to the special requirement that the controller must modulate its output at a much higher frequency than standard motor controllers do. In addition, the circuit must accurately measure voltage, motor current, and wheel speed to determine wheel load. A central question of this research is to determine if, with an accurate measurement of wheel load, a machine learning algorithm can be taught to recognize the difference between various road surfaces. A test rig was built to gather motor controller measurement data under various voltage and load conditions, to determine how well the intended circuit design will be able to make these measurements, and which measurements are most important in determining wheel load.

**06.03.18  ARE SUBSTITUTION CIPHERS A LOST CAUSE?.** Clay Carley, Computer Science, East Central University, Ada, OK.

Simple substitution ciphers are found in newspapers’ cryptograms. These encrypted texts are easy to resolve into plain text. However, during World War II, Germany brought new meaning to substitution ciphers by introducing the Enigma Machine. This paper explores the viability of using a substitution cipher as a reasonable encryption technique for private communications.

**06.03.19  ONLINE CARPOOL SYSTEM FOR THE STATE OF OKLAHOMA.** Suman Adhikari, Ravi Khanal, Math and Science, University of Central Oklahoma, Edmond, OK.

In present times of global warming and depletion of natural resources, it has become a necessity to reduce the use of gasoline based transportation vehicles. Our answer is to promote a carpooling system in the State of Oklahoma as this can be the most commonly used ridesharing arrangement between a common or nearby destination. This system benefits even those people who have car but wish to travel in shared car with other
people to save cost. Even though there exists a carpooling system, it lacks an online system that would be able to get people together to use this concept of traveling. The benefits of having an online reservation system will not only save money on fuel, insurance and maintenance of car but also on time and convenience. The State of Oklahoma especially the City of Edmond lacks full-blown commuter system to travel from one place to another, thereby initiating the fact for an online carpooling system. The goal of our project is to identify the needs and development of a prototype for an effective online carpooling system. The result of this study will have the following advantages: 1. Cater towards a more eco-friendly environment. 2. Develop computer transportation options. 3. Creates more business opportunities and directly improving the economy of the State of Oklahoma.

**06.03.20** AN OBJECT-ORIENTED ASSOCIATIVE DATA NETWORK (ADN) FOR DATA MODELING AND MANIPULATION. Michael Chambers, Raymond Payton, Computer Science, University of Central Oklahoma, Edmond, OK.

AI systems have made many advancements concerning machine learning, however, these advancements are still far from the desired goal of developing a truly intelligent machine. A basic problem is providing an AI with adequate methods for knowledge representation and manipulation. We propose to solve this problem by implementing an object-oriented associative data network (ADN). The ADN implemented consists of a set of nodes containing semantic information, and links between nodes that may optionally contain semantic information. Links between nodes may or may not be weighted as needed. The ADN used in this paper is initially stored in a database which is then loaded into RAM memory. Various operations may be performed on the ADN to include: addition, subtraction, multiplication, intersection, creation, deletion, linking, node-chaining, and listing. We further intend to demonstrate that an ADN using the mentioned operations is capable of providing a system by which machine learning can be facilitated, through the use of associative learning techniques. We also intend to demonstrate how an ADN can be used to support natural language processing through its ability to organize and manipulate semantic data.

**06.03.21** SYNOPSIS OF SPRING, 2006 DISTRIBUTED SIMULATION RESEARCH. Charles Shuller, Farhana Reid, Computer Science, University of Central Oklahoma, Edmond, OK.

DistSim is a research project to construct a general purpose distributed simulation environment which enables software engineers to help researchers from other disciplines construct simulation models. The principle goal is a system where software engineers are called upon only for the development of primitive models. Then a non-computer oriented researcher may use these primitive models to develop an entire simulation. DistSim provides the mechanism to shift the focus from software design to simulation design.

In the spring 2006 semester, we developed a prototype design and a skeletal implementation of the fundamental system architecture. We developed a simple simulation consisting of four models that report their location in an 8x4 grid. The simulation is implemented in two simultaneous processes.

The most difficult problem encountered to date is static automatic load balancing. The goal is to create an algorithm to maximize model adjacency in an n-dimensional array. Initial research employing matrix Algebra knowledge failed to reveal a known solution. A genetic algorithm approach is currently favored. Other problems had apparent tractable solutions.

Current research goals include dynamic automatic load balancing, in which optimal network placement is determined periodically during a simulation run. Also a GObject subclass which includes methods for trans-network clones and compares for all further subclasses.

**06.03.22** DATA Driven ASP.NET APPLICATION. John Casteel, Hong Sung, Computer Science, University of Central Oklahoma, Edmond, OK.

This project is to develop an ASP.NET with VB application for an aircraft title research company Aerospace Reports. Aerospace Reports currently has a working program in Microsoft Access 97. They have outgrown this program, having making modification to it as needed. This project consists of clients, bases, chain of titles, transactions, and reports. Bases consist of the starting point for creating a title report, an entire history of the aircraft. A chain of title stores the previous owners of the aircraft, lien history, and any special notes pertaining to the aircraft. Aerospace bills customers for researching a title history so all report requests are logged as transactions. The company must be able to bill clients every thirty days for reports processed that month including any past due balances. A public website will provide access to the private system through logon. This program must contain user system with administrator, employee, and client roles. Later improvements to the system may include clients able to logon and view billing statements and history. The project is being developed using .NET 2.0 controls. Some new controls included in the project are the view controls, user controls, menu controls, report viewer, and crystal reports.
06.03.23  SOFTWARE ERRORS. Vaibhav Pandya, Pankaj Mishra, Computer Science & Information Systems, Southwestern Oklahoma State University, Weatherford, OK.

Recent estimates indicate that software errors create security vulnerabilities that are exploited by hackers. Also, the estimates show that more than half of vulnerabilities come from basic buffer overflow errors. Problems could be avoided if they were best solved in the program code. Better programming techniques combined with understanding of the information security requirements and limitations of a programming language used for software development are necessary to produce safe and secure code. We investigate different types of programming errors and identify solutions that are vital to good programming skills. Also, we provide examples and solutions to detect and prevent software errors for a few modern programming languages.

06.03.24  SECURE WALL. Rad Alrifai, Joseph Byfield, Mathematics and Computer Science, Northeastern State University, Tahlequah, OK.

In the highly interconnected world we live in today, there is a pressing need for applying security to every component within the network architecture, including the personal computer. Secure Wall is developed to address this need by providing a security solution to filter packets based on their IP addresses. While other security solutions may also employ similar security mechanisms, this particular implementation is distinguished by its scalability and applicability at the personal computer level. Furthermore, Secure Wall is implemented using a well supported architecture, the Windows Driver Model developed by Microsoft.

To implement the basic functionality of a packet filter, the architecture of the presented solution consists of a driver that interfaces with one or more applications. An application, in turn, consists of three main components: A window console program, a window graphical program, and an IP database. In this architecture, the window console program interfaces with the driver program, while the window graphical program interfaces with the IP Database.

Most of the work and research for this project revolved around the driver program and the related challenges in implementing it. To implement the presented solution, one ought to develop an understanding of the Windows Driver Model as it pertains to NDIS Intermediate drivers. The driver base is heavily dependent on the passthru driver distributed by Microsoft with the Windows 2003 Driver Development Kit.

06.03.25  VARIABLE MUTATION RATES AND GENETIC RESILIENCE IN EVOLUTIONARY COMPUTATION. Gerardo Gonzalez, Dean Hougen, School of Computer Science, University of Oklahoma, Norman, OK.

It has been shown that evolutionary computation methods are influenced not only by the fitness function explicitly defined by the user but also by the genetic resilience inherent in the evolutionary mechanisms. Given an environment with specialized ecological niches that allow for high fitness and niches that are less specialized but have a lower maximum fitness, Jones and Soule (“Comparing Genetic Robustness in Generational vs Steady State Evolutionary Algorithms,” Proceedings of the 8th Annual Conference on Genetic and Evolutionary Computation, p. 143-150, 2006) investigate the effect on the resilience of individuals of a crossover mechanism that allows chromosomes to increase or decrease in size. They conclude that after the genes gain size and, resulting, resilience, the algorithm performs as if it is influenced only by the fitness function. In the present work, we investigate the effect of variant mutation on resilience in evolutionary computation, specifically in genetic algorithms. The core of the experiments study the effects of a mapping function from fitness to mutation rate on the shape of the existing fitness landscape. We determine whether, by manipulating this fitness-to-mutation-rate function, individuals will effectively become more resilient and the population will converge based on fitness alone, given an environment such as the one used by Jones and Soule.

06.03.26  DEVELOPMENT OF A LIGHTNING DECISION SUPPORT SYSTEM. Angie Albers, Mary Long, Michelle Stone, Weather Forensics, Weather Decision Technologies, Inc., Norman, OK.

The objective of this research has been to develop, commercialize, and support a lightning detection support system (LDSS) which will provide the best depiction of lightning activity at or near a specific location of interest. In May 2006, Weather Decision Technologies launched two new online lightning verification services based upon the lightning data archives of the USPLN (www.uspln.com). One of these services, called LightningTrax, provides a graphical depiction of the lightning strike locations on a high resolution map produced from geographical information system (GIS) technology and services. LightningTrax provides property and casualty insurance companies as well as fire investigators with the capability to verify the occurrence of lightning and validate claims of lightning damage to property and lightning related injuries. After filling out an online form, customers are able to see where cloud-to-ground lightning occurred in relation to their location of interest and also in relation to other geographical features.
Along with LightningTrax, a comparable service called LightningExpress was also made available to customers. LightningExpress is a subscription based service that allows the customer unlimited access to lightning verification reports. Operating since 2004, innovative technology makes up the USPLN, which accurately identifies the location and timing of cloud-to-ground lightning. An important part in the development of the LDSS, is an evaluation of the lightning strike location accuracy. The lightning data used for this research and development come from the USPLN. In addition, ground verification of lightning strike locations have been obtained from NWS reports (archived at the National Climatic Data Center), media reports, insurance agencies, and electric cooperative reports of infrastructure damage. These observations have been compared with queried lightning data from the USPLN lightning database. Included in the queried lightning data are the date, time, latitude, longitude, polarity, and amplitude of the lightning stroke. A geographic information system called ArcView is used to display and examine the location of the lightning stroke relative to the ground verified location of the lightning stroke. To date, 150 verified lightning events have been identified. The latest analysis, results and statistics will be presented. In addition, a summary of the new lightning verification services provided by WDT will be shown.

06.03.27 EXPERIENCES IN SOFTWARE DEVELOPMENT IN A TEAM ENVIRONMENT. Mark Underwood, Computer Science and Information Systems, Southwestern Oklahoma State University, Weatherford, OK.

Visual Studio .Net 2005 has many different tools to allow teams of developers, working on different tasks within the same project, to work together more efficiently. This research will investigate the main tool, Visual Studio Team System. It will investigate the process a development manager uses to create and assign projects, issue specific work assignments to team members and prevent potential conflicts when multiple people work on the same project. It will explore the tool’s ability to facilitate the process of program documentation, and management of different builds.

06.03.28 EVOLVING ARTIFICIAL NEURAL NETWORKS WITH GENETIC ALGORITHMS TO PLAY TIC-TAC-TOE. 1 Nathaniel Troutman, 1 Brent Eskridge, 2 Dean Hougen, 1 Computer Science, Southern Nazarene University, Bethany, OK. 2 Computer Science, Oklahoma University, Norman, OK.

Back-propagation and related techniques are well-known and proven methods for determining the weights in artificial neural networks applied to supervised-learning problems. However, there are interesting problems that supervised learning methods are not effective for solving, but that allow for learning through performance evaluation. This research investigates the effect of opponent type on the success of machine learning in a two-player, deterministic, zero-sum game with complete information. We use tic-tac-toe as a simple prototypical game with these characteristics and we use learning to play tic-tac-toe by evolving the weights of an artificial neural network as an example learning system. The fitness of a tic-tac-toe player is evaluated by having it play games against other opponents. The networks learn both play and strategy at the same time, and both contribute to the fitness of the individual. The opponents used for fitness evaluation are a random-move player, a simple heuristic player, and other individuals from the population. When playing against other individuals in the population we have observed a negative feedback loop in which an individual’s short term fitness increase causes the population to shift towards more similar members. This shift then results in a sharp decline in fitness for those similar individuals reducing their frequency in the population.

06.03.29 INTERACTIVE DIGITAL STORY-TELLING AS THE FOUNDATION FOR COMPUTER SCIENCE ONE. Warren Moseley, Caleb Creed, Rachel Hurt, Rachel Hurt, Robert Perry, Computer Science, Southwestern Oklahoma State University, Weatherford, OK.

This research explores the connection between basic programming fundamentals, 3D animation and interactive digital storytelling to comprise the beginning of a computer science program. Most all students have some level of creativity but it is usually not discovered using conventional Computer Science techniques. Digital Storytelling is a fantastic way to engage students, teachers and just about anyone else who has ever wanted to be the next Ken Burns or Steven Spielberg. There are many different definitions of digital storytelling, but in general, all of them revolve around the idea of combining the longstanding art of telling stories with any of a variety of available multimedia tools, including graphics, audio, video animation, and Web publishing. Alice is an open source system developed over the last 10 years and provided as a free public service by Carnegie Mellon to provide the best possible first exposure to programming for college students. Introductory computer programming has historically been a frustrating experience for many students. Recent attempts to include object-oriented programming in first semester university curricula have only compounded the problem. Through these projects students demonstrate fundamental of critical skills thinking by demonstration of the importance of team-building, basic programming
skills, and a touch of interactive digital storytelling creativity.

**06.03.30 HIGH RESOLUTION AND PHOTO-REALISTIC IMAGERY IN ELEMENTARY INTERACTIVE DIGITAL STORYTELLING.**

Warren Moseley, Jesse Johnson, Ryan Lutz, Computer Science, Southwestern Oklahoma State University, Weatherford, OK.

Interactive Digital Storytelling is beginning to infiltrate computer programming courses. It’s fun, provides immediate feedback and a very satisfying experience to most students. There always seems to be a group of students that are not satisfied with the low-resolution graphics of the characters. The Alice Project at Carnegie-Mellon have provide a stimulus long needed for the introduction computer programming. However until the next generation of Alice the characters will remain low resolution and not easily expandable.

This research attempts to combine the High Resolution Capability of programs such as Vue, Poser 6, Daz Studio with the scripting capability of Python to provide a high resolution capability for Interactive Digital Storytelling.

In addition to providing the tools for more realistic images this research explored a team based approach to the construction of storyboarded scenarios for building interactive digital storytelling.

**06.03.31 THE DEVELOPMENT OF A CONTROL SYSTEM FOR GROUND-BASED MOBILE ROBOTS.**

1 Dennis Ferron, 1 Warren Moseley, 2 Dean Hougen, 1 Computer Science, Southwestern Oklahoma State University, Weatherford, OK. 2 Computer Science, University of Oklahoma, Stephenson Research and Technology Center.

This research concerns development of a control system for large, ground-based mobile robots. It is part of ongoing work on a six-wheeled, FIDO-class planetary rover and includes the control system design for a four-wheeled rover. The resulting control system design will be general enough to work on multiple different types of robot chassis and must scale from four to twelve motors. The FIDO-class chassis on which the control system will be used possesses air-core motors which have a lower inductance than standard motors, leading to the special requirement that the controller must modulate its output at a much higher frequency than standard motor controllers do. In addition, the circuit must accurately measure voltage, motor current, and wheel speed to determine wheel load. A central question of this research is to determine if, with an accurate measurement of wheel load, a machine-learning algorithm can be taught to recognize the difference between various road surfaces. A test rig is used to gather motor controller measurement data under various voltage and load conditions, to determine how well the intended circuit design is able to make these measurements, and which measurements are most important in determining wheel load.

**06.03.32 3-D SCENE RECONSTRUCTION.**

Nathan Williams, Computer Science/Mathematics, Langston University, Langston, OK.

3-D Scene Reconstruction Student: Nathan J. Williams (Langston University) Mentor: Dr. Dezhen Song (Texas A&M University Computer Science Professor) Graduate Mentor: Hyunnam Lee (Texas A&M University Ph. D. Student) My goal is to learn stereo vision, which is the reconstruction of the 3D scene of an object using overlapped images taken from dislocated cameras. 3D scene reconstruction consists of first finding the corresponding points of overlapped images and then second estimating the 3D scene. To find the corresponding points, I have focused my study on the algorithm Scale Invariant Feature Transform (SIFT). SIFT is a method which extracts invariant features from images that can be used to make matches between different views of object and/or scenes. To be able to use SIFT, open source will be used. To estimate the 3D scene, we assume the calibrated camera intrinsic parameters and positional/transitional camera parameters are known. Therefore, given the images and parameters, I can estimate the depth information of the 3D scene.

**06.03.33 INFORMATION SECURITY MANAGEMENT MODELING BASED ON IDEF0 DIAGRAMS.**

Larry Underwood, Mariana Hentea, Department of Computer Science and Information Systems, Southwestern Oklahoma State University, Weatherford, OK.

Information security consists of measures to prevent the unauthorized use, misuse, modification, or denial of use of data, information, or capabilities. Information security is a continuous process comprised of key activities such as risk assessment, policy, implementation, training, and audits. Organizations can reduce the cost of information security by using proper planning and control of each activity to reduce risk, if not eliminate, the cost of an incident. The cost of an incident and the risk to the organization is unknown until an incident has occurred. Taking the proper measures before an incident occurs is a proactive approach to information security. Therefore, there is a need for a concise and unambiguous representation of the information security interdependent activities such that an improved process can be implemented. We define a model using IDEF0 methods that allow a specific order of the activi-
ties with the structure of inputs, outputs, and controls of the functions, activities, and processes for information security management. This model provides support for the better analysis and communication techniques for professionals involved in managing and improving security.

**06.03.34 DISCUSSIONS OF SOME ADVANCED POINTER USAGE IN C.** Chao Zhao, Feridoon Moinian, Computing and Technology, Cameron University, Lawton, OK.

A pointer is one of the key features in the C and C++ languages, that provides programmers a powerful facility to access and modify data via data location. However, since in a C or C++ program we use pointers to access data through data addresses, the program may be terminated with little useful error message if any illegal address access occurs during program run time. Experience from our teaching practice indicates that the pointer concept and its utilization are very difficult topics for new programmers. In this article, we will discuss some advanced usage of pointers with respect to structures, functions, and objects. We believe that it may be beneficial to both CS students and instructors in their teaching and learning practice in C programming. 

**Key Words:** pointers, structures, functions, objects, threads, processes

**06.03.35 IMPLEMENTING LINUX-ENABLED CONDOR IN WINDOWS COMPUTER LABS.** Chris Franklin, Henry Neeman, Horst Severini, Joshua Alexander, Information Technology / OSCER, University of Oklahoma, Norman, OK.

Condor is a program developed by the University of Wisconsin to allow desktop computers to harness idle time to perform computationally intensive operations, such as simulations performed by the scientific community. The problem is that Condor and the programs written for it are primarily Linux-based, so it is not normally used on Windows computers. This study is to determine the feasibility of implementing Linux-enabled Condor in Windows-based computer labs without affecting the end-user experience while still allowing a Systems Administrator to deploy these computers in a manner similar to that used to deploy traditional Windows computers.

Our study to date has focused on running Condor inside a native installation of Linux, while using VMware to run Windows and provide the desktop experience. We first created an installation of Linux with Condor, VMware, and Windows installed that could be deployed to multiple machines without problem. We then deployed this to test lab machines to determine if it was possible to set the machines up such that the end-user did not notice a performance or reliability difference using this set-up. After receiving feedback and performing many rounds of modifications and retesting, we found that it is possible to set these machines up such that there is negligible performance difference between the traditional Windows machines and the Linux-enabled Condor machines.

**06.03.36 HIGHWAY WIRELESS SENSOR NETWORK SPECIFICATIONS FOR SECURITY AND SURVEILLANCE.** Pierre Tiako, Jahi Milton, Michael Simpson, Richard Osei, Siobhan Thompson, Tyler McNeely, Center for IT Research, Langston University, Langston, OK.

Networks of thousands of sensors present a feasible and economic solution to some of our most challenging problems: real-time traffic modeling; military sensing and tracking; real-time pollution monitoring; wildlife tracking; and monitoring for bio-terrorist attacks. These small, fragile sensors are limited in energy, computational and storage resources. The current highway camera system is monolithic and static. Replacing it with distributed and ad-hoc wireless sensor network systems will provide better assistance, security and surveillance capabilities. This position paper proposes an initial approach of UML modeling to design such a system.

**Forensic Science**

**06.04.01 ACCREDITATION OF FORENSIC SCIENCE DEGREE PROGRAMS.** Robert Bost, Dana Rundle, David von Minden, Chemistry, University of Central Oklahoma, Edmond, OK.

The public’s fascination with forensic science has been fueled by both fictional (CSI, Law and Order) programs and actual events (O.J. Simpson trial) and has driven an increasing demand for educational programs to train students in forensic science. Many colleges and universities have created programs to meet this demand. Forensic science practitioners and other interested parties, especially attorneys who need properly trained experts, have raised concerns about the adequacy of training being given to students by these various programs.

The Forensic Science Education Program Accreditation Commission (FEPAC) was developed to determine the components of a suitable education curriculum and a process for evaluating these degree programs leading to accreditation.

This presentation will provide an overview of the curriculum recommendations and of the application and evaluation process which leads to accreditation of forensic sciences degree programs.
06.04.02  CAREER FELON OFFENDER STATE SENTENCING MULTIVARIATE ANALYSIS. Jessica Saffa, Criminal Justice and Legal Studies, Northeastern State University, Tahlequah, OK.

This study examined sentencing discrepancies in the Eastern District of Oklahoma. The data analysis revealed an astounding number of probation, suspended, and deferred sentences given to habitual felons in the Oklahoma State System. The average percent of state sentences actually served was only 38%. It is 85% in the Federal System. Data was collected from the Muskogee Federal Court House online system, the Oklahoma Supreme Court Network, and from Oklahoma Department of Corrections records. N=77.

Mathematics & Statistics

06.05.01  ON A MATHEMATICAL MODEL DESCRIBING INFECTION CAUSING BACTERIA, NUTRIENT INTAKE AND MEDICINE IN A LIVING ORGANISM. Robert Ferdinand, Rebekah Rogers, Mathematics, East Central University, Ada, OK.

A mathematical model describing infection causing bacteria and nutrient intake in a living organism is developed. This model takes the form of a system of two nonlinear ordinary differential equations (ODEs). Points of equilibrium of this system are calculated and a phase-plane analysis of these equilibrium points is carried out using the well known perturbation method which uses a linearization process. The physical significance of the results of this analysis is explained and then a new model is created which introduces medicine in the body of the living organism to destroy the disease causing bacteria. This leads to a system of three nonlinear ODEs. Analysis results on the equilibrium points of this new system are the emphasis of future research therein.

06.05.02  SOME PROPERTIES OF CONIC SECTIONS. Hong Yoon, Mathematical Science, Cameron University, Lawton, OK.

We characterize a conic section as a set of points in a plane that are equidistant from a given point and a given circle. This characterization is used to establish several properties of conic sections related to tangent lines.

06.05.03  AN IMPROVED UNIFYING CONVERGENCE ANALYSIS OF NEWTON’S METHOD IN RIEMANNIAN MANIFOLDS. Ioannis Argyros, Mathematical Sciences, Cameron University, Lawton, OK.

We provide a finer convergence analysis than before\[1,7\] of Newton’s method in Riemannian manifolds by using more precise majorizing sequences. The advantages over the above mentioned works are: weaker or the same semilocal convergence conditions, finer error bounds on the distances involved and an at least as precise information on the location of the singularity of the vector field. Examples are also provided.

06.05.04  IMPORTANT ALGEBRAISTS: OBSERVATIONS ON SIR WILLIAM ROWAN HAMILTON AND GEORGE BOOLE. Charlotte Simmons, Mathematics & Statistics, University of Central Oklahoma, Edmond, OK.

Sir William Rowan Hamilton and George Boole are regarded as two of the greatest nineteenth century algebraists, and rightly so, as their work helped lay the foundations for abstract algebra. These two are of significance to mathematical history for more than just their mathematical contributions, however, as a study of their lives clearly demonstrates. For instance, Boole is a wonderful example of what can be accomplished through diligence and perseverance. Though economically disadvantaged, he surmounted all obstacles to become a successful mathematician. While the two never formally met, there are many similarities in their philosophical views and personality traits. Neither fits the stereotype of “boring” with which mathematicians are so oft labeled. Indeed, their exciting connections with some of the most prominent men of their day were enough to keep their lives interesting. The humorous account of Hamilton hiding under a car to protect his books during a rainstorm (and unfortunately losing his hat in the process) helps one see Hamilton as more than just the mathematician who discovered quaternions. This talk attempts to convey a little of the spirit and enthusiasm of these men’s lives and work that is so characteristic of both.

06.05.05  ALEKS PILOT PROJECT: A COMPARATIVE STUDY. September Pennington, Anne Fine, Mathematics, East Central University, Ada, OK.

Remediation of incoming college freshman students is a national concern. In Oklahoma several initiatives are underway to help reduce the number of students requiring remediation who matriculate to college directly out of high school. Higher education institutions are encouraged to collaborate with K-12 systems to find ways of reducing the number of students requiring remediation. One such undertaking is the ALEKS Pilot Project in which participants use an artificial intelligence-based learning system to help hone mathematics skills during their senior year in an effort to enhance performance on college placement assessments. The present study was
undertaken to supplement the research currently underway in the ALEKS Pilot Project by identifying three comparison groups: students who took a non-ALEKS math course, students who took computer science in lieu of a traditional mathematics course, and students who took no mathematics course during their senior year in high school. These three groups were analyzed to determine whether grouping was independent of the remediation classification. Chi squared analysis showed a strong dependent relationship between taking a 12th grade math course and removing a remediation requirement. Results support the effectiveness of taking a fourth unit of mathematics in reducing the number of college-bound high school seniors requiring mathematics remediation.

06.05.06 MATHEMATICAL IDEAS: TRICKS OF THE TRADE. Jesse Byrne, Charlotte Simmons, Mathematics & Statistics, University of Central Oklahoma, Edmond, OK.

Have you ever been asked to come to an elementary school to give a math presentation to the students in first grade? This can be a very daunting task. You would like the presentation to be interesting, educational and fun. You can’t simply teach the mathematical topics that the first graders are going to learn in second grade nor can you present any of the upper level mathematics that you would teach in your classes. It is surprisingly difficult to find good ideas and examples as well as a list of resources. In this talk we will share a few of the presentation ideas that we have used successfully in previous years.

06.05.07 THE GEOSET EFFECT ON STUDENT ATTITUDES AND BELIEFS. 1 Luke Foster, 2 Darlinda Cassel, 1 Mathematics and Computer Science, Northeastern State University, Tahlequah, OK. 2 Curriculum and Instruction, Univeristy of Central Oklahoma, Edmond, OK.

If educators consider it important for students to have a healthy attitude regarding the study of mathematics, then it is equally important to discover what type of learning environments can be effective in instilling that attitude. One such attempt at discovery was taken by Dr. John Wolfe and Dr. Doug Aichele, Professors of Mathematics at Oklahoma State University in Stillwater, OK, through the development of GeoSET. GeoSET is an acronym which stands for Geometric Structures for Elementary Teachers, a 3-year project funded by the National Science Foundation and awarded to the Mathematics Department at Oklahoma State University. This paper describes a research project conducted to determine what effect, if any, the GeoSET curriculum has on attitudes of geometry students regarding mathematics learning.

06.05.08 CONSTRUCTING A FUNCTION OF A CERTAIN TYPE IN A STAR-SHIFT INVARIANT SUBSPACE OF A CLASSICAL HARDY SPACE. 1 Kristi Karber, 2 John Akeroyd, 1 Mathematics and Statistics, University of Central Oklahoma, Edmond, OK. 2 Mathematical Sciences, University of Arkansas, Fayetteville, Arkansas.

The context of this research is that of a star-shift invariant subspace of the form K_B, the orthogonal complement of BH2(D) in H2(D), where B is some infinite Blaschke product. In particular, we explore K_B-spaces which contain nontrivial singular inner factors. The only known examples of such spaces were those for which B had a proper factor b(z) of a certain form. Hence the question arose as to whether B necessarily had to have such a factor in order for K_B to contain a function with a nontrivial singular inner factor. We answer this question fully! In fact, a whole class of functions in K_B which have a nontrivial singular inner factor is generated where B does not have a factor of b.

06.05.09 THE HEX THAT LIES WITHIN. Nathan Smith, Carol Swigert, Rebecca Stockstill, Mathematics, Northeastern State University, Tahlequah, OK.

Given any triangle with trisected sides, the lines created by connecting each of the vertices with the trisection points of the side opposite of the vertex will intersect to create a hexagon. We will prove that the area of the interior hexagon is one-tenth of the area of the original triangle. Our methods will include the exploration of similar triangles, parallel lines, and other geometric theorems and axioms.

06.05.10 ROAMING ROOM OF A TETHERED PONY. Charles Anglin, David Imwalle, Terri Whitney, Mathematics, Northeastern State University, Tahlequah, OK.

In this project, we will calculate the area of ground a horse can cover on the end of a rope pi units in length nailed to a tree with a radius of one. We will find this area by dividing it into smaller parts, each of which is easier to calculate. We will approach this problem using calculus and trigonometry.

06.05.11 PROJECTIVE GEOMETRY IN THE HIGH SCHOOL CLASSROOM. Donna Hardway, Mathematics, Northeastern State University, Tahlequah, OK.

This project researches basic elements of projective geometry. How can they be used to enrich the regular mathematics curriculum for advanced students in a high school geometry course? The historical development of
the subject, invariant properties of this non-Euclidean geometry, and common applications of projective geometry are explored. Lesson plans are developed for the introduction of projective geometry to high school students.

06.05.12  FIBONACCI SEQUENCE. Vanessa Canfield, Anita Walker, Mathematics, East Central University, Ada, OK.

The fulfilling life of Leonard Pisano Fibonacci lasted a total of eighty years. From 1170-1250 he wrote many mathematical books. One of his most famous books was Liber Abaci. Written in 1202, Fibonacci introduced, to the western world, what is known today as the Fibonacci sequence. Fibonacci came upon this sequence while doing an observation on rabbits. In later years, we discovered the sequence in many other aspects in life. Classic examples of the sequence are found in nature. Other examples can be found in music, nature, poetry, art, film, as well as others.

06.05.13  INFALLIBLE PROGRAMMING METHOD. 1 Jennifer Nicholson, 1 Anita Walker, 2 Bill Walker, 1 Mathematics, East Central University, Ada, OK. 2 Computer Science, East Central University, Ada, OK.

Is there such a thing as an infallible programming method? - YES! In 1969 C.A.R. Hoare published the first formal attempt at subjecting computer programming to logical scrutiny. This pioneering effort has developed into the well-accepted practice of verifying the correctness of code by formal methods. Programs written in C realize the logical analysis of calculating 1) the least common multiple of two integers, and 2) the least common multiple of three integers.

06.05.14  G-IRREDUCIBLE SUBGROUPS OF TYPE A_1. Bonnie Amende, Mathematics and Statistics, University of Central Oklahoma, Edmond, OK.

My research is motivated by the work of J.-P. Serre. Serre, among others, was interested in generalizing standard concepts in the representation theory of the special linear group, SL(V), to arbitrary semisimple algebraic groups. In particular, one can generalize the notion of irreducibility. Since the subgroups of SL(V) which act reducibly on V are those which are contained in the parabolic subgroups of SL(V), it is natural to define a closed subgroup X of a simple algebraic group G (over an algebraically closed field of arbitrary characteristic) as G-irreducible if it is not contained in any proper parabolic subgroup of G. A problem of considerable interest is to classify the G-irreducible subgroups. We solve the problem completely when G is of exceptional type G2, F4, E6, or E7, and X is a subgroup of type A1.

06.05.15  FINDING FRACTALS IN THE HIGH SCHOOL CLASSROOM. Sharon Trogdon, Mathematics, Northeastern State University, Tahlequah, OK.

How can an enrichment unit be presented to a Pre-AP Geometry class on self similarity and fractals? This project investigates the presence of fractals in nature and studies the concept of self similarity. The history of the development of the fractal name given by Benoit Mandelbrot is included. The Cantor set, the Koch curve, and the Sierpinski gasket are used to explain self similarity in a structured environment. The various applications of self similarity in nature is explored. The National Council of Teachers of Mathematics provides a web site for developing fractals up to eight stages. The web site is a useful tool to use in the classroom to demonstrate the development of a fractal and to give students the opportunity to develop a fractal. This research would be helpful in developing an enrichment unit for a Pre AP Geometry class.

06.05.16  A RELATIONSHIP OF PRIMES AND PERFECT SQUARES. Catherine Swanson, Jaclyn Ward, Seana Smith, Mathematics, Northeastern State University, Tahlequah, OK.

Prime numbers have many unusual properties and are seen in many mathematical patterns and relationships. Their properties have been studied by great mathematicians for centuries. Our goal is to find an answer to the following questions involving primes: “Given a prime p greater than 2, is there a positive integer n so that n(p+n) is a perfect square? If so, is n unique?” Upon further investigation of this relationship, we hope to gain a greater understanding of the role of prime numbers in other mathematical relationships.

06.05.17  VARIATIONS OF NEWTON’S METHOD FOR FINDING ROOTS. Irene C. Corriette, Dr. Ioannis K. Argyros, Sabina Sadou, Department of Mathematics, Cameron University, Lawton, OK.

Root finding algorithms, stemming from ancient mathematicians such as the Babylonians and Greeks, are an integral part of mathematics, particularly numerical analysis. Sir Isaac Newton, an English mathematician, created a method commonly known as Newton’s method, which is used extensively today. Newton once stated: “As long as the object of my inquiry constantly before me, and wait till the first dawning opens gradually, by little and little, into a full and clear light.” He would be pleased to know that when he was no longer able to continue his inquiry his method continued to develop and contribute to mathematics. We look briefly at the basis of Newton’s method and then go on to examine three variations of this method: the continuous method, the method in higher dimensions, and a
higher order method. We do not claim originality of this work.

06.05.18 A NONPARAMETRIC MAXIMUM-LIKELIHOOD DECOMPOSITION FOR BIMODAL DISCRETE DISTRIBUTIONS. 1 Dan Endres, 2 Irene De Biase, 3 Sanjay Bidichandani, 1 Mathematics and Statistics, University of Central Oklahoma, Edmond, OK. 2 Biochemistry and Molecular Biology, University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma. 3 Biochemistry and Molecular Biology and Pediatrics, University of Oklahoma Health Sciences Center, Oklahoma City, Oklahoma.

A bimodal discrete distribution arises when two modes of response are observed as "spikes" in the distribution of responses for a discrete system. When the distribution is a simple mixture of the two perturbation distributions, the relationship between the two perturbation distributions is revealed by decomposing the mixture into the components associated with the two modes. We have developed a novel iterative method that decomposes the empirical cumulative distribution function (CDF) into a most likely pair of CDFs associated with the two modes under the assumption that the two component processes are related by a system of linear rescalings. Such mixtures are found in the case of long unstable DNA microsatellites. We analyzed data from several Friedreich ataxia patients having two distinct highly unstable long expanded alleles (one from each parent). While it is not clear from bimodal patient data whether, or to what degree, the instability seen in vivo exhibits dependence on progenitor allele length, the decomposition for a single subject exhibits the effect of progenitor allele length alone as an influence on the underlying systems responsible for the microsatellite instability in that subject.

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06.05.19 ANALYZING THE PRODUCTIVITY OF WHEAT PRODUCTION AND ESTABLISHING A PRODUCTION ESTIMATE IN OKLAHOMA. Derek Blythe, Mathematics, Langston University, Langston, OK.

The U.S. Department of Agriculture’s National Agricultural Statistics Service (NASS) prepares and publishes a state production estimate for all major wheat producing states, which is then combined into a United States wheat production estimate. A well formulated estimate of wheat production promotes the efficiency of the wheat market with reference to sales and future production. Throughout the year, component estimates are established for, acres planted, acres harvested, and yield. These estimates then contribute to the production estimate. The component estimates are achieved from a number of surveys which are conducted throughout the crop year. The production estimation is produced by careful consideration of many factors; most inclusively, the survey indications that are comprised from survey data. The surveys used to prepare this estimate are the Quarterly Agriculture Surveys, the Agricultural Yield Surveys, and the Wheat Objective Yield (WOY) survey. Of these surveys, all are subjective and dependent upon voluntary producer response, except the WOY survey. The WOY survey is unique in that it uses actual field measurement data along with plant counts and grain weights to produce a yield indication. Finally, the USDA’s Farm Service Agency (FSA) provides some benchmark information that is considered while reviewing actual survey data. Indications from all these sources give information on planted acres, harvested acres, and yield. These indications, coupled with statistical analysis, agricultural field experience, and industry communication all help to prepare a quality and statistically sound wheat production estimate.

06.05.20 ON THE REGULARITY OF THE CAUCHY PROBLEM FOR THE MKDV EQUATION. Heather Hannah, Mathematics, East Central University, Ada, OK.

In the Cauchy problem for the periodic mKdV equation with analytic initial data, we show that the solution is also analytic in the space variable at any fixed time near zero. Furthermore, while the solution may not be analytic with respect to time, it does have Gevrey-3 regularity in the time variable.

06.05.21 THE RELATIONSHIP BETWEEN ASTHMA AND EXHALED NITRIC OXIDE AND THE DIFFERENCES OF CONCENTRATIONS OF EXHALED NITRIC OXIDE BETWEEN MALES AND FEMALES. Jason McCracken, College of Engineering, University of Oklahoma, Edmond, OK.

A high-resolution mid-IR tunable-laser absorption spectroscopy (TLAS) system was used to determine the concentration in parts per billion (ppb) of exhaled nitric oxide (eNO) of 1057 subjects: 442 males and 615 females. People with asthma have a higher concentration of eNO. An eNO “cut-off” value was determined to show the cut-off of the value of eNO in ppb that can be used to determine whether or not a person is asthmatic, based on the fact that approximately 10 percent of people in the United States are asthmatic. The cut-off eNO value was the 90th percentile of our data, so that the highest 10 percent would be those people who have asthma. The cut-off value for males was determined to
be 41 ppb and for females was 38 ppb. The distributions of males and females were plotted separately and were both determined to have a lognormal distribution. The reasons for males having a higher concentration of eNO than women are still open for conversation, though the data from this experiment supports one of the more common arguments that it is due to something that takes place during puberty.

### Physics & Engineering

**06.07.01**  
A MODEL FOR THE GEOMETRIC HEIGHT LOSS EXPERIENCED BY AIRCRAFT DURING MISSED APPROACH. David Stapleton, 100 N. University Dr., University of Central Oklahoma, Edmond, OK.

Flight Tests of the KC-10 aircraft to planned missed approaches at the FAA Tech Center and McGuire AFB using GPS/WAAS guidance have provided data for the analysis of the geometric height loss experienced by aircraft during category D approaches. Analysis of the data is accomplished by means of data provided by an onboard truth system. The truth system data from the flight tests is evaluated by means of central differences to obtain velocity, acceleration and jerk estimates during missed approach; and from the acceleration and jerk characteristics the time of missed approach initiation by each pilot is deduced. The corresponding geometric height loss is the difference between the height at the deduced missed approach initiation time and the low height. Statistics are compiled for the height loss and the mean and standard deviation are used to evaluate the goodness of fit of a Gaussian distribution to the uncertainty in height loss. The suitability of certain obstacle clearance surfaces for use during GPS/WAAS final approach is then evaluated.

**06.07.02**  
R & D OF FLUID DISPERSION FOR WEB COATING. Dustin Donnell, James Tull, Industrial and Engineering Technology, Southwestern Oklahoma State University, Weatherford, OK.

High density magnetic storage tape is manufactured by applying various fluid dispersions to a “plastic” web carrier. Many properties of the tape are critical in order to deliver the desired performance in the final product application. A significant number of these properties are determined by the materials and processes used in manufacturing the fluid dispersions that are applied to the film. For these and various other reasons, it is critical to understand the relationships between fluid properties and finished data tape performance. This research focuses on the identification and study of fluid properties in relation to data tape performance.

### Nursing

**06.06.01**  
AMERICAN INDIAN ELDERS AND FAMILIES WITH CHILDREN WITH DISABILITIES. Lee Anne Nichols, Nursing, University of Tulsa, Tulsa, OK.

The purpose of this research is to reveal elder traditional knowledge about strengths and need of American Indian (AI) families with disabilities. There is a lack of knowledge from the perspective of Indian elders about Indian family adjustment to children with disabilities. Elders are the wisdom keepers of traditional knowledge related to family strengths and needs and can provide knowledge about family life of families with children with disabilities. Indian children view other family members such as aunts or grandparents as additional parents. Grandparents and elders often have a say in child rearing and in other decisions affecting family members. Therefore, elders can provide knowledge about family adjustment of AI families to disabilities. This understanding is needed for nursing professionals to develop culturally sensitive and effective interventions in dealing with the AI family as a whole. Given the dearth of knowledge about AI traditional beliefs about AI families and disabilities, a qualitative grounded theory method was used to build scientific knowledge in this area. The specific aims of this study were to (1) from the perspective of the AI elder develop a theory about the social process Indian family adjustment to disability and (2) identify cultural patterns of care which are sources of family strengths and resiliency. The guiding framework for this research, The Pattern of American Indian Families: Harmony Ethos, used Indian concepts (living in harmony) to explain the strength and resiliency potential within Indian families. Thirty-one elders were interviewed. The transcribed interviews provided the data for analysis. Data were content analyzed using the technique of constant comparative analysis. Findings included a cultural sensitive theory about the social process of Indian family adjust-
BASED INFRASOUND SENSORS. Scott DeWolf, Physics Department, University of Wisconsin - River Falls, River Falls, WI.

There are many natural and man-made phenomena that produce sounds at frequencies well below the range of human hearing. These “infrasonic” or “infrasound” sources are also unique in their ability to travel great distances without losing energy. This work will report on the mechanical sensitivities of three novel piezo based infrasound sensors developed at the National Center for Physical Acoustics. Results for motion in and out of the plane of the piezo elements will be presented and compared with two commercial sensors, including estimates of minimum detection thresholds due strictly to ground motion. In addition, pressure sensitivity measurements were made to approximate the potential significance of the mechanical response in the presence of pressure changes induced by ground motion.

06.07.04 SUMMER INTERNSHIP AT CONOCOPHILLIPS; REGINALD BROWN. Rex Ackerson, MATh, Science & Engineering, Northern Oklahoma College, Tonkawa, OK.

Reginald Brown worked about 2.5 months at ConocoPhillips in Ponca City. His specific focus was in the Refinery’s Analytical Lab. Responsibilities included general lab testing for certification of finished product. He was also responsible for performing analysis on Quality Control samples and plotting results on a Statistical Quality Control (SQC) chart. Reggie was also required to attend all safety meetings at the refinery. Reginald performed the following lab analysis. ASTM D-1319 Fluorescent Indicator Adsorption (FIA), ASTM D-1840 Naphthalene Hydrocarbons in Aviation Turbine Fuels by Ultraviolet Spectrophotometry and ASTM D-664 Acid Number of Petroleum Products by Potentiometric Titration.

06.07.05 SUMMER INTERNSHIP ABSTRACT FOR BLAKE COLE. Rex Ackerson, Science, Math & Engineering, Northern Oklahoma College, Tonkawa, OK.

Blake Cole worked for about 2.5 months with the ConocoPhillips Refinery in Ponca City, OK. Blake worked with the Design Group (Evergreen, drafting). Much of his work involved validating various drawings by walking down equipment for the new Ultra Low Sulfur Diesel (ULSD) project. Blake also worked with the Process Safety Management Group. In this capacity, he assisted in research and data entry for process technology packages (PTPs) for the new clean fuels units, conducted research on facility buildings to validate building siting data, assisted as a scribe for the #4CTU process hazards analysis, updated PTP forms for the Santa Fe loading rack, loaded tank farm dike volume data in the electronic data management system (EDMS), and assisted in maintaining the evergreen step of the management of change (MOC) process for updates to various PTPs. Blake worked with Evergreen document updating, visiting all the Ponca City refinery areas, including alky, to field verify Evergreen changes. Blake was assigned an average of six CAF changes per day for field verification and was required to research and organize all of the information required to update the necessary Evergreen documents. Following field visits, Blake was required to redline necessary documents such as P&ID’s, PFD’s, Line Schedules, and Plot Plans.

06.07.06 REVOLUTIONIZING PROSTHETICS. Jay Martin, CP, LP, Research and Development, Martin Bionics, OKC, OK.

The prosthetics research and design industry is entering a groundbreaking and exciting era. Revolutionary technology promises to radically enhance the capabilities of the end user. Martin Bionics is a team member under the Johns Hopkins University Applied Physics Laboratory of the DARPA (Defense Advanced Research Projects Agency) Revolutionizing Prosthetics program. Martin Bionics is the leader of the socket interface system development and cosmesis integration of that program - and is working to provide a “Renaissance” in technology during these next couple years in those fields. Along with other researchers from around the world integrated into this project, the field of prosthetics will radically change over these next 4 years. The end goal of this program is to enable a person with a shoulder level amputation to be able to play the guitar or piano with their full neurally integrated biomimetic prosthetic limb. Key objectives of the research for Martin Bionics are to develop a state-changing socket, incorporate novel sensor technology into the prosthetic design, create a more life-like cosmetic covering, and integrate haptic feedback to provide sensation to the user. Several benefits will result from these innovations including improved proprioceptive control, enhanced psychological integration, greater comfort, and enhanced abilities. Student Interns will play a key role in the success of this program.

06.07.07 ADVANCE AEROSPACE APPLICATIONS. Craig Easter, R&D, - Other University -, Weatherford, OK.

Precision Design has several on going projects. The VARS (Vacuum Assisted Relief system) phase I research was completed for the Airforce. Patents were secured which amounted to 23 separate claims. The R-4 tooling project is seeking to become a FAA approved process, which required Precision Design to make ap-
could be easily programmed for any sensitivity value of 0dB, -20dB and -40dB settings, as the sensitivity circuit values be changed to vary the sensitivity between different sensor. The current design requires that component values be changed to vary the sensitivity between different environments. One sensor in this family of products is the Mini Magnetic Sensor (MAGH). This device detects changes in the local magnetic field; when activity crosses a given threshold, the sensor triggers a radio transmitter to send this information to a remote recording location. The interns at Qual-Tron have focused recent efforts on streamlining test procedures and redesigning MAGH sensor in order to improve performance and enable a programmable sensitivity. An automated test procedure has been developed using LabVIEW that can test up to four sensors simultaneously and yield more detailed sensitivity data on each unit tested. Additionally, the test adapts to units of different sensitivities with a simple turn of a switch, eliminating laborious adjustments under the old procedures. The net result is better quality control and an increase in production throughput by nearly 400%, saving manufacturing time and money. As a related project, data and performance benchmarks obtained during the development of this test procedure are now being used to design microprocessor based sensor. The current design requires that component values be changed to vary the sensitivity between 0dB, -20dB and -40dB settings, as the sensitivity circuitry is entirely analog. In contrast, a microprocessor could be easily programmed for any sensitivity value from 0dB to -40dB to meet customer needs more efficiently, resulting in improved performance and reduced lead times. Through this internship, the students have not only exercised their technical skills but also gained an understanding of the interconnection of engineering, test, manufacturing, and sales priorities in an industrial environment.

**CHLORINE TOOL FOR WELL LOGGING APPLICATIONS.** Zachary Sprague, Electrical Engineering, University of Tulsa, Tulsa, OK.

The OCAST interns at Century Geophysical Corporation in Tulsa have been working on a Chlorine tool that detects the amount of Chlorine and other materials in the immediate vicinity of the tool. The Chlorine tool has a neutron source that gives off gamma radiation. This gamma radiation then interacts with the surrounding materials and a portion of the radiation is reflected back to the tool. Inside the tool there is a sodium iodine crystal that converts the gamma radiation into an electrical impulse. This impulse is then slightly filtered and refined, and then fed into an analog to digital converter. The value produced from the converter signifies a bin number between 1 and 256, where a reference voltage determines the width of the bin. The data is then collected and plotted. From the plotted data, geologist can determine the amount of chlorine and other materials that are in the immediate area.

**SCATTER RADIATION EFFECT ON INTERVENTIONAL DEVICE VISUALIZATION IN X-RAY FLUOROSCOPY.** 1 Yuhaoo Jiang, 2 David Wilson, 1 Physics and Engineering, University of Central Oklahoma, Edmond, OK. 2 Biomedical Engineering, Case Western Reserve University, Cleveland, Ohio.

In X-ray imaging, scattered radiation can significantly degrade image quality. The anti-scatter grid or digital scatter correction algorithms have been used to reduce the effect of scatter radiation. We perform stent and guidewire detection experiments to compare detection performance between images with the digital scatter correction or anti-scatter grid. We created realistic synthetic image sequences with clinical backgrounds for objective perception experiments. Experimental results showed that digital scatter correction methods could obtain equal or better detection performance than the anti-scatter grid did. We concluded that scatter correction was preferable in interventional X-ray fluoroscopy. Further experimental validation may be necessary using Monte Carlo simulation or images from a clinical fluoroscopy system.

**ERROR DETECTION AND CONCEALMENT OF CORRUPTED IMAGES USING...**
EDGE INFORMATION. Mohamed Bingabr, Mohammad Kabir, Neal Harvey, Tarik Soureleah, Physics and Engineering, University of Central Oklahoma, Edmond, OK.

Image transmission and video conferencing have many applications in the medical fields such as diagnosis, consulting, transmission of medical images, etc. In business videoconferencing can enable individuals to have face-to-face business meetings without leaving the desktop on short notice. This technology has been growing steadily in military fields for the purpose of remote sensing.

In this paper we propose a new approach to detect corrupted regions in the received images and to conceal the error using transmitted edge information of the original image. The new approach can be applied to the different methodologies of image transmission such as JPEG and JPEG2000. The proposed approach works as follow: At the receiver the edge information of the compressed image will be extracted by using wavelet transform and then canny method of edge extraction. At the receiver the edges of the received image will be extracted and subtracted from the transmitted edge information of the original image. If the difference is zero then the received image is not corrupted. However, if the difference is not zero at any region then this region will be labeled as a corrupted region. The transmitted edge information will be used to approximate the actual intensity values of the corrupted pixels using the uncorrupted adjacent pixels. Corrupted pixels at each side of the edge will be estimated by using the corresponding uncorrupted pixels intensities at the same side. We will be using bilinear interpolation in our approximation of the corrupted pixels. The possible advantages of the proposed methodology over the existing methodologies are the minimum requirement of channel bandwidth to transmit edge information and its applicability to different image transmission methods.

06.07.12 PULSED POWER BURNOUT OF SEMICONDUCTOR DEVICES. 1 Chadd Fleming, 1 Dr. Baha Jassimejad, 2 Bob Searles, 2 Peter Richeson, 1 Physics and Engineering, University of Central Oklahoma, Edmond, OK. 2 The Boeing Company,

Semiconductor material is at the very heart of our electronic world and is used to produce such devices as diodes, transistors, and computer memory devices. Diodes are often used to protect sensitive electronics from voltage spikes and transients. However, diodes are also vulnerable to voltage spikes. Much of the data available on diode part failures with regard to spikes and transients is from the 1970s and 1980s. Since technological advances have allowed component sizes to shrink and manufacturing processes and materials to change the actual failure characteristics of these devices may have altered. Electronic circuit designers and maintainers need up to date failure characteristics to better provide for today’s electronics. An Experimental Semiconductor Test Module (ESTM) was designed and built for the purpose of generating and measuring the pulse magnitude necessary to damage the diodes. Test results indicate the actual failure voltages were at or above the theoretical value but the failure currents, power, and energy were found to be much lower than predicted. Consequently, the available failure data does not appear to accurately represent failure predictions for today’s parts.

06.07.13 MULTI-MODALITY IMAGING BY A COMBINATION OF DIFFUSE AND COHERENT OPTICAL TOMOGRAPHY TECHNIQUES: INITIAL APPROACH. Zhen Jiang, Daqing Piao, Electrical and Computer Engineering, Oklahoma State University, Stillwater, OK.

In this paper, we introduce a novel approach of combining diffuse and coherent optical imaging modalities, for the purpose of providing morphological and functional diagnostic information concurrently and non-invasively. Near-Infrared (NIR) diffuse optical tomography (DOT) is a technique sensitive to blood-based functional contrast, however it suffers from low resolution due to the measurement of multiple-scattering photons. On the other hand, optical coherence tomography (OCT) obtains high resolution imaging of tissue structures by coherent gating, but it lacks pathognomonic information due to the detection of back-reflected light. This paper describes an initial approach of combining these two techniques, in an attempt to acquire tissue-specific information and morphological details concurrently. The potential applications lie in the detection of early stage malignancies including, but not limited to, the color-rectal tissues.

06.07.14 GAS TREATING PROBLEMS & OPPORTUNITIES FOR RENEWABLE RESOURCES. Justin Wirt, Joshua Brigham, Production Specialties, Inc., Production Specialties, Inc., Oklahoma City, OK.

Interest in renewable or more eco-friendly energy sources has grown quickly over the past few years, spurred by the rapid rise in energy prices and the realization of greenhouse gas emission impacts that result from the use of fossil fuels. Sources such as land-fill gases and bio-gases could be economically viable candidates for supplanting use of fossil fuels. These gases typically result from the anaerobic decomposition of organic matter. The primary energy resource in biogas and landfill gas is methane. However, these gas
resources are contaminated with other heterogeneous components, including: water vapor, oxygen, siloxanes, hydrogen sulfide, chlorides and carbon dioxide. Methane can be used in a wide variety of applications such as electric power production via combustion in an internal combustion engine/gas turbine. But comprehensive removal of the heterogeneous, non-hydrocarbon components is essential for cost effective use of biogas. The consequences of biogas combustion without purification are quite severe, including: conversion of siloxanes to silicon dioxide (silica, glass) damaging engine components, and conversion of hydrogen sulfide to sulfur dioxide and sulfurous acid (causing acid attack of engine components). The purpose of this study is to conduct both an initial literature review and an experimental effort to evaluate technologies that are available for cost-effective treating biogas for removal of the deleterious compounds. We will also develop new technologies that satisfy any voids in the mix of technologies that can be used to make these renewable resources economically viable. Currently we anticipate that a combination of unit operations that rely upon key differences in the physical and chemical characteristics of methane and the heterogeneous compounds can be employed to refine the biogas stream into a valuable, renewable energy resource.

06.07.15 DUAL-BAND NEAR-INFRARED DIFFUSE OPTICAL TOMOGRAPHY BY USE OF TWO SUPERLUMINESCENT DIODES. Hao Xie, Daqing Piao, Electrical and Computer Engineering, Oklahoma State University, Stillwater, OK.

Near-infrared (NIR) optical tomography is a non-invasive imaging technique of acquiring blood-based intrinsic optical contrast. When multi-spectral detection is utilized, the hemoglobin concentration and oxygen saturation can be quantified, which provides physiological information important for cancer diagnosis. Recently we have introduced a novel approach, the endoscopic implementation of NIR optical tomography that extends NIR tomography from imaging of external tissues to imaging of internal organs. This technique has been based on the spread-spectral-encoding from tissues to imaging of internal organs. This technique explores the selecting, designing, constructing and testing phases of the entire project.

06.07.17 INSTALLATION OF A MULTIPLE TRANSDUCER SOUND SYSTEM. Jonathan Gonzales, Physics, East Central University, Ada, OK.

This summer I had the opportunity to design a sound system for the First Baptist Church in Ada. For this project, I deduced the problem at hand and acted accordingly. This included buying several in-ceiling speakers and testing them to find the most effective one while keeping our financial constraints in mind. Afterwards, a sufficient circuit was designed and all of the components were installed. Graphs of predicted speaker placement, final speaker placement, sound dispersion, and room sound levels were created. This presentation explores the selecting, designing, constructing and testing phases of the entire project.

06.07.18 HEMODYNAMIC IMAGING BY A NEAR-INFRARED OPTICAL TOMOGRAPHY SYSTEM BASED ON A SUPERLUMINESCENT DIODE. Daqing Piao, Electrical and Computer Engineering, Oklahoma State University, Stillwater, OK.

Near-infrared optical tomography is a sensitive technique for non-invasive imaging of hemodynamic changes in tissues at a depth up to centimeters. The stability of the NIR tomography system is a key factor impacting the accuracy of hemodynamic measurements, because NIR tomography reconstruction is by nature an ill-conditioned process. Previous NIR tomography sys-
tems have used individual light sources including laser diodes and light emitting diodes for the tomographic detection of hemodynamic responses, where the non-correlated intensity fluctuations among source channels may degrade the measurement accuracy. In this work, we introduce which is believed to be the first attempt of using single superluminescent diode for tomographic NIRS imaging, where the multi-channel source illumination is coupled from the same diode source by use of a novel spread-spectral-encoding technique. The use of single source eliminates the inter-channel intensity fluctuations in principle, which results in significantly improved detection sensitivity. Example of in vivo homodynamic changes acquired from a finger during 10 seconds of breath-holding is presented. This technique has the potential of high-sensitivity non-invasive hemodynamic imaging in tissues in vivo.

06.07.19 AN EXAMINATION OF COPPER-TANTALUM LAYERS USING X-RAY REFLECTIVITY FOR SEMICONDUCTOR APPLICATIONS. Timothy Laundre, Christine Russell, Physical Sciences, Cameron University, Lawton, OK.

X-ray reflectivity (XRR) is an effective non-destructive characterization method that has gained interest in the semiconductor industry for routine quality control. XRR is capable of measuring thin film properties such as density, thickness and interface characteristics. It is particularly sensitive to layers of materials which have a significant electron density contrast, such as metallic layers. To increase computer chip clock speeds, the use of copper circuits is a vital next step in semiconductor processing, which is currently undergoing implementation in fabrication facilities. However, depositing copper directly on silicon often results in a mixture of the two materials, hence an intermediate layer is necessary. A good candidate for this buffer layer is tantalum due to its smooth deposition and inertness with either silicon or copper. This work explores the principle interests of layer thickness and interface characteristics of tantalum and copper structures of various layer thicknesses.

06.07.20 DESIGN AND INVESTIGATION OF A TWO DIMENSIONAL WAVE MACHINE. Britteny Lee, Calvin Cole, Engineering Physics, Northeastern State University, Tahlequah, OK.

A magnetic field provides a medium for mechanical wave propagation. By constructing various arrays consisting of different magnetic arrangements, different features of one or two dimensional wave behaviours can be investigated. The purpose of this research is to create an inexpensive and sturdy model with which wave behavior in some ways similar to that in a crystalline solid may be observed. We are looking at the system response to step, pulsed, and alternating forcing functions. To achieve this it has been necessary to lower the internal friction as much and as simply as possible as well as to find different variable frequency driving mechanisms. We have used a variable frequency mechanical sine drive and are currently performing tests using a pendulum as an external driver. This seems to hold promise of a means of quantifying the energy absorption of the array as well as its natural frequency spectrum.

06.07.21 LIMITATIONS IN THE CRITICAL ANGLE DETERMINATION OF SiO2 WITH GRAZING INCIDENCE X-RAY REFLECTIVITY. Christine Russell, Mark Polson, Physical Sciences, Cameron University, Lawton, OK.

X-ray reflectivity (XRR) is an effective non-destructive characterization method that is used in the semiconductor industry for routine quality control of thin, uniform layers of material deposited on a substrate. In particular, this method is being studied to determine its usefulness for characterizing porous SiO2, one possible replacement for standard SiO2, as a low-k dielectric for device miniaturization. A necessary component to evaluating these porous materials is to understand the level of porosity within the layer based on the layer density. The density information can be obtained from the critical angle observed in XRR data, hence the necessity of accurate measurements. In this work, the authors explore the limitations of density determination by XRR using a simulation and fitting program, Simul-Reflec, designed for x-ray and neutron reflectivity studies. This fitting program is applied both to experimental and simulated data. Various versions of noise have been added to simulated data and then re-fit to determine the sensitivity of the fitting program and the limitations of XRR for this application.

06.07.22 AN INVESTIGATION OF CONTROL METHODS AND LOCOMOTION USED IN ROBOTIC VEHICLES. Gregory Falling, Engineering Physics, Northeastern State University, Tahlequah, OK.

This project involves the identification of strengths and commonalities for some of the main methods of control and locomotion in robotics. We are currently exploring methods of locomotion of a robotic vehicle, with special attention being given to non-typical methods. This poster presents examples of programmed and hardwired control for robotic vehicles and various forms of locomotion being investigated. Control is demonstrated through use of a Stamp microcomputer and microcomputers from Parallax, the Lego robotics system, and hardwired control using Mark Tilden’s
BEAM (Biology, Electronics, Aesthetics, and Mechanics) approach. Methods of movement shown are wheeled, legged, and other types not fitting into the before mentioned typical methods. We hope to hybridize both the programmed and BEAM approach for control and to create a multipurpose all terrain vehicle. We are grateful for the support of the National Science Foundation and OK-LSAMP STEM for helping to make this work possible.

06.07.23 STRATEGIC SOLUTIONS APPLIED RESEARCH. Matt Andrews, Joseph Pruitt, Robert Atkinson, Shawn Hellman, Research & Development, Strategic Solutions International, LLC, Stillwater, OK.

Strategic Solutions International, LLC, (SSI) is a research and development company headquartered in Stillwater. SSI’s four undergraduate interns were hired as part of an Intern Partnership grant with the Oklahoma Center for the Advancement of Science and Technology (OCAST). The interns have played an integral part in the following R&D projects: [1] an RF system that monitors the real-time health of beef cattle; [2] a patent-pending system for quantifying the water-cement ratio in fresh concrete; [3] a handbook for the Federal Aviation Administration governing the use of concrete maturity methods to accelerate airfield pavement construction and provide enhanced concrete quality control; and [4] a patent-pending insulated, disposable bottle that keeps beverages colder longer with no added cost.

06.07.24 DEVELOPMENT OF A PNEUMATIC PRODUCTION TOOL FOR THE MERCRUISER ALPHA SHIFT SPOOL ASSEMBLY. James Hayes, Mechanical & Aerospace Engineering, Oklahoma State University, Stillwater, OK.

MerCruiser is the leading producer of stern drives for marine propulsion. These drives must perform well and be cost competitive. Reliable, efficient, and safe operation requires great precision in the assembly of the drive train. The shift spool assembly shifts the drive from first to reverse. Inaccurate assembly of the spool can result in an inability to engage reverse, a fault that can have disastrous consequences for a boat approaching a dock. The objective of this project was the design and development of a manufacturing assembly tool that would produce shift spool assemblies with improved precision using less assembly worker effort and time. The successful development of this assembly tool required the design and testing of alternative concepts. The prototypes were drawn with the Pro-E Wildfire 2.0 solid modeling program. The testing resulted in the choice of a design employing twelve pneumatic actuating cylinders. It was found that material selection also was very important to proper operation of the tool. For example, bronze was chosen for use in the metal grips used to hold the spool while its retainer nuts are tightened. The tool design incorporated a number of features to facilitate the efficient production of high precision shift spool assemblies.

*Supported by Mercury MerCruiser, the Oklahoma Center for the Advancement of Science and Technology Research and Development Intern Program, and Oklahoma EPSCoR - OCAST Intern

06.07.25 TEMPERATURE MEASUREMENT DURING LASER-IMMUNOTHERAPY FOR CANCER TREATMENT. 1 Surya Gnyawali, 1 James Wicksted, 1 Jerry Ritchey, 1 Kandace Metcalf, 2 Kenneth Bartels, 3 Wei Chen, 3 Yichao Chen, 1 Physics, Oklahoma State University, Stillwater, OK. 2 Medicine and Surgery, College of Veterinary Medicine, OSU, Stillwater. 3 Physics & Engineering, UCO, Edmond.

A combination therapy using a laser, a laser-absorbing dye, and an immunoadjuvant guided by temperature measurement probes such as magnetic resonance imaging thermometry (MRT) and infrared thermography (IRT) can be an ideal treatment modality. Infrared thermal imaging and magnetic resonance imaging have been applied to medical research, because the temperature distribution in tissue plays an important role in primary tumor treatment and induction of immunological responses for metastatic tumor control. Infrared thermography has been applied to measure the surface temperature under the same conditions in tumor-bearing mice. Irradiation of 805-nm laser on tissues increases the temperature due to enhanced photon absorption within the tissue. Intratumor injection of both indocyanine green (ICG) and glycated chitosan (GC) followed by 805-nm laser irradiation has been found efficacious in the cancer treatment. Monte Carlo simulation for selective photothermal-tissue interaction has been performed for the measurement of both volume and surface temperature distribution. The primary results of simulation and in vivo experimental studies are presented and discussed. The relationship between the target temperature and the treatment effects are also studied.

06.07.26 3D THERMAL DISTRIBUTION DETERMINATION USING MAGNETIC RESONANCE IMAGING (MRI) DURING LASER THERAPY. 1 Yichao Chen, 1 Andrew Abbott, 1 Rheal A. Towner, 2 Hong Liu, 3 Surya Gyanwalib, 4 Wei R. Chen, 1 Dept of Physics and Engineering, University of Central Oklahoma, Edmond, OK. 2 Center for Bioengineering and School of Computer Electrical Engineering, University of Oklahoma,
Everette King, Mohamed Aryan, Electrical and Computer Engineering, University of Oklahoma, Norman, OK.

Ekips Technologies is a biotechnology company specializing in the development of lasers and spectroscopy systems for detecting exhaled biomarkers in breath. The company conducts extensive research in breath analysis to identify biomarkers and their application in disease diagnosis such as asthma, cancer, and organ function. Ekips is a recognized leader in this emerging field of medicine. The instrument utilizes a tunable diode laser to excite a target molecule, which absorbs the laser energy. Company developed electronics and software detect and measure the decrease in laser energy to quantify the molecule(s) present. Due to the critical nature of the laser, an autonomous system monitor is necessary to protect sensitive opto-electronic devices. A stirling cooler integrated with a cryostat housing containing a mid-infrared laser and photo-detector is employed to maintain cryogenic temperatures ranging from 90 K to 100 K (-183 to -173 degrees Celsius). These low temperatures are necessary for the laser to operate in a single mode (i.e. constant frequency), while emitting a continuous wave source of energy, and to also minimize detector thermal noise. Loss of cooling is detrimental to the laser device, resulting in either performance degradation or failure. The project entailed developing a monitoring system independent from the laser system electronics and controls, which monitors stirling cooler operating temperatures and device temperatures to detect a cooling system failure. Ambient temperatures within the instrument are also monitored. In the event of a temperature failure, the system removes power from the laser controller and stirling cooler. In addition to temperature measurement, the monitoring system records the data with a time stamp to facilitate troubleshooting failures and tracks operating hours of a pump as part of a preventative maintenance program.

06.07.29 AUTONOMOUS MONITORING OF A TUNABLE DIODE LASER ABSORPTION SPECTROSCOPY SYSTEM. Everette King, Mohamed Aryan, Electrical and Computer Engineering, University of Oklahoma, Norman, OK.

In the event of a temperature failure, the system removes power from the laser controller and stirling cooler. In addition to temperature measurement, the monitoring system records the data with a time stamp to facilitate troubleshooting failures and tracks operating hours of a pump as part of a preventative maintenance program.

06.07.30 STRUCTURE AND MOBILITY OF PLATINUM NANOPARTICLES DEPOSITED ON CARBON NANOTUBES. Brian Morrow, Alberto Striolo, Chemical, Biological and Materials Engineering, University of Oklahoma, Norman, OK.

Supported metal nanoparticles are used in many applications, such as nanoelectronics, optoelectronics, and catalystics. Recently the use of metals supported on carbon nanotubes as electrocatalysts for fuel cells has been investigated. The unique properties of carbon nanotubes, such as their high surface area and electrical conductivity, high gas transport rate, and tunable diameter, make them promising candidates for supports in fuel cell catalysts. Towards this end we are using molecular dynamics to compare the structure and mobility of platinum nanoparticles deposited on graphite and different types of carbon nanotubes, over a large temperature range.

We find that the particles diffuse more readily on graphite surfaces, and on nanotubes settle into the trenches formed by the curvature of the tubes. On all surfaces the diffusion coefficient decreases when the particle melts, and the particles have different diffusion mechanisms at low and high temperatures. Platinum clusters on graphite are very ordered, while clusters on nanotubes are more disordered.

06.07.31 A STUDY OF LIGAND EXCHANGE KINETICS OF ALUMINUM AND GALLIUM TRIS 8-HYDROXYQUINOLINE COMPLEXES. Daniel White, Lloyd Bumm, Susan Alguindigue, Homer L. Dodge Department of Physics and Astronomy, University of Oklahoma, Norman, OK.

Aluminum tris-(8-hydroxyquinoline) (Alq3) and its gallium analog are organic semiconductors which are widely used in organic LEDs. These and other molecules are the object of our group’s single molecule electroluminescence studies. The color of their luminescence can be changed by substituting one or more of
the 8-hydroxyquinoline ligands with modified luminescent spectra. Interestingly mixed ligand complexes are poorly characterized because the ligands can exchange with free ligands in solution. In addition, the complex adopts the meridional isomer where the 3 ligands surrounding the aluminum and the gallium ions are symmetry inequivalent. Performing our single molecule experiments requires an understanding of both the intramolecular and the intermolecular ligand exchange kinetics.

We are using nuclear magnetic resonance (NMR) spectroscopy to study the kinetics of this system. The intermolecular processes are measured from the time evolution of the NMR spectra after adding labeled free ligands. The temperature dependence of the kinetics is used to measure the thermodynamics of the exchange processes. This knowledge will allow us to develop an effective strategy for preparing and studying mixed ligand analogs of these technologically important materials.

**06.07.32 FLAT GOLD NANOPARTICLE GROWTH AND SEDIMENTATION.** Christopher Allen, Daminda Dahanayaka, Lloyd Bumm, Wesley Tennyson, Homer L. Dodge Department of Physics and Astronomy, University of Oklahoma, Norman, OK.

Flat Gold Nanoparticles can serve as an atomically flat and optically resonant workbench for a variety of applications. These nanoparticles are grown in solution, which produces a wide variety of sizes and shapes ranging from triangles to hexagons. At the same time a large population of unwanted spherical gold nanoparticles also grow. My research has focused on size and shape fractionation of the as-grown sol using centrifugal sedimentation. I will also discuss other methods to improve the flat-to-sphere shape ratio using seeded nanoparticle growth and selective deposition of flat particles onto a variety of substrates. Dark-field optical microscopy and scanning electron microscopy are used for to evaluate our results.

**06.07.33 SEM-CORRELATED SINGLE-NANOPARTICLE SPECTROSCOPY.** Daniel J. Wasielewski, Chris E. Allen, Daminda H. Dahanayaka, Emily S. Day, Jane X. Wang, Lloyd A. Bumm, Marshall D. McCutchen, Wesley D. Tennyson, Homer L. Dodge Department of Physics and Astronomy, University of Oklahoma, Norman, OK.

The surface plasmons, or oscillations of free electrons, of metal nanoparticles are strongly influenced by particle size and shape. Spectroscopy is commonly used to characterize nanoparticle samples, but typical absorption spectra only represent ensemble averages. Due to the polydispersity of the nanoparticle sols, much information is lost in traditional spectra.

Here we present a method to investigate the optical properties of individual nanoparticles. Flat gold nanoparticles are deposited on a microscope slide and observed under a dark-field microscope. Scattered light from an isolated nanoparticle is collected via an optical fiber and channeled into a spectrometer. Because many of the particles are too small to be clearly resolved in the optical microscope, the same nanoparticle is then imaged using high-resolution scanning electron microscopy to correlate its spectrum with its exact shape and size. SEM correlated spectra have revealed trends in shape-dependence of nanoparticle spectra. We present our experimental results and compare the theoretical prediction.

**06.07.34 COMPUTATIONAL FLUID DYNAMICS INVESTIGATION OF BLOOD FLOW THROUGH RENAL ARTERY STENOSIS.** Carrie Street, Chemical, Biological, and Materials Engineering, University of Oklahoma, Norman, OK.

Irregularities in renal artery anatomy may be linked to health problems, such as hypertension. These abnormalities seem to influence malfunctions in the renin-angiotensin-aldosterone system (RAAS), which is a hormonal control system that acts to regulate blood pressure in the body. In an experiment conducted in 1934, Goldblatt consistently produced hypertension in dogs by constricting the renal artery with clamps. Computational Fluid Dynamics (CFD) provides a promising means for understanding the influence of abnormal anatomy on blood flow through the human renal artery. The purpose of this research is to ascertain the effect of renal artery structures (e.g. stenosis) on blood pressure. Gambit, a preprocessing program, serves as the graphical user interface for creating the representative geometries and their respective meshes or grids for calculations. The geometries can be imported into the flow modeling software Fluent. Fluent is used to perform calculations necessary to test the representative geometries and provide pressure, velocity, and shear stress data. The density and viscosity of blood are considered constant and are taken to be 1060 kg/m3 and 4 cp, respectively. Normal renal artery dimensions of 50 mm in length and 5 mm in diameter and blood flow of 600 ml/min are used as the starting point for variations. The influences of renal artery diameter, length volumetric blood flow rate are under investigation. One case under investigation is the influence of stenosis length, diameter, and axial position on the pressure drop across the artery. The results of this research should aid physicians in the prediction and treatment of problems associated with abnormal renal artery physiology.


06.07.35  **SERVICEABILITY AND BEARING CAPACITY OF REINFORCED UNPAVED ROADWAYS.**  Ted Huynh, Kianoosh Hatami, Civil Engineering and Environmental Science, University of Oklahoma, Norman, OK.

This study presents development of a validated computational model that has been subsequently used to investigate the influence of subgrade soil, base aggregate and reinforcement material properties on the performance of reinforced unpaved roads under service load conditions as well as conditions leading to failure. The idealized cross-section of unpaved roadway used in this study included an aggregate base layer placed on a weak subgrade soil with significant depth. The model was developed using the commercially available program FLAC (Itasca 2005). The bearing capacity values for two different homogenous soil models were compared and verified against values predicted from theoretical solutions. The responses of unreinforced (i.e. control) and reinforced pavement models subjected to traffic load were compared with respect to settlement under tire pressure and subgrade failure load. A series of parametric analyses has been carried out to investigate the influence of tire contact surface area, base layer thickness, and reinforcement depth and stiffness on predicted performance and bearing capacity of reinforced unpaved roadways. Results of this analysis can be used to improve current design approaches for reinforced unpaved roads with respect to the influence of reinforce material properties and embedment depth.

06.07.36  **GRADUATE RESEARCH OPPORTUNITIES IN THE DEPARTMENT OF PHYSICS AT OKLAHOMA STATE UNIVERSITY.**  James Wicksted, Physics, Oklahoma State University, Stillwater, OK.

The OSU Department of Physics offers nationally recognized research programs leading to the MS and Ph.D. in Physics. Many of our 25 faculty members have attained international stature in their respective research areas, including four who are fellows of the American Physical Society. Several of our faculty have also received distinguished awards in research and teaching. Faculty research interests include both experimental and theoretical studies in optical sciences and photonics, biophysics and nano science, high energy physics, material science, radiation physics and sensor technologies, and astronomy and space physics. We invite you to explore the program details and research opportunities at our website at www.physics.okstate.edu. You are invited to contact the Graduate Coordinator, Dr. Paul Westhaus, at paul.westhaus@okstate.edu, or the Department Head, Dr. James Wicksted at james.wicksted@okstate.edu, with any questions you may have about our graduate physics program.

06.07.37  **IMMUNOLOGICAL EFFECT OF LASER IMMUNOTHERAPY IN TREATMENT OF METASTATIC TUMORS IN MICE.**  Abdiwahab Mohamed, Wei Chen, Physics and Engineering, University of Central Oklahoma, Edmond, OK.

The ultimate cancer treatment is one that cures local tumor effects and stops metastasis. Laser induced immunotherapy has been found to be effective in achieving this goal. The method encompasses a laser, a light absorbing dye and an immunoadjuvant working hand in hand. Previous studies using indocyanine green (ICG) as the dye and glycated chitosan (GC) as the immunoadjuvant have seen considerable success in the treatment of metastatic breast tumors in rats. The experiments showed suppression of the primary tumors, regression of metastasis, and an induced anti-tumor immunity. Despite the success of the previous experiments, the physiology behind the induced immune response has not been fully understood. In this study BALB/c mice bearing EMT6 tumors were treated with various combinations of 0.25% ICG, 1% GC and 805 nm diode laser. The tumor sizes were measured before and after treatment. Sera were then obtained from the different groups two weeks after treatment and an Eli spot assay performed. Our initial results indicate an immune response in the group that received the full treatment. Our results also indicate that the full dosage of laser immunotherapy treatment does trigger an immune response and could be the reason behind the eradication of metastasis.

06.07.38  **SIMULATING THE EFFECTS OF CHANNEL INTERACTION IN SPEECH INTELLIGIBILITY FOR COCHLEAR IMPLANT USERS.**  Mohamed Bingabr, Physics and Engineering, University of Central Oklahoma, Edmond, OK.

The “Cochlear Implant is a device that mimics the functions of the outer, middle, and inner ear to help the individual with sensorineural hearing loss restore partial hearing and discriminate sounds again. In quiet environment, speech recognition by cochlear implant users reaches accuracy levels as high as 70%; however, in noisy environment such as restaurants and classrooms, recognition accuracy drops to 20%.

In this research we will investigate the effect of channel interactions and noise background on speech intelligibility by simulating the effects for normal hearing people. We will then determine the optimal number of channels needed to represent the spectrum of speech that, while minimizing the spectral distortion due to channel interactions, maximizes speech intelligibility in quiet and noisy environments. The effects of varying
the number of channels, the locations of the channels, and their corresponding interactions on the recognition of vowels and consonants will be studied in normal hearing subjects.

06.07.39 ELLIPSOIDAL MIRRORS FOR LIGHT COLLECTION. David Kelle, Danny Wasielewski, Lloyd Bumm, Homer L. Dodge Department of Physics and Astronomy, University of Oklahoma, Norman, OK.

We are developing a light collection system for a scanning tunneling microscope (STM). The STM tunneling junction acts as an optical point source. An ellipsoidal mirror will collect and refocus the emitted light onto a photodiode. This task would be simple if imaging-quality ellipsoidal mirrors were available. Electroformed ellipsoidal mirrors are available at low cost, but their optical aberrations will spread the image of our point source.

It is critical that we know the fraction of the emitted light that our detector is capable of collecting. We have designed an optical test system to characterize the efficiency of the mirror. The sample is simulated by a tube-etched optical fiber tip. The percentage of light focused within the detector area is dependent upon the dimensions of the fiber tip’s source region. In order to normalize the efficiency, the dimension of the tip must be measured and taken into account. Minimizing this dimension will allow a more accurate result.

06.07.40 DEVELOPMENT OF A COMPREHENSIVE MULTIPHYSICS MATERIALS CHARACTERIZATION SYSTEM. Michael Tinsley, Brandon Olson, Regina Boseman, Aerospace and Mechanical Engineering, University of Oklahoma, Norman, OK.

Abstract: Engineering design is founded on the ability to accurately assess and predict how components and systems will function. A thorough understanding of material behavior is key to this approach; especially for modern multiphysics materials that are characterized by complex mechanical, thermal and electrical interactions.

Most existing materials characterization systems typically measure individual material properties, and are inadequate for characterizing this new breed of multi-tasking materials. The overall objective of this research effort is to begin integration of existing test methods into a single, comprehensive system capable performing traditional measurements as well as combined multiphysics measurements.

The objective of this Undergraduate Research project is to begin the design and manufacture of the hardware components and basic software controls that will serve as a platform for the multiphysics measurement system. Specifically, this includes:

1) Design and assemble customized mechanical testing fixtures that will accommodate multiphysics sensors.

2) Design and assemble a temperature and environmental control fixture for an existing mechanical testing system.

3) Integrate software components that will control the sample temperature and mechanical testing.

06.07.41 PARAMETRIC ANALYSIS OF COMPRRESSIBLE GEOINCLUSION PERFORMANCE IN REINFORCED SOIL WALLS. Alan Witthoeft, CEES, University of Oklahoma, Norman, OK.

Recently completed research used the geotechnical modeling software Fast Lagrangian Analysis of Continua (FLAC) to examine the feasibility of using the relatively compressible Expanded Polystyrene (EPS) foam known as geofoam to achieve reduction of lateral earth pressure behind the reinforced soil zone in Mechanically Stabilized Earth (MSE) retaining walls. This study concluded that use of geofoam in this manner appears to be a practical means of reducing lateral earth pressure and warrants further investigation. The objectives of the present study are to refine the existing numerical model, to verify the accuracy of model predictions against predicted and measured results reported in the literature, and to assess the sensitivity of model outputs to input parameters. This ongoing project is expected to result in the eventual development of design guidelines for the use of compressible geoinclusions in MSE walls.

06.08.01 UREA SPACE AND BODY CONDITION SCORE TO PREDICT BODY COMPOSITION OF MEAT GOATS. Tilahun Sahlu, Arthur Goetsch, Asanji Ngwa, Glenn Detweiler, Ignacio Tovar-Luna, Roger Merkel, Ryszard Puchala, Lionel Dawson, Calvin Ferrell, American Institute for Goat Research, Langston University, Langston, OK. College of Veterinary Medicine, Oklahoma State University, Stillwater, OK. Meat Animal Research Center, USDA ARS, Clay Center, NE.

Yearling Boer x Spanish wethers (40) were used to develop and compare body composition prediction equations for mature meat goats based on urea space (US) and body condition score (BCS). Before the experiment, one-half of the animals were managed to

Agriculture
have high BW and BCS (1-5, with 1 being extremely thin and 5 very fat) and the others were managed to have low BW and BCS. During the 24-wk experiment, initially fat wethers were fed to lose BW and BCS and initially thin wethers were fed to increase BW and BCS. BCS, US, and whole body chemical composition were determined after 0, 12, and 24 wk. Mean, minimum, and maximum values were 42.1 (SE = 1.12), 24.5, and 59.0 kg for shrunk BW; 3.0 (SE = 0.11), 1.5, and 4.0 for BCS; 61.3 (SE = 1.01), 53.7, and 76.5% for water; 20.2 (SE = 1.11), 4.7, and 29.7% for fat; 15.6 (SE = 0.19), 13.3, and 18.1% for protein; and 2.9 (SE = 0.062), 2.2, and 3.7% for ash, respectively. For water, fat, and ash concentrations and mass, simplest equations explaining greatest variability (with independent variables of US, BCS, and(or) shrunk BW) based on BCS accounted for more variation than ones based on US, although in some cases differences were not large (i.e., water and ash concentrations and mass). Neither US nor BCS explained variability in protein concentration. Equations to predict protein mass based on shrunk BW and US or BCS were nearly identical in R2 and the root mean square error. A 1-unit change in BCS corresponded to change in full BW of 8.9 kg (full BW, kg = 17.902 + (8.9087 Å— BCS); R2 = 0.653), fat concentration of 7.54% (% fat = -5.076 + (7.5361 Å— BCS); R2 = 0.612), and energy concentration of 3.01 MJ/kg (energy, MJ/kg = 0.971 + (3.0059 Å— BCS); R2 = 0.615). In summary, BCS may be used as or more effectively to predict body composition of meat goats than US. The primary determinant of BCS, within the range of BCS observed in this experiment, was body fat content.

**06.08.02 TETHERING MEAT GOATS GRAZING FORAGE OF HIGH NUTRITIVE VALUE AND MODERATE TO HIGH MASS.** 1 Amlan Patra, 1 Arthur Goetsch, 1 Getachew Animut, 1 Glenn Detweiler, 1 Ryszard Puchala, 1 Tilahun Sahlu, 2 Gordon Carstens, 3 Zelpha Johnson, 4 Harvey Freely, 1 American Institute for Goat Research, Langston University, Langston, OK. 2 College of Veterinary Medicine, Oklahoma State University, Stillwater, OK.

Yearling Boer x Spanish goats (24) were used in a crossover design to determine effects of tethering on forage selection, intake, and digestibility, grazing behavior, and energy expenditure (EE) with forage of high nutritive value and moderate to high mass. Four 0.72-ha pastures of wheat (Triticum aestivum) and berseem clover (Trifolium alexandrium) were grazed in April to May. Each pasture hosted six animals, three with free movement and three attached to a 3 m tether for access to a circular area of 28.3 m2. One animal of each treatment and pasture was used to determine forage selection, fecal output, or grazing behavior and EE. Measures were in the second week of 2-wk periods. Mass of forage DM before grazing in Tethered areas averaged 2,649 and 2,981 kg/ha in periods 1 and 2, respectively. The CP concentration in ingesta was greater (P < 0.05) 23.1 and 20.3%; SE = 0.82) for Free vs Tethered animals. The level of NDF (54.0 and 55.9%; SE = 1.66) and in vitro true DM digestion (75.7 and 76.5%; SE = 1.20) were similar between treatments. Metabolizable energy intake was greater (P < 0.05) for Free vs Tethered animals (12.7 and 10.4 MJ/d; SE = 0.89). There were small treatment differences (P < 0.05) in in vivo apparent digestibility of OM (71.7 and 72.34%; SE = 0.24) and NDF (63.3 and 65.2% for Free and Tethered, respectively; SE = 0.92). There were no treatment effects on time spent ruminating, idle, or eating (405 and 366 min/d for Free and Tethered, respectively; SE = 42.5). Energy expenditure was considerably greater (P < 0.05) for Free vs Tethered animals (633 and 512 kJ/kg BW0.75, respectively; SE = 27.4). In conclusion, differences in EE between goats freely grazing and tethered may not be solely attributable to ME intake, distance traveled, and(or) grazing time. Tethering as a model for free movement may offer a reasonable means of studying some aspects of grazing such as ingesta composition but appears inappropriate for others, including EE and efficiency of energy metabolism.

**06.08.03 EFFICIENCY OF ENERGY USE FOR PREGNANCY BY CROSSBRED BOER X SPANISH DOES WITH DIFFERENT LITTER SIZE.** 1 Arthur Goetsch, 1 Ignacio Tovar-Luna, 1 Ryszard Puchala, 1 Tilahun Sahlu, 2 Gordon Carstens, 3 Zelpha Johnson, 4 Harvey Freely, 1 American Institute for Goat Research, Langston University, Langston, OK. 2 Department of Animal Science, Texas A&M University, College Station, TX. 3 Department of Animal Science, University of Arkansas, Fayetteville, AR. 4 Meat Animal Research Center, USDA ARS, Clay Center, NE.

Twenty-four Boer x Spanish does (3 yr of age, having kidded once previously, and with an initial BW of 42.7 Å± 1.2 kg) were used to determine the efficiency of ME utilization for pregnancy (kpreg). Six does were nonpregnant and, based on ultrasound determination on day 45 of gestation, six had a litter size (LS) of 1, 2, and 3. However, only 10 of the pregnant does delivered the expected number of kids (three, four, and three with LS of 1, 2, and 3, respectively). Does were fed a diet of approximately 50% concentrate in accordance with assumed maintenance plus pregnancy energy requirements based on estimated nonpregnancy tissue BW and LS. Recovered energy (RE) was determined by subtraction of energy expenditure (EE; respiration calorimetry) near day 80, 100, 120, and 140 of gestation from ME intake (MEI). RE was assumed attributable to...
pregnancy tissues (fetus, fetal fluids and membranes, uterus, and mammary gland), and ME used for pregnancy (MEpreg) was estimated by subtracting MEm determined with nonpregnant goats from MEI by those pregnant. For does with actual LS equal to that expected, the no-intercept equation for the regression of RE against MEm was: RE = MEm x 0.252 (SE = 0.030; R2 = 0.64), indicating a kpreg of 25%. Although, a regression including LS (1 vs 2 or 3) suggested greater kpreg for LS of 1 (40.2% Â± 5.6) vs 2 or 3 (20.5% Â± 3.2). Regressions for goats with LS different from expected suggested positive effects of use of energy mobilized from nonpregnancy tissues on kpreg and of use of dietary ME for energy accretion in nonpregnancy tissues on the efficiency of whole body ME utilization. In conclusion, the average efficiency of ME use for pregnancy regardless of LS in goats was near 25%, which when considering the expected proportion of all pregnancy tissues attributable to fetal or conceptus tissues implies an energy requirement for pregnancy of goats similar to common recommendations for sheep and cattle.

06.08.04 RELATIONSHIP BETWEEN ENERGY EXPENDITURE AND HEART RATE IN PREGNANT BOER X SPANISH DOES WITH DIFFERENT LITTER SIZE. Ryszard Puchala, American Institute for Goat Research, Langston University, Langston, OK.

Twenty-four Boer x Spanish does (3 yr of age, having kidded once previously, and initial BW of 42.7 Â± 1.19 kg) were used to determine effects of litter size (LS) and stage of gestation (near d 80, 100, 120 and 140) on the relationship between energy expenditure (EE) and heart rate (HR). Six does were nonpregnant (0) and, based on ultrasound determination on d 45 of gestation, six had LS of 1, 2, and 3. However, only 10 of the pregnant does had the expected number of kids (three, four, and three with LS of 1, 2 and 3, respectively). Does were fed a diet of approximately 50% concentrate in accordance with assumed maintenance plus pregnancy energy requirements based on LS. EE determined by respiration calorimetry on d 80, 100, 120, and 140 of gestation with head-boxes was expressed relative to average BW within the 2-d measurement periods and HR was determined at the same time using Polar S610 HR monitors. There was an effect of animal on EE:HR within LS (P < 0.05), CV of 10.2, 11.2, 3.8, and 8.6%, and maximum differences of 41.7, 16.6, 5.2, and 12.0% of means for LS 0, 1, 2, and 3, respectively. Time of the day affected (P < 0.05) EE, HR, and EE:HR; highest values were at 0900 and 1600 h and lowest values were between 0200 and 0700 h. CV for hourly values were 3.9, 2.1, and 2.4%, and maximum differences relative to means were 9.0, 4.1, and 4.8% for EE, HR and EE:HR, respectively. There was an interaction in EE:HR between LS and stage of gestation (P < 0.05). EE:HR decreased as gestation progressed (LS 1:7.29, 6.79, 6.14, and 5.53; LS 2:6.73, 6.42, 6.07, and 5.02; LS 3: 6.53, 6.07, 5.71, and 5.07 (kJ/kg BW0.75)/(beats/min) on d 80, 100, 120, and 140, respectively), whereas nonpregnant goats had stable EE:HR (8.04, 7.78, 7.78, and 7.74 (kJ/kg BW0.75)/(beats/min)). In conclusion, changing EE:HR in pregnant animals may preclude use of HR to predict EE. Magnitudes of difference in EE:HR among animals and time of the day suggest benefit from determinations for individual animals and over extended periods of time.

06.08.05 EFFECTS OF FEEDING METHOD, DIET NUTRITIVE VALUE, AND PHYSICAL FORM AND GENOTYPE ON FEED INTAKE, FEEDING BEHAVIOR, AND GROWTH PERFORMANCE BY MEAT GOATS. Terry Gipson, Arthur Goetsch, Glenn Detweiler, Tilahun Sahlu, American Institute for Goat Research, Langston University, Langston, OK.

Thirty-two F1 Boer x Spanish (28.7 kg, SE = 0.49 kg) and 40 3/4 Boer-1/4 Spanish (31.9 kg, SE = 0.47 kg) wethers, approximately 5 mo of age, were used to compare feeding systems with different dietary treatments. Feeding systems were Calan gates and automated feeding units allowing one animal to consume feed at a time. Two diets included concentrate (C) and two were dehydrated alfalfa (A), fed pelletized (P) or loose (L). The main effect of feeding method was not significant for any variable. There was an interaction in DMI involving feeding method, diet, and genotype, which indicated that with a concentrate diet, regardless of physical form, DMI was not influenced by feeding method. Main effect dietary treatment means (1.78, 1.67, 2.04, and 1.70 kg for C-P, C-L, A-P, and A-L, respectively; SE = 0.030) indicated that pelleting had a slightly greater effect on DMI with A vs C. ADG was lowest among treatments for A-L (212, 205, 190, and 157 g for C-P, C-L, A-P, and A-L, respectively; SE = 8.9), and ADG:DMI was greater for C vs A (127, 120, 94, and 94 g/kg for C-P, C-L, A-P, and A-L, respectively; SE = 7.8). Both ADG and ADG:DMI were similar between genotypes. For wethers subjected to automated feeding units, the number of feeder visits was lowest among diets (P < 0.05) for C-P (23.1, 31.2, 35.7, and 35.7 per day; SE = 2.00); total feeder occupancy time per animal ranked (P < 0.05) C-P < A-P < C-L and A-L (74, 130, 105, and 122 min/d; SE = 6.8), and rate of DMI was greater for P than for L diets (24.6, 12.9, 22.0, and 13.7 g/min for C-P, C-L, A-P, and A-L, respectively; SE = 3.89). In summary, meat goats can markedly vary feeding behaviors in response to differ-
ent diet types and forms; however, there appear limits to such changes, as exemplified by lowest ADG for A-L. Calan gates and automated feeding systems appear similar in the ability to compare growth performance with treatments such as the concentrate-containing diets and genotypes of this experiment. Pelletizing does not seem to affect growth performance with diets consisting of appreciable concentrate. Effects of pelletizing on growth performance of meat goats consuming forage diets may be attributable to change in level of feed intake, without impact on efficiency of feed utilization.

**06.08.06 METHANE EMISSION BY GOATS CONSUMING DIETS WITH DIFFERENT LEVELS OF CONDENSED TANNIN-CONTAINING LESPEDEZA AND SORGHUM-SUDANGRASS.** 1 Getachew Animut, 1 Amlan Patra, 1 Arthur Goetsch, 1 Glenn Detweiler, 1 Ryszard Puchala, 1 Tilahun Sahlu, 2 James Wells, 2 Vincent Varel, 1 American Institute for Goat Research, Langston University, Langston, OK. 2 Meat Animal Research Center, USDA ARS, Clay Center, NE.

Twenty-four yearling Boer A—Spanish wethers (7/8 Boer; initial BW of 34.1 ± 1.02) were used to determine effects of dietary levels of a condensed tannin (CT)-containing forage Kobe lespedea (Lespedeza striata; K) and sorghum-sudangrass (Sorghum bicolor; G) on methane emission. Treatments were dietary K levels (DM basis) of 100, 67, 33, and 0% (100K, 67K, 33K, and 0K, respectively). Forages harvested daily were fed at 1.3 times the maintenance energy requirement. The experiment lasted 21 d, with measures on the last 8 d. N was 1.7 and 2.2%, in vitro true DM digestibility was 85.5 and 68.0%, and CT was 0 and 15.1% for G and K, respectively. DMI was similar among treatments (677, 664, 633, and 626 g/d; SE = 30.8) and methane emission changed quadratically (P < 0.05) as K declined (8.3, 11.8, 15.6, and 27.1 x 105/ml for 100K, 67K, 33K, and 0K, respectively). In conclusion, the CT-containing forage K decreased methane emission by goats regardless of nonzero level without deleterious effects on digestibility. The impact of K CT on methane emission appears attributable to changes in methanogenic bacterial activity, although alterations of protozoal actions might be involved as well.

**06.08.07 EFFECT OF INITIAL BODY CONDITION OF BOER X SPANISH YEARLING WETHERS AND LEVEL OF NUTRIENT INTAKE ON BODY COMPOSITION.** 1 Roger Merkel, 1 Arthur Goetsch, 1 Asanji Ngwa, 1 Glenn Detweiler, 1 Ryszard Puchala, 1 Tilahun Sahlu, 2 Lionel Dawson, 3 Calvin Ferrell, 4 Ignacio Tovar-Luna, 1 American Institute for Goat Research, Langston University, Langston, OK. 2 College of Veterinary Medicine, Oklahoma State University, Stillwater, OK. 3 Meat Animal Research Center, USDA ARS, Clay Center, NE. 4 Universidad Autonoma Chapingo, Unidad Regional Universitaria De Zonas Aridas, Bermejillo, Durango, Mexico.

Yearling Boer x Spanish wethers were used, with 27 fed to achieve high body condition score (BCS; 1 to 5, with 1 = extremely thin and 5 = extremely fat) and BW (I-F) and 27 fed for low BCS and BW (I-T). During the experiment, I-F wethers were fed low amounts of a pelletized diet and I-T wethers received high amounts. Harvest measures were determined before the experiment (wk 0) and after 12 and 24 wk, with seven animals per initial body condition and time. BCS was 3.8, 3.2, 2.6, 1.9, 2.8, and 3.5 (SE = 0.11) and live BW was 53.3, 46.2, 42.4, 36.6, 40.1, and 48.2 kg (SE = 2.03) for I-F: wk 0, I-F:wk 12, I-F:wk 24, I-T:wk 0, I-T:wk 1, and I-T:wk 2, respectively. Changes in carcass mass of protein (-5.9, -5.3, 7.0, and 5.8 g/d; SE = 0.89) and fat (-16.3, 21.4, and 26.6 g/d; SE = 2.35) were greater (P < 0.05) for I-T vs I-F, as was also true for non-carcass protein (-1.9, 0.2, -5.9, -5.3, 7.0, and 5.8 g/d; SE = 0.89) and fat (-1.9, 0.2, -16.3, -10.4, 13.6, and 26.3 g/d for I-F:wk 1-12, I-F:wk 1-24, I-T:wk 1-12, and I-T:wk 1-24, respectively; SE = 2.49). Based on energy concentrations in empty body tissue lost or gained in wk 1-12 and 1-24 (14.8, 12.1, 19.9, and 26.4 MJ/kg for I-F:wk 1-12, I-F:wk 1-24, I-T:wk 1-12, and I-T:wk 1-24, respectively; SE = 2.13), the energy concentration in wk 13-24 was 9.4 and 32.9 MJ/kg for I-F and I-T, respectively. In conclusion, the energy concentration in tissue mobilized or accreted by yearling meat goats within certain body condition ranges may not necessarily be the same and appears influenced by initial animal characteristics and subsequent feeding conditions.
06.08.08  TETHERING MEAT GOATS GRAZING FORAGE OF HIGH NUTRITIVE VALUE AND LOW TO MODERATE MASS.  1 Glenn Detweiler, 1 Amlan Patra, 1 Arthur Goetsch, 1 Getachew Animut, 1 Ryszard Puchala, 1 Tilahun Shahu, 2 Lionel Dawson, 1 American Institute for Goat Research, Langston University, Langston, OK.  2 College of Veterinary Medicine, Oklahoma State University, Stillwater, OK.

Yearling Boer x Spanish goats (24) were used to determine effects of tethering on forage selection, intake, and digestibility, grazing behavior, and energy expenditure (EE) with forage of high nutritive value and low to moderate mass. Four 0.72-ha pastures of wheat and berseem clover were grazed in December and January. Each pasture hosted six animals, three with free movement and three attached to a 4.11 m tether for access to a circular area of 53.1 m². Mass of forage DM before grazing in Tethered areas averaged 1,280 and 1,130 kg/ha in periods 1 and 2, respectively. The CP concentration in ingesta was greater (P < 0.05) 23.9 and 20.9%; SE = 0.80) and the NDF level was lower (P < 0.05) for Free vs Tethered animals (50.3 and 53.8%; SE = 1.20); in vitro true DM digestion was similar between treatments (80.8 and 80.7% for Free and Tethered, respectively; SE = 0.96). Intakes of DM (1,013 and 968 g/d; SE = 78.6), NDF (511 and 521 g/d; SE = 39.9), and ME (10.9 and 10.7 MJ/d; SE = 0.90) were similar between treatments, but CP intake was greater (P < 0.05) for Free vs Tethered animals (241 and 203 g/d; SE = 17.2). There were small treatment differences in in vivo apparent digestibility of OM ((P < 0.05); 78.0 and 81.4%; SE = 0.49), CP ((P < 0.05); 80.0 and 81.7%; SE = 0.67), and NDF ((P < 0.08) 77.7 and 76.0% for Free and Tethered, respectively; SE = 0.78). There were no treatment effects on time spent ruminating, idle, or eating. Energy expenditure was considerably greater (P < 0.05) for Free vs Tethered animals (571 and 489 kJ/kg BW0.75 for Free and Tethered, respectively; SE = 8.9). Based on estimates of ME intake and recovered energy and an assumed efficiency of use of ME for energy accretion, this difference equated to an energy cost for free movement of 111 kJ/kg BW0.75. A greater distance traveled for Free than for Tethered goats presumably accounted for some but doubtfully all of this difference, suggesting that free movement influenced other physiological conditions impacting EE. In conclusion, tethering would seem to offer a production advantage over free grazing of less energy used for activity and may not be a perfect model of ones with free movement for all areas. 0.75

06.08.09  THE IMPACT OF MARTIN BIOCHEM (A BIOSTIMULANT) ON FEED CROPS FOR RUMINANTS. Jaime Meade, Hatcher Kyle, Agricultural, Redlands Community College, El Reno, OK.

The purpose of the research project is to determine the impact of biostimulants on feed crops for ruminants. The Impact of Martin BioChem (a Biostimulant) on Feed Crops for Ruminants research project will provide new production agriculture knowledge to farmers and ranchers in the state of Oklahoma. The results will provide agriculturalists the opportunity to make more informed resource management decisions that will, in turn, improve the productivity and consequently the profitability of their operations. The Martin BioChem (Biostimulant) product is an aerobic bacterial culture that is a combination of enzymes, amino acids and natural plant extracts. It is used to support and stimulate existing soil biology by improving the balance of soil microbes. The Redlands Community College applied research project will measure the impact the biostimulant has on the soil and plants. Two four-acre plots of Bermuda grass, one twenty-acre plot of wheat and one twenty-acre plot of alfalfa will be utilized in the project. One half of each plot will be treated with Martin BioChem and the other half will receive no treatment of Martin BioChem. It will be applied using calibrated spray equipment designed by the intern. The amounts and time of treatment will be made under the guidance and recommendation of mentors from Martin BioChem, Inc. starting at 100 gallons of product per acre. Fertilizer and/or herbicide applications will be made equally to both treated and non-treated areas if recommended.

06.08.10  EFFECTS OF EXTENDED STORAGE ON MICROBIOLOGICAL QUALITY, SOMATIC CELL COUNT, AND COMPOSITION OF GRADE-A GOAT MILK.  1 Steve Zeng, 1 Blaise Bah, 2 Sean Chen, 1 American Institute for Goat Research, Langston University, Langston, OK.  2 College of Food Science & Nutritional Engineering, China Agricultural University, Beijing, China.

As specified in the Pasteurized Milk Ordinance, Grade-A goat milk must contain less than 1.0 x 105 cfu/ml and must be processed within 4 d. However, dairy goat producers in the U.S. are small scale, scattered around and distant from processing facilities. It is not cost-effective to collect goat milk every 2 d as it is with cow milk. Some goat milk is collected only once a week. This study was conducted to determine the effect of extended storage time up to 7 d over a lactation on composition, somatic cell count (SCC), pH, and microbiological quality of goat milk in the refrigerated storage tank (4 Â± 1oC) on the farm. Duplicate samples were taken daily from the farm tank after the morning milking and analyzed immediately. Results indicated that there were no significant changes (P>0.05) detected in milk fat, protein, lactose, solids-non-fat, SCC, and...
pH during the extended storage, but significant variations (P<5 cfu/ml on the 6th d of the extended storage, exceeding the Grade-A limit (1.0 x 10^5 cfu/ml). Mean psychrotrophic bacteria count increased steadily to 1.5 x 10^5 cfu/ml within 6 d of storage. Mean coliform count was approximately 500 cfu/ml for the first 3 d and fewer than 2,500 cfu/ml throughout the 7 d storage. In conclusion, when stored under refrigerated and sanitary conditions, goat milk within 5 d could meet the Grade-A limits but would exceed the SPC limit thereafter. Data also indicated that care should be taken when goat milk was stored in the bulk tank during summer months.

06.08.11 EFFECTS OF CLA SUPPLEMENTATION ON TEXTURE PROFILE OF SEMI-HARD GOAT CHEESE, 1 Sean Chen, 1 Arthur Goetsch, 1 Blaise Bah, 1 Maristela Rovai, 1 Steve Zeng, 1 Terry Gipson, 2 Adam Lock, 2 Dale Bauman, 1 American Institute for Goat Research, Langston University, Langston, OK. 2 Department of Animal Science, Cornell University, Ithaca, NY.

Thirty Alpine does (BW 50 Â± 7.4 kg) were randomly assigned to three groups to study effects of t-10, c-12 conjugated linoleic acid (CLA) dietary supplementation on the texture profiles of semi-hard goat cheese. The trial consisted of three periods (2 wk in length with a 14-d interval) with CLA supplemented at 0, 3, and 6 g/d per doe for treatments 1, 2, and 3, respectively, using a 3Ã—3 Latin Square design. In the early (first 3 d) and late (last 3 d) stages of each period, milk was collected for cheese manufacture. Samples were taken from one cheese block on d 1 and 60 after manufacture and cheese texture profile (hardness, springiness, cohesiveness, gumminess, and adhesiveness) was determined using an Instron textural analyzer. Cheeses made from milk collected early in periods had similar texture profiles (P > 0.05) on d 1 after manufacture. However, after 60 d of aging at 80C, both treatments 2 and 3 had lower cohesiveness (P < 0.05) than treatment 1 while treatment 3 showed higher springiness (8.02 mm, P < 0.05) than treatments 1 (6.78 mm) and 2 (6.85 mm). For cheeses made from milk collected late in periods, hardness, cohesiveness, and gumminess differed (P < 0.01) among treatments on d 1 after manufacture. After 60 d of aging, hardness, springiness, gumminess, and cohesiveness increased while adhesiveness decreased (P<0.01) as CLA supplement increased. In conclusion, supplementation of dairy goat diets with CLA as well as experiment stage and cheese age can impact texture profiles of semi-hard goat cheese.

06.08.12 EFFORTS TO ANALYSIS NUTRIENT MANAGEMENT WITHOUT THE USE OF COMMERCIAL FERTILIZER. Amy Robak, Plants and Earth Science, University of Wisconsin - River Falls, River Falls, WI.

The purpose of this project for the past year has been to research how corn will perform without the use of commercial fertilizer. This is being pursued in order to help Benton County, Minnesota farmers realize that past legume credits and past and current manure credits can be enough nutrients, especially nitrogen, to support a corn crop throughout a growing season. This approach is also expected to produce no difference in the harvested yield. The project also consisted of researching and comparing the new and old nutrient management recommendations prepared by the University of Minnesota. Throughout the growing season, various scouting procedures and tests were conducted to help test our hypothesis. Replicated test plot areas were set up to help compare and contrast yield calculations in the fall. Analysis of the resultant data are on-going.

06.08.13 LABORATORY AND FIELD EVALUATION OF THREE ORGANIC INSECTICIDES FOR MANAGING HARLEQUIN BUG, MURGANTIÁ HISTRIONICA, POPULATIONS ON LEAFY GREENS. Lisa Overall, Jonathan Edelson, Department of Entomology and Plant Pathology, Oklahoma State University, Stillwater, OK.

The Harlequin bug (HB), Murgantia histrionica, is a key pest of Brassicae crops in North America. Populations in commercial production fields have been managed through use of synthetic insecticides. Numerous field and laboratory studies have shown that various synthetic pesticides effectively suppress Harlequin bug populations. The HB has potential of becoming a serious pest in the absence of synthetic insecticides, as the case in organic production. Currently, organic producers have no reliable method of managing populations of this pest. Laboratory bioassays were conducted to determine response of the HB to three organic insecticides, Neemix 4.5, Entrust, and Pyganic EC 1.4. These studies were conducted in conjunction with field efficacy trials to verify results of the laboratory studies. Results indicated significant differences in response to the three insecticides. These results will be used in developing IPM programs for organic crop producers.

06.08.14 EFFECTS OF MANURE APPLICATION ON WHEAT YIELD AND SOIL PROPERTIES IN DEGRADED PRIME FARMLAND. Matthew Johnson, Leon Fischer, Philip Schroeder, Agriculture, Cameron University, Lawton, OK.

Winter wheat and cotton are the principal agronomic crops in the southwestern region of Oklahoma with approximately 1.3 million acres of wheat and 140 thousand acres of cotton planted annually. Continuous
crop production has had negative effects on soil chemical and physical properties and lead to a reduction in soil quality and, pH. Green house and field studies were undertaken to determine the ability of manure application to improve soil properties and increase wheat yield. Five treatments, 3 rates of feedlot manure (11, 22, and 44 Mg/ha), fertilizer, fertilizer+lime, and unfertilized controls were applied in a randomized complete block design with three replications. Hard red winter wheat (var. Jagalene) was planted at a seeding rate of 84 kg/ha in plastic pots (20 cm dia) and 3m x 9m field plots. After 9 weeks, above ground biomass was harvested from pots and at maturity grain was harvested from field plots. Soil samples were collected to a depth of 15 cm from all pots and plots. Plant matter was analyzed for moisture, protein, P, Ca, Mg, K, S, Cu, Fe and Zn. Grain yield, thousand kernel weight, and seed moisture were determined for field plots. Soil samples were analyzed for OM, nitrate, pH, P, Ca, Mg, K, S, Cu, Fe and Zn. The fertilizer plus lime treatment produced the highest dry matter yield, however there was no significant (alpha = 0.05) differences between the treatments except that the unfertilized control produced the lowest yield. In general, the 20 ton manure treatment had the highest levels of OM, Ph, and soil nutrients. Soil pH levels were not different among the limed, 10 ton, and 20 ton manure treatments. Plant nutrient uptake levels were also highest from manure and lime treatments. The results of this study suggest that application of feedlot manure can affect pH and nutrient availability in degraded farmland and may increase wheat yield as much as liming.

06.08.15 CORRELATION OF GENETICALLY-CONTROLLED ABSCISSION WITH RIPENESS IN MELONS. 1 Inaia Phoenix, 1 Stanley Rice, 2 Angela Davis, 2 Penelope Perkins- Veazie, 1 Biological Sciences, Southeastern OK State University, Durant, OK. 2 South Central Agricultural Research Lab, USDA, Lane, OK.

Lycopene, a red pigment antioxidant with anti-cancer properties, found in tomatoes and watermelons, is one of many phytonutrients supplied by the Cucurbitaceae family, which includes squash, watermelon, cantaloupe, pumpkin, and cucumbers. The typical U.S. cantaloupe produces an abscission zone between the stem and fruit that detaches when ripe. This harvesting aid has been used to pick melons at certain ripeness stages. Watermelons do not abscise when ripe and therefore it is not always easy to determine the ripeness stage of watermelon. To insure quality fruit with high lycopene content, it is important to be able to predict the ripeness of watermelon while harvesting. The goal of this experiment was to determine if certain cultivars of watermelon could be selectively bred to produce abscission zones that would determine ripeness stages. We analyzed a watermelon line that has an abscission trait to see if the formation of the abscission zone correlated with ripeness indicators, such as sugar and lycopene accumulation. We found a small but significant correlation between these three traits. This data suggests we have an abscission trait that correlates with ripeness.

06.08.16 TRANS-10, CIS-12 CONJUGATED LINOLEIC ACID REDUCES MILK FAT SYNTHESIS IN LACTATING GOATS. Maristela Rovai, Agricultural Research, Langston University, Langston, OK.

The efficacy of trans-10, cis-12 conjugated linoleic acid (CLA) in reducing milk fat synthesis in dairy cows and sheep has been well documented. However, recent examinations of the effects of trans-10, cis-12 CLA on milk fat synthesis in lactating goats have proved inconclusive. The current study was therefore designed to determine if a lipid-encapsulated trans-10, cis-12 CLA supplement (LE-CLA; BASF AG, Ludwigshafen, Germany) would inhibit milk fat synthesis in lactating goats. Thirty multiparous Alpine dairy goats (50 ± 7.4 kg) in late lactation were randomly assigned in a 3 x 3 Latin square experiment. Goats were fed a bermuda grass hay, alfalfa pellet, concentrate diet (20:20:60) either A) unsupplemented (Control), B) supplemented with 30 g/d LE-CLA (low-dose; LLE), or C) supplemented with 60 g/d LE-CLA (high-dose; HLE). The LE-CLA supplement supplied 3 and 6 g/d of trans-10, cis-12 CLA for the LLE and HLE treatments, respectively. Treatment periods were 14 d in length with a 14 d washout interval. Milk yield, DMI, and milk protein content and yield were unaffected by treatment (P > 0.05). Compared with Control, milk fat yield was reduced 8.1% by the LLE treatment and 21.2% by the HLE treatment (P < 0.001), with milk fat content reduced 4.4 and 16.0% by the LLE and HLE treatments, respectively (P < 0.001). In conclusion, the results of the present study demonstrate that trans-10, cis-12 CLA reduces milk fat synthesis in lactating goats in a manner similar to that observed in lactating dairy cows and sheep. However, dose-response comparisons suggest that the degree of reduction in milk fat synthesis is less in goats compared with other lactating ruminant species studied. Further studies are required to verify and extend these results and to elucidate the mechanism of action for the effects observed with trans-10, cis-12 CLA supplementation.

06.08.17 PRICING MODEL FOR CONVENTIONAL AND ORGANIC FERTILIZERS. Stacey McMeans, Joshua Brigham, Production Specialties, Inc., Production Specialties , Inc., Oklahoma City, OK.
An investigation of the price history of fertilizers in the United States, shows a significant tie between the price of energy and the price of bulk primary plant nutrients (especially nitrogen). The volatility of energy prices is directly reflected in price fluctuations in fertilizer prices. Given the physical state of a commercial grade fertilizer, for a given year and a geographic region of the country, prices are shown to track closely based on a unit weight of primary plant nutrient, across a wide variety of fertilizer formulations. Plant products that meet the USDA requirements for organic certification enjoy a price premium in the market place. The organic fertilizers used to grow the organic plant products, realistically should also enjoy a price premium. The purpose of this study is to delineate the organic fertilizer certification process and to expand the fertilizer pricing model to determine if organic fertilizer market prices can be predicted by a relatively simple modification to the mathematical model for conventional fertilizers.

06.08.18  EFFECTS OF WATER STRESS ON COTTON FIBER QUALITY AND PRICE. 1 Justin Chavez, 1 Elizabeth Wallace, 1 Julian Lowell, 2 J.C. Banks, 2 Shane Osborne, 1 Agriculture, Western Oklahoma State College, Altus, OK.  2 Agriculture, OSU, Altus.

The market price of cotton is based primarily on five quality characteristics: color, length, strength, micronaire (coarseness of fiber) and uniformity (relationship between short fiber content and long fiber content). Of these properties, length, micronaire and uniformity are the characteristics most affected by management. Cotton™ fiber quality is a function of both genetics and environment. As producers, our only opportunity to affect fiber quality, beyond variety selection (genetics), is through the management of this environment. Although the initial timing of irrigation is primarily determined by the producer, often times the frequency of irrigation is dictated by the actual water supply. Producers challenged with the task of maximizing profitability with a limited supply of irrigation water face tough decisions in regards to when and how often to irrigate. The objective of this study was to determine the impact of pre and post bloom irrigation regimes on cotton lint yield and quality. Replicated eight row by 500' plots were irrigated at pre bloom and post bloom times. Plots will be harvested and subjected to HVI fiber analysis to compare the effects of irrigation timing stress on lint quality and price.

06.08.19  FERTILIZER N EFFECTS ON NITRATE ACCUMULATION AND DISTRIBUTION IN WHEAT FORAGE. 1 Manuel Muniz, 1 David Dalbow, 2 Charles MacKown, 1 Biology, Redlands Community College, El Reno, OK.  2 USDA-ARS Grazinglands Research Lab, El Reno, OK.

Wheat is considered good forage, but excessive nitrate (NO3-) accumulation can pose risks to ruminants. This research contrasted two wheat cultivars (cv) for total N and NO3- in a hay crop. Winter wheat cv 2174 and Endurance were planted late September 2005 in a strip-plot experimental design with four reps and received one of six N fertilizer treatments (0 to 448 kg N/ha). Hay samples from mid April at Feekes growth stage 10.5 were divided into stem and leaf blades for analysis of total N and NO3-. Hay yields of both cv were similar and differed due to N fertilizer treatments. Distribution of dry matter between stem and leaf blades was unaffected by cv and only the stems differed significantly among the N treatments. As N fertilizer increased, stem total N of both cv increased linearly from 103 to 159 g/kg crude protein (CP). In contrast, the response of leaf blade total N of both cv was quadratic and ranged from 179 to 268 g/kg CP between 0 and 224 kg N/ha. Stem NO3- of both cv were similar and the NO3- levels of leaf blades and stems of Endurance were similar while that of 2174 leaf blades was 50% less then the stem NO3-. For both cv, stem and leaf blade NO3- levels increased in direct proportion to increasing N fertilizer. Only at the highest N fertilizer application to Endurance did forage NO3- exceed a level considered safe for ruminants. These results demonstrate that NO3- level and partitioning can be managed by cv selection and amount of fertilizer N used.
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