April 16-18

2018

create

CREATE @ STATE

A Symposium of Research, Scholarship & Creativity

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Student Research Ambassadors 2017-2018

Ashley Schulz	Brett Hale	Olivia Smith
Genevieve Quenum	Anna Mears	Parker Knapp
Nathan Baggett	Kristian Watson	Courtney Cox
QianQian Yu	Neha Verma	Quy Van
	Cameron Duke	

Student Research Advisory Committee 2017-2018

Katerina Hill. . . . . .Neil Griffin College of Business

Hilary Schloemer . . . . . .Neil Griffin College of Business

Tina Teague . . . . . College of Agriculture, Engineering & Technology

Zahid Hossain. . . . . College of Agriculture, Engineering & Technology

Virginie Rolland . . . . . College of Sciences & Mathematics

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Susan Motts . . . . . College of Nursing & Health Professions

Mark Foster. . . . . College of Nursing & Health Professions

Katherine Baker . . . . . College of Liberal Arts and Communication

Claire Abernathy . . . . . College of Liberal Arts and Communication

Deborah Chappel Traylor . . . . . College of Liberal Arts and Communication

Sarah Scott . . . . . College of Liberal Arts and Communication

Chi Young Song . . . . . College of Liberal Arts and Communication

Welcome to the eighth celebration of Create@State: A Symposium of Research, Scholarship & Creativity, showcasing the quality works of our students from across all of our university's colleges and disciplines. This venue provides an opportunity for undergraduate and graduate students to present original work to stakeholders and the community in a professional setting. The theme for Create@State 2018 is focused around the **STEAM initiative** to highlight integration of STEM (Science, Technology, Engineering and Math) with Art + Design. We are excited to welcome Edwin Faughn, our distinguished keynote, as he presents to campus and the community the intersection of art, design and science. I am proud of the intellect, creativity and innovation taking place at Arkansas State University. This event is a testament to the rich cocurricular learning experiences that are provided by our outstanding faculty mentors. I hope you will participate in as many of the events over the three days as possible.

Best regards,

Andrew Sustich, Ph.D.
Associate Vice Chancellor for Research

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April 16 2018

April 17 2018

Schedule

8:30 a.m. - Noon
Fowler Center
Showcase of the Arts – *Music, Theater & Visual Arts*

9:00 a.m. - 11:00 a.m.
Riceland Hall
Creative Musical Performances

11:00 a.m. - Noon
Simpson Theatre
Creative Theatrical Performances

11:00 a.m. - Noon
Bradbury Art Museum Hallway Exhibit & Conference Area
Creative Visual Performances

Noon
Special collaborative performance: Tableau Vivant

8:30 a.m. - 10:15 a.m.
Reng Student Union, 3rd Floor
Concurrent Oral Sessions

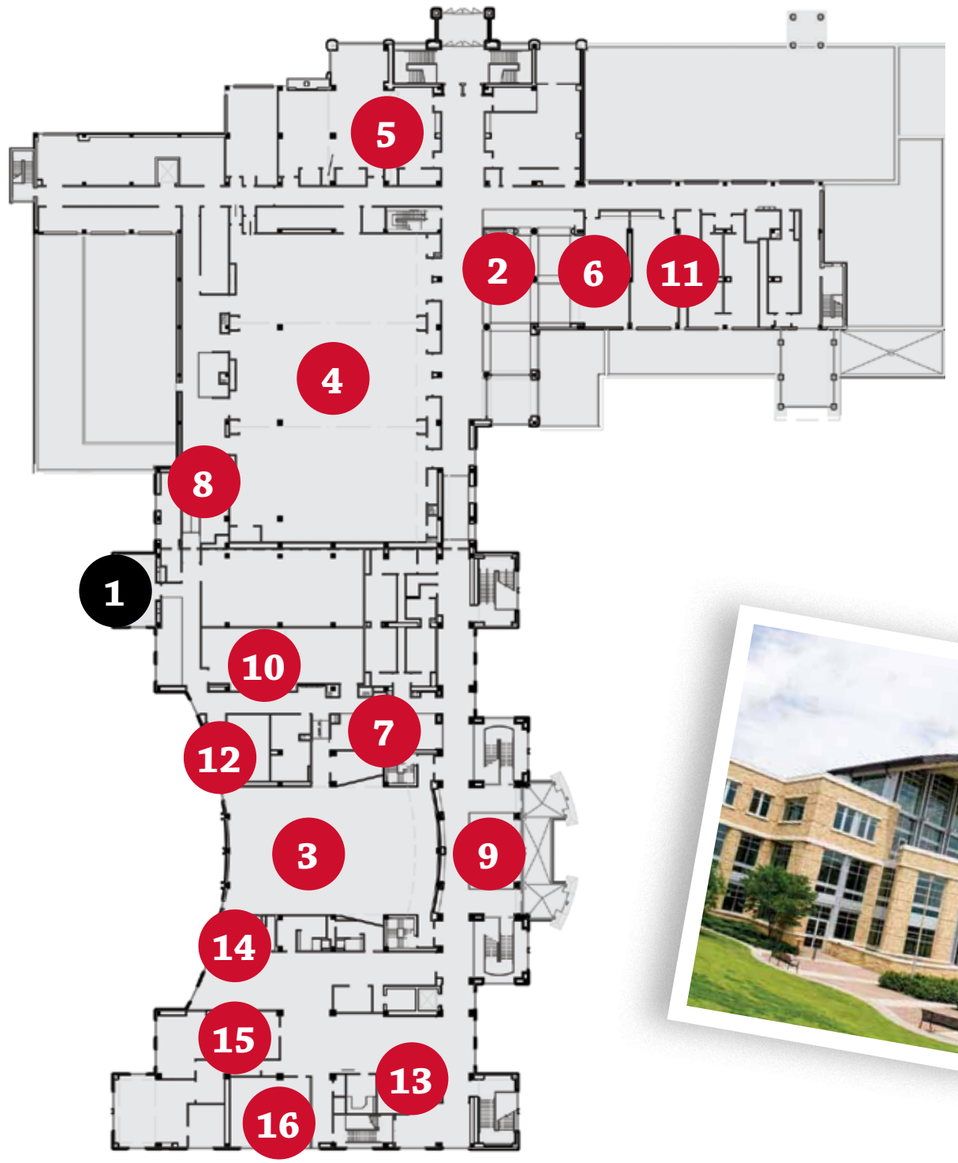
College of Nursing & Health Professions
College of Education & Behavioral Sciences
Including Psychology, Education & Sports Management
College of Liberal Arts & Communication
Including Humanities & Arts

10:30 a.m.
Campus tours with Advancement

10:30 a.m. - 11:45 a.m.
Reng Student Union, 3rd Floor
Poster Session

College of Nursing & Health Professions
College of Education & Behavioral Sciences
College of Liberal Arts & Communication *(Humanities & Arts)*

11:45 a.m. - 12:15 p.m.
Reng Student Union, Alumni Lounge
Networking Lunch



Map (Third Floor, Reng Student Union)

Room Used
Room Not Used

ARKANSAS STATE UNIVERSITY

1) 1909 Suite
2) Alumni Lounge
3) Auditorium
4) Centennial Hall
5) Spring River Room
6) Cache River Room
7) Diamond Lounge
8) Green Room
9) Vaughn Student Lounge
10) Mockingbird Room
11) St. Francis River Room
12) Pine Tree Room
13) Multicultural Center
14) White River Room
15) Black River Room
16) Arkansas River Room

April 17 2018

Schedule

12:15 p.m. - 1:15 p.m.
Reng Student Union, Auditorium
STEAM Keynote
Edwin Faughn, Rainwater Observatory in French Camp, Mississippi

1:30 p.m. - 3:30 p.m.
Reng Student Union, 3rd Floor
Concurrent Oral Sessions
College of Agriculture & Technology
Including Agriculture, Technology & Engineering
College of Sciences & Mathematics
College of Liberal Arts & Communication
Including Communications and Media

3:30 p.m.
Campus tours with Advancement

3:30 p.m. - 4:45 p.m.
Reng Student Union, 3rd Floor
Poster Sessions
College of Agriculture & Technology
Including Agriculture, Technology & Engineering
College of Sciences & Mathematics
College of Liberal Arts & Communication
Including Communications and Media

5:30 p.m.
Cooper Alumni Center
Networking & Reception for Create@State Judges & Invited Guests
(RSVP to Jessica Blackburn, jkscott@AState.edu)

April 18 2018

8:00 a.m. - 8:30 a.m.
Reng Student Union, 3rd Floor
Student Entrepreneurship Welcome
Amy Hopper: Winrock International
Max Dynerman: InfoReady
Kevin Dietz & Paula Estrada de Martin: Baker, Donelson, Bearman, Caldwell & Berkowitz, PC

8:30 a.m. - 10:15 a.m.
Reng Student Union, 3rd Floor
Concurrent Oral Sessions
Neil Griffin College of Business
Including Business Elevator Pitch & Sales Pitch

11:00 a.m.
Reng Student Union, Vaughn Student Lounge & Auditorium
Reception and Create@State Awards

Create@State 2018 is finally here, and we would like to acknowledge the collaborative efforts of the administrators, faculty, staff and students across campus who have made this event possible. This event marks a record year of student presentations and performances, including 130+ oral and creative presentations and 90 poster presentations, made by more than 270 A-State undergraduate and graduate students. The event has grown this year to an impressive three-day event across two venues, Fowler Center and the Reng Student Union, showcasing students' research, scholarly and creative works from all six colleges. We want to thank Dr. Summer Deprow, the Assessment Office and the Program-Level Assessment Committee for the generous assessment grant we received to pilot the cocurricular assessment model for Create@State, marking a first in assessment tools for student research events. We also must recognize the commitment of the student research advisory committee, made up of faculty across each of the colleges, who collaborated with the Research and Technology Transfer Office to conduct the co-curricular assessment of student learning outcomes of students who have participated in the activities of abstract composition and presentation skills. This symposium is designed to be both a showcase and a learning experience in a professional setting for students to enhance their skills of creative and critical thinking and communication across diverse audiences, and we are constantly looking at ways to grow impact for these learning experiences.

We sincerely thank and welcome the 80+ judges, made up of alumni, industry, community and foundations who invest their time and resources in growing opportunities for student experiences reflected in the presentations this week at Create@State. Your engagement with our students and faculty make extraordinary experiences possible for our university.

This year also marks the first in endowed Create@State student awards! We want to thank InfoReady for their generous endowment of two student awards to be presented Wednesday at the Awards Ceremony. We also want to thank Baker, Donelson, Bearman, Caldwell & Berkowitz, PC, for their in-kind awards to be presented for student entrepreneurship. Named awards are important for our students as they gain recognition while preparing for their career, and we express our full gratitude for those who have made this possible.

As this event is a culmination of collaborative efforts across campus, we want to sincerely thank the Student Research and Philanthropy Councils, the Learning Commons, Career Services, Assessment, Creative Services, faculty mentors and the deans and chairs of each of the colleges for working with our Offices of Research & Technology Transfer and Advancement. Also, a big thank you to the individuals who donated to Back the Pack campaign, and the generous sponsorships from the Student Government Association & the College of Nursing and Health Professions to carry out this event.

Sincerely,
Emily Devereux, Executive Director, Research Development
Jessica Blackburn, Director of Foundation Relations & Corporate Engagement

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Keynote Speaker

Edwin Faughn - Artist Statement and Bio

"For many years the universe has been a strong motivating interest in my life. Whether I look out across a lovely green field, study the remains of a fossilized life form or peer into the vast expanse of the heavens, I am amazed by such incredible beauty and elegant design. As an artist and lecturer, much of my greatest pleasure has come from marveling at such magnificent, awe-inspiring handiwork and sharing it with others as faithfully as my growing knowledge, skills and imagination will allow."

Edwin Faughn is an artist and lecturer specializing in space sciences and has presented hundreds of programs to diverse audiences including, but not limited to, universities, museums, schools, churches, civic groups, scouts and various other organizations. His original artwork has been featured in and on the covers of leading international space science magazines, exhibitions and planetarium productions. A few of his credits include but are not limited to Scientific American, Science News, Astronomy, Sky and Telescope, the late Carl Sagan's Planetary Society magazine-The Planetary Report, Federal Express World Headquarters, Crew Training International, IAAA World Tour Exhibition: The Artist's Universe and the world premiere of Titanic: The Exhibition.

Faughn is currently the director of Rainwater Observatory in French Camp, Mississippi, which is one of the largest public observatories in the southeastern United States, and also served nearly 20 years as the art director for the Sharpe Planetarium of the Pink Palace Family Museums in Memphis, Tennessee. His work has also been featured on the main KEPLER website of NASA's Ames Research Center. More of his work can be seen at EdwinFaughn.com.

** - Undergraduate* *** - Graduate*

April 16th, 9:00 a.m. - 11:00 a.m.

CREATIVE MUSICAL PERFORMANCES

RICELAND HALL

9:00 a.m.	**Connor Scroggins***	Spectral Music: a Creative Perspective on Listening and Aural Analysis
9:15 a.m.	**Tye Crawford***	Mirage
9:30 a.m.	**Callie Clark***	Everyone Has Their Own Song
9:45 a.m.	**Crystal Kachevas***	The Songs of Ben Moore: A Creative Approach to Engaging the Modern Audience
10:00 a.m.	**James Washam***	"Catching Shadows" by Ivan Trevino
10:15 a.m.	**Jordan Moquin***	Satie's Influence on Compositional Thought
10:30 a.m.	**Samantha Holt***	From Paper to Disk: The Music Making Process

April 16th, 11:00 a.m. - Noon

CREATIVE THEATRICAL PERFORMANCES

SIMPSON THEATRE

11:00 a.m.	**Hannah Cummins***	100 Hundred Women
11:20 a.m.	**David Norris***	Joan of Arkansas
11:40 a.m.	**Davis Polston***	An Experimental Creation of The John Philip Sousa Workshop by Stephen Gregg

April 16th, 11:00 a.m. - Noon

CREATIVE VISUAL PERFORMANCES

BRADBURY ART MUSEUM HALLWAY EXHIBIT & CONFERENCE AREA

11:00 a.m.	**Madeline Jennings***	Somnia
11:15 a.m.	**David Persell***	Disposable Time
11:30 a.m.	**Autumn Harris***	Throw Aways
11:45 a.m.	**Morgan Presley***	Group Display: Medieval Ink

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* - Undergraduate ** - Graduate

Oral Presentations

April 17th, 8:30 a.m. - 10:15 a.m.

COLLEGE OF NURSING & HEALTH PROFESSIONS, *MOCKINGBIRD ROOM*

8:30 a.m.	**Lauren Gotte***	The Perceived Effects of Peer Tutoring on Nursing Students
8:45 a.m.	**David Holmquist***	The Effect of Photobiomodulation Therapy on Adult Human Fibroblast Cells
9:00 a.m.	**Sandricka Bowen****	Behavioral Changes in Freshman Students
9:15 a.m.	**Jessica Camp****	Quality Improvement Interventions to Improve Adult-Gerontology Clinical Nurse Specialist Student Competencies
9:30 a.m.	**Tammy Hawkins****	Increasing Health Care Providers' Awareness of Health Literacy to Promote Advanced Care Planning
9:45 a.m.	**Rhonda Hill****	Which co-morbidities aligned with FIM scores contribute to readmission rates?

April 17th, 8:30 a.m. - 10:15 a.m.

COLLEGE OF EDUCATION & BEHAVIORAL SCIENCES - SPORTS MANAGEMENT

PINE TREE ROOM

8:30 a.m.	**Sean Sanders****	Means to improve soccer in the United States
8:45 a.m.	**Julie Gauguery****	The Economic Impact of European Mega-Sporting Events On The Hosting Cities/Regions
9:00 a.m.	**Harmanvir Singh****	Measuring the growth of Indian Premium League (IPL) through the years
9:15 a.m.	**Levi Itamar****	ESPE 6133 Sport Finance & Budgeting
9:30 a.m.	**Kara Deshazo****	Athletic Departments and Ticket Prices

April 17th, 8:30 a.m. - 10:15 a.m.

COLLEGE OF EDUCATION & BEHAVIORAL SCIENCES - PSYCHOLOGY

ST. FRANCIS RIVER ROOM

8:30 a.m.	**Cecily Brock***	Affordable versus For-Profit Clinics: Cultural Adaptation towards Hispanic Patients
8:45 a.m.	**Emily Moran***	Lecture Note Taking Methods for Students with ADHD-like Symptoms
9:00 a.m.	**Madalyn Crittenden*** **Shelby Daniele***	"Oh, did you say something?": Mindfulness and phubbing in college students

* - Undergraduate ** - Graduate

9:15 a.m.	**Sarah Hall*** **Amy Tipton***	Effect of Therapy Dogs in Courtroom on Witness Stress Levels
9:30 a.m.	**Elisha Doane*** **Kaitlyn Hale*** **Sierra Mitchell*** **Kashmoney Pride***	Reaction to "Pranking": Perceptions of Practical Jokes as a Function of Relationship

April 17th, 8:30 a.m. - 10:15 a.m.

COLLEGE OF EDUCATION & BEHAVIORAL SCIENCES - PSYCHOLOGY

CACHE RIVER ROOM

8:30 a.m.	**Anthony Adkins*** **Worthie Springers*** **Tristan Sweatt***	Achievers and Leavers
8:45 a.m.	**Kennedy Capps*** **Ashley Chandler*** **Kerri Kramer***	Endangered Red Wolves: Traveling Suitcase for Educators
9:00 a.m.	**Olivia Hitchcock****	Jury Decision-Making and Graphic Evidence: The effects of Auditory vs. Visual Presentation
9:15 a.m.	**Jalisa Damron****	Jury Trials & Inappropriate Student-Teacher Relationships
9:30 a.m.	**Stephen Berry****	Together, They are Troy and Chase: Who Supports Demonetization of Gay Content on YouTube?

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April 17th, 8:30 a.m. - 10:15 a.m.

COLLEGE OF LIBERAL ARTS & COMMUNICATION - UNDERGRADUATE HUMANITIES & ARTS

ARKANSAS RIVER ROOM

8:30 a.m.	**Warren Baxter***	Composing Electroacoustic Music
8:45 a.m.	**Jeremiah Page***	Making Walking Bass Lines from Someone Not Qualified to Talk about Anything Related to Walking
9:00 a.m.	**Nathanael Grimes***	Death, Delay, and Debate: The Failure of the Eads Ship-Railway
9:15 a.m.	**Joseph Brown***	Washington's Spies: The Culper Spy Ring and the Mystery of Agent 355
9:30 a.m.	**Bryan Carmer***	Treasure Island and the Origins of the Swashbuckling Pirate

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* - Undergraduate ** - Graduate

April 17th, 8:30 a.m. - 10:15 a.m.

COLLEGE OF LIBERAL ARTS & COMMUNICATION - UNDERGRADUATE HUMANITIES

WHITE RIVER ROOM

8:30 a.m.	**Stephanie Wyatt***	An Autoethnography Of A Female Gamer
8:45 a.m.	**Wesley Sanders***	Harry Potter and the Resulting Trauma: Presentation of an Original Essay Regarding the Mental and Emotional Damages in Harry Potter
9:00 a.m.	**Sara Helms***	The Inescapable Angel Stereotype in Victorian Literature
9:15 a.m.	**Claire Rowland***	The Mentality of Slavery: Cultural Assimilation in Octavia Butler's Kindred
9:30 a.m.	**Gracie Hicks* Talena Ramneth* Wesley Sanders***	Chavallion House Project: Hogwarts' School Website

April 17th, 8:30 a.m. - 10:15 a.m.

COLLEGE OF LIBERAL ARTS & COMMUNICATION - GRADUATE HUMANITIES

BLACK RIVER ROOM

8:30 a.m.	**Talena Ramnath****	How Harry's Relationship with Voldemort Exhibits the Gothic Doppelgänger Convention
8:45 a.m.	**Kayla Fonseca****	Secondary Characters finding Agency through Trauma within the Harry Potter Series
9:00 a.m.	**Samuel Jackson****	The Noble Savage: Parallels of Native American Subjugation in Harry Potter Centaurs
9:15 a.m.	**Kayla Davis****	Harry Potter and Death: A Complicated Relationship
9:30 a.m.	**Edward Harthorn****	Preserving Historic Cemeteries: Melding Principles and Practicality

* - Undergraduate ** - Graduate

Poster Presentations

April 17th, 10:30 a.m. - 11:45 a.m.

COLLEGE OF NURSING & HEALTH PROFESSIONS
COLLEGE OF EDUCATION & BEHAVIORAL SCIENCES
NEIL GRIFFIN COLLEGE OF BUSINESS
COLLEGE OF LIBERAL ARTS & COMMUNICATION (HUMANITIES & ARTS)

CENTENNIAL HALL

1	**Leah Young****	**CONHP**	A local clinic's use of low-dose computed tomography for lung cancer screening
2	**Lauren Smith****	**CONHP**	A Local Clinic's Adherence to JNC 8 Guidelines on Medication Therapy for Treating Hypertension
3	**Jennifer Arnold****	**CONHP**	A local medical clinic's rate of fundoscopic exam vs the recommended annual exam
4	**Brandy Anderson****	**CONHP**	A retrospective chart review of compliance with prevention of cardiovascular complications in at risk patients according to HEDIS guidelines
5	**Angel Hamill****	**CONHP**	A retrospective chart review of obesity diagnosis in the primary care setting
6	**Charles Gothard****	**CONHP**	A Retrospective Chart Review to Assess Percentage of Pediatric Asthmatics with Allergy Testing on File
7	**Lindsey Gee****	**CONHP**	Are ACEI or ARBS, in accordance with ADA guidelines, being prescribed for hypertension treatment in type II diabetics?
8	**Courtney Chamberlain****	**CONHP**	Are healthcare providers following JNC 8 guidelines on lifestyle modifications for hypertension?
9	**Molly Dresbach****	**CONHP**	Are hypertensive patients over the age of 60 years old treated in accordance with JNC 8 guidelines?
10	**Allison Gragg****	**CONHP**	Are lifestyle modifications prescribed for a diagnosis of pre-hypertension?
11	**Heather Ditto****	**CONHP**	Are males age 30 to 59 diagnosed with hypertension, receiving JNC-8 recommended treatments, achieving blood pressures of less than 140/90?
12	**Jessica Armstrong****	**CONHP**	Are primary care providers discussing diet, exercise, and weight loss with patients who have a BMI ≥ 30kg/m²?
13	**Barbara Coble****	**CONHP**	Cigarette Smoking and the Eighth Joint National Committee Guidelines
14	**Jessica Ayecock****	**CONHP**	Describing the Potential Effects of Educational Offerings on the Organ Donor Registry

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** - Undergraduate ** - Graduate*

15	**Carla Kibbe****	**CONHP**	Diabetes Self-Management Education Referral Rate in a Local Family Practice Versus the National Average
16	**Pooja Ghai****	**CONHP**	Effect of enriched tai chi exercise program on quality of life of older adults residing in the assisted living facility.
17	**Laryssa Blunt****	**CONHP**	Evaluation of Human Papillomavirus Completion Rates Following 2016 CDC Two-Dose Scheduling Update
18	**Yolanda Davis****	**CONHP**	Evidence- based treatment choices: Initial modalities prescribed in newly diagnosed DMT2 patients with HbA1c <7.5%
19	**Lindsey Johnson****	**CONHP**	Healthcare providers and the use of nonpharmacologic weight reduction methods in patients age 65 or older.
20	**Jennifer Crisp****	**CONHP**	Is Spirometry Being Used in Diagnosing COPD?
21	**Andrew Smith****	**CONHP**	Metformin as initial pharmacotherapy in pre-diabetes A1C levels between 5.7% and 6.4%; a quantitative approach.
22	**Jennifer Calas****	**CONHP**	Moving Upstream: The Prediabetes Screening of Individuals Diagnosed with Hypertension, Obesity, or Dyslipidemia in a Northeast Arkansas Primary Care Clinic
23	**Kikanwa Osih****	**CONHP**	Opioids treatment regimen versus marijuana for the management of cancer pain in cancer patients
24	**Whitney Bradford****	**CONHP**	Prescriber Adherence to Allergic Rhinitis Treatment Guidelines
25	**Julie Keefer****	**CONHP**	Provider Adherence to Guidelines for Prescribing Topical Corticosteroids in Pediatric Atopic Dermatitis
26	**Dana Childress****	**CONHP**	Provider Adherence to JNC 8 Guidelines for the Treatment of Patients 18 to 60 years of age
27	**Timothy Bass****	**CONHP**	Provider Adherence to National Statin Therapy Guidelines.
28	**Emma Miller***	**CONHP**	An Analysis of Effective Teaching Methods of a Fine Motor Skill: Golf Putting
29	**Madison Allred***	**CONHP**	Food Innovation Product through the use of a Focus Group
30	**Autumn Forrest***	**CONHP**	Food Innovation Through the Use of Focus Groups
31	**Sara Saucedo*** **Jennifer Taylor***	**CONHP**	Interprofessional Management of Clients with Chronic Musculoskeletal Pain: The Use of a Plant-based Diet to Affect Pain and Functional Status
32	**Perri Wright***	**CONHP**	Low Level Light Therapy and Photodynamic Therapy as an Inhibitor of Serratia marcescens

** - Undergraduate ** - Graduate*

33	**Sarah Eason***	**CONHP**	Product Development Focus Group on Berry Blast Smoothie
34	**Hannah Aldridge***	**CONHP**	Product Development of Fruit and Vegetable Smoothies through the use of a Focus Group
35	**Mikaela Lucy***	**CONHP**	Product Development Through the Use of a Focus Group On Crunchy Crunch Granola
36	**Victoria Wantulok***	**CONHP**	Product Development Through the Use of Focus Groups For PowerCakes
37	**Sarah Roddy***	**CONHP**	Product development through use of a focus group
38	**Haley Shoffner***	**CONHP**	Product development through use of a focus group
39	**Summer Nash***	**CONHP**	Product Development with Focus Group on Quinoa Breakfast Bar
40	**David Holmquist***	**CONHP**	The Effect of Photobiomodulation Therapy on Adult Human Fibroblast Cells
41	**Jordan Maynard***	**CONHP**	The MRSO Exam: Does it benefit the MRI career field positively?
42	**Samantha Overby****	**COEBS**	Financial Insight and Economic Impact of Professional Sport Facilities and Stadia
43	**Khalil Bratton****	**COEBS**	Rising Costs of Interscholastic Sports and its Effect on Participants, Parents, and Sport Administrators
44	**Brian Cook****	**COEBS**	The Financial Impact of Alcohol Sales on Collegiate Campuses
45	**Lauren Dubar***	**COEBS**	Crazy in Love or Just Crazy? Limerence and Psychological Maladjustment
46	**Brittany Dubose*** **Mckenzie Griffin*** **Ashley Hurst***	**COEBS**	Field Testing of Activities for a Digitized Interactive Neuroscience Lab Manual
47	**Faith Allen***	**COEBS**	Is there a Catch, Coach? Perceptions and Effects of Sexual Assault Claims in Athletic Programs
48	**Kyle Madden***	**COEBS**	Self-myofascial release vs. static stretching: the effects on hamstring range of motion
49	**Marva Burgess*** **Kodi Lands***	**COEBS**	Snooping: intrusive behaviors and cheating in romantic relationships
50	**Vanke'Via Garner***	**COEBS**	Sobriety Strategies Among College Students
51	**Rebecca Brittingham*** **Chukwuemaka Ota*** **Jarod Roberts***	**COEBS**	The Impact of Reinforcement Contingency on Interresponse Time Variability in Rats

** - Undergraduate ** - Graduate*

52	**Hannah Glynn*** **Emily Johnson*** **Hannah Knight*** **Abigal Windham***	**COEBS**	The Role of Self-Control in the Daydreaming Process
53	**Anthony Adkins*** **Worthie Springer*** **Tristan Sweatt***	**COEBS (COB)**	Achievers and Leavers
54	**Mollie Mason***	**COLAC**	Taming the Tartan: Analyzing the Breakdown of Scottish Highland Culture after the Battle of Culloden

Oral Presentations

April 17th, 1:30 p.m. - 3:15 p.m.

COLLEGE OF AGRICULTURE, ENGINEERING & TECHNOLOGY

MOCKINGBIRD ROOM

1:30 p.m.	**Sumon Roy****	Applications of Nanotechnology to Predict the Moisture Sensitivity of Asphalt Binders
1:45 p.m.	**Collin Weatherly****	Automatic Robotic Assembly Prototype Design and Fabrication
2:00 p.m.	**Christopher Jones****	Credit Card Skimmer Protection
2:15 p.m.	**MdSabel Nazim****	Particle Motion Simulator in 3D: A MATLAB Program
2:30 p.m.	**Hunter Wood****	Soil exchangable in retention at Various Soil Depths in NE Arkansas Cotton

April 17th, 1:30 p.m. - 3:15 p.m.

COLLEGE OF SCIENCES & MATHEMATICS

ST. FRANCIS RIVER ROOM

1:30 p.m.	**Harold Jack Laws***	Synthesis, antibacterial, and cytotoxicity studies of pyrazole-derived compounds
1:45 p.m.	**Faith Allen**** **Joshua Gray**** **MdRokib Hasan****	Dissecting the role of adhesion kinase FAK in mediating CAP1 regulation of ERK and breast cancer cell functions
2:00 p.m.	**Mohammad Fazle Azim****	Genetic Transformation of Muscadine Grape to Produce Arachidin-2: A Bioactive Stilbenoid with Multiple Benefits for Human Health
2:15 p.m.	**Robert Vernocy****	Nest Site Selection of Eastern Wild Turkey (Meleagris gallopavo silvestris) in a Shortleaf Pine–Bluestem Grass Ecosystem in Western Arkansas.
2:30 p.m.	**Irene Sanchez Gonzalez****	Quantitative Freshwater Mussel (Bivalvia: Unionida) Surveys In The Lower Strawberry River

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2:45 p.m.	**Lana Elkins****	Recombinant Production and Bioactivity of Catfish Interleukin-22 as a Natural Immune Stimulant for Improved Aquaculture Fish Health
3:00 p.m.	**James Gore****	Relative Habitat Use of Threatened and Endangered Bat Species on the Buffalo National River
3:15 p.m.	**Rachel Hampton****	The Effects of Infrared Radiation on Lesser Grain Borer (Rhyzopertha dominica F.) Development and Grain Damage

April 17th, 1:30 p.m. - 3:15 p.m.

COLLEGE OF SCIENCES & MATHEMATICS

CACHE RIVER ROOM

1:30 p.m.	**Jesse Brown***	Adsorption of Volatile Organic Compounds on the Surface of Aerosol Salts
1:45 p.m.	**Sara Brown***	Extraction of Estradiol from Plasma using Low Hazard and Low Cost Organic Solvents
2:00 p.m.	**Jon Mize***	Optical Homodyne: Computer Generated Data and Results
2:15 p.m.	**Patrick Tribbett***	Optimizing LA-LEAF for Trace-Element Detection
2:30 p.m.	**Kristiana Watson***	Removal of an Endocrine Disruptor by Clay-like Oxides
2:45 p.m.	**Audrey Kirk***	Simulation Study for Some Multiple Testing Procedures Based on Covering Principle
3:00 p.m.	**Zachary Rail***	Thermoviscoelastic Rod And Nonlinear Timoshenko Beam System With Dynamic Contact
3:15 p.m.	**Samantha McKnight***	Mangrove Systems as Nurseries for Caribbean Coral Reef Fishes
3:30 p.m.	**John Davis***	Optical Homodyne: Introduction and Mathematical Analysis
3:45 p.m.	**Katelyn Watson***	Optical Homodyne: Experimental Design and Results

April 17th, 1:30 p.m. - 3:15 p.m.

COLLEGE OF LIBERAL ARTS & COMMUNICATION - GRADUATE COMMUNICATION/MEDIA

PINE TREE ROOM

1:30 p.m.	**Chelsea Hays****	How Universities Handle Sexual Assault and Harassment Cases: A Victim's Perspective
1:45 p.m.	**Jonathan Thibault****	Self-disclosure in Digital Media
2:00 p.m.	**Musaed Alshammari****	Social Media's Role in Promoting Volunteerism and Charitable Work in Kuwaiti Society

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** - Undergraduate ** - Graduate*

April 17th, 1:30 p.m. - 3:15 p.m.

COLLEGE OF LIBERAL ARTS & COMMUNICATION - UNDERGRADUATE COMMUNICATION/MEDIA

ARKANSAS RIVER ROOM

1:30 p.m.	**Christian Canizales***	A gendered analysis of the second 2016 Presidential Debate: Muted Group Theory
1:45 p.m.	**Madison Hart***	A Look at the First Female Nominee
2:00 p.m.	**Amber Blade***	Feminisim, The Working Woman
2:15 p.m.	**Tanjela Robinson***	Is there really love in hip hop?
2:30 p.m.	**Jamie Shaw***	Analysis of The Crown
2:45 p.m.	**Christopher Kjorlaug***	Death Becomes Her: A View of Gender Enhancement

April 17th, 1:30 p.m. - 3:15 p.m.

COLLEGE OF LIBERAL ARTS & COMMUNICATION - UNDERGRADUATE COMMUNICATION/MEDIA

WHITE RIVER ROOM

1:30 p.m.	**Lamarcus Cole***	Forms of Feminism in Hidden Figures
1:45 p.m.	**Levi Crawford***	Gender stereotypes in television shows
2:00 p.m.	**Ryoko Uchida***	Gendered women and men in fashion magazines
2:15 p.m.	**Mikka Rolle***	What happened to Monday Standpoint Theory?
2:30 p.m.	**Kyron Henderson***	Liberty for All
2:45 p.m.	**Logan Wescott***	Naked Hustle

April 17th, 1:30 p.m. - 3:15 p.m.

COLLEGE OF LIBERAL ARTS & COMMUNICATION - UNDERGRADUATE COMMUNICATION/MEDIA

BLACK RIVER ROOM

1:30 p.m.	**Mckenzie Garrett***	Parking Issues/Solutions at Arkansas State University
1:45 p.m.	**Kaylianne Weber***	Standpoint Theory as it applies to “The Total Woman”
2:00 p.m.	**Clark Ferguson***	The Difference in Rules and Acceptable Behavior at Sorority Houses compared to Fraternity Houses

** - Undergraduate ** - Graduate*

2:15 p.m.	**Jacey McKinley***	Using the Standpoint Theory to Show How Men are Muted in “Seven Brides for Seven Brothers”
2:30 p.m.	**Coulton Lee***	Situation of the Muted Group Theory
2:45 p.m.	**Shania McGee***	What is Wrong With Our Music Today

Poster Presentations

April 17th, 3:30 p.m. - 4:45 p.m.

COLLEGE OF AGRICULTURE, ENGINEERING & TECHNOLOGY
COLLEGE OF SCIENCES & MATHEMATICS

CENTENNIAL HALL

55	**Sumon Roy****	**COATENG**	Characterization of Asphalt Binder Resistance to Moisture Damage using the Microscopy Technique
56	**Mohammad Hassan****	**COATENG**	Characterization of Paving Asphalt Binders-a Chemistry Perspective
57	**Pruthviraj Pola****	**COATENG**	Comparison of Soybean Vegetation Coverage and Crop Response to Different Cover Crop Treatments based on Aerial Images
58	**Neha Verma****	**COATENG**	Genetic modification of Switchgrass cell wall for improved biomass processability
59	**Kazi Tamzidul Islam****	**COATENG**	Performance Evaluation of Silica Fume (SF) Modified Concrete
60	**MdSaber Nazim****	**COATENG**	Scattered magnetic field in multiple Rayleigh particles systems
61	**MdAriful Hasan****	**COATENG**	System-Reliability Concepts in Bridge Pier Design: Inclusion of Scour and Soil Variability Effects
62	**Shailaja Vemula****	**COATENG**	UAS-Based Remote Sensing for Weed Identification and Cover Crop Termination Determination
63	**MMTariq Morshed****	**COATENG**	Viscosity Temperature Susceptibility Analysis for Nanoclay-Modified Asphalt Binders
64	**Amber Booth***	**COATENG**	Agrobacterium tumefaciens in vacuum infiltration of Zea mays for transient expresion
65	**Brandon Cole***	**COATENG**	Baja Racer - Drivetrain Design for Transfer of Functional Power Aljaber, A., Alsuwaij, A., Cole, B., Williams, C., Stafford, W.
66	**Christopher Jones***	**COATENG**	Credit Card Skimmer Protection

create

** - Undergraduate ** - Graduate*

67	**Haylee Campbell***	**COATENG**	Validation of Insect Control Termination Timing in Arkansas Cotton
68	**Emma Martin****	**CSM**	Assessing Mitigative Properties of Vegetation in Northeast Arkansas Agricultural Ditches using Biotic and Abiotic Measures
69	**Abbas Karouni****	**CSM**	HPLC Profiling of Prenylated Stilbenoids in Diverse Cultivars of Peanut
70	**Cristofer Calvo****	**CSM**	Hydroxyproline-O-glycosylation tag for increasing recombinant protein production using the transient expression platform
71	**Amber Ruby****	**CSM**	Monitoring water quality at sites in the Bayou DeView, Arkansas
72	**Amelia Atwell****	**CSM**	Monitoring water quality through physicochemical assessments in the upper Cache River Watershed, Arkansas
73	**Patrick Roberto****	**CSM**	Sustainable Bioproduction and Antioxidant Activity of Prenylated Stilbenoids from Peanut
74	**Dylan DeRouen****	**CSM**	Thinking outside the Crops: Mapping Vascular Plant Species Richness in the Anthropocene
75	**Robert Rogers***	**CSM**	Applying Nano Sensors Using Reduced Graphene Oxide to Detect Phosphate
76	**Aylin Villalpa-Arroyo***	**CSM**	Are rice seeds with elevated ascorbate less prone to chalkiness?
77	**Lauren Calhoun*** **Courtney Cox*** **Joshua Gray*** **MdRokib Hasan*** **Takida Phillips***	**CSM**	**C**AP1 in pancreatic cancer: a novel role in mediating growth factor signals to control cancer cell invasiveness
78	**Michael Trusty***	**CSM**	Does Axle Grease Effectively Protect Bluebird Nests from Predators?
79	**Amanda Trusty***	**CSM**	Does frequently visiting a bluebird nest increase predation risk?
80	**Parker Knapp***	**CSM**	Metabolic Engineering to Enhance the Health Benefits of Muscadine Grape
81	**Hunter Holcomb***	**CSM**	Noise/Vibration Reduction in Vacuum Cleaner using Acoustic Analysis
82	**Krishna Sasa Vellanki*** **Kennith Swafford***	**CSM**	Optimizing the Extraction Process of Bio-active Compounds in Hairy Root Cultures of Peanut
83	**Steven Cooper***	**CSM**	Oxygen Mediated Cross-Coupling of Silicon and Boron Compounds
84	**Hilary Canada***	**CSM**	Phylogeographic analyses suggest cryptic diversity within the Bluntnose Darter, Etheostoma chlorosoma
85	**Kristiana Watson***	**CSM**	Removal of an Endocrine Disruptor by Clay-like Oxides

** - Undergraduate ** - Graduate*

86	**Faith Allen*** **Joshua Gray*** **MdRokib Hasan***	**CSM**	Roles for FAK and c-Abl in mediating CAP1 regulation of ERK and the invasiveness and proliferation of breast cancer cells
87	**Chineche Aniemena***	**CSM**	Standardization of Photosynthetic Efficiency Measurements in Rice Using a MultispeQ Instrument
88	**Kei Ohgo***	**CSM**	Synthesis of new dihydropyrimidinones and their testing with the ESKAPE pathogens
89	**Jennifer Bryant***	**CSM**	The Hunt for Bigleaf

Oral Presentations

April 18th, 8:30 a.m. - 10:15 a.m.

NEIL GRIFFIN COLLEGE OF BUSINESS - SALES PITCH

AUDITORIUM

Tori Bell	tori.bell@smail.AState.edu
Matthew Strack	matthew.starck@smail.AState.edu
Shelby O'Brien	shelby.obrien@smail.AState.edu
Hayden Henderson	hayden.hendero@smail.AState.edu
Kiel Causey	kiel.causey@smail.AState.edu
Jordan Sheets	jordan.sheets@smail.AState.edu
Payton Sledge	Payton.sledge@smail.AState.edu
Liz Burris	elisabet.bussis@smail.AState.edu
Jenny Keller	jkeller@AState.edu
Kayla Priddy	kayla.priddy@smail.AState.edu
Madison Riley	Madison.riley1@smail.AState.edu

create

* - Undergraduate ** - Graduate

* - Undergraduate ** - Graduate

April 18th, 8:30 a.m. - 10:15 a.m.

NEIL GRIFFIN COLLEGE OF BUSINESS - BUSINESS ELEVATOR PITCH

ARKANSAS RIVER ROOM

Adam Aldhanki	adam.aldhanki@smail.AState.edu	Farming Crickets, the Future of Food
Alicia Dyer	alicia.dyer@smail.AState.edu	Wine About It
Brenton McKinney	brenton.mckinney@smail.AState.edu	Smart-cart
Colin Thompson	colin.thompson@smail.AState.edu	Mods for Rods: Customize your Ride
Collin Nord	collin.nord@smail.AState.edu	Waxx
Devon Newton	devon.newton@smail.AState.edu	New & Improved Blackboard
Ervin Torres Meza	ervin.torresme@smail.AState.edu	“Desire” Upscale Dessert Bar
Hunter McQueen	hunter.mcqueen@smail.AState.edu	ALLSTAR Technologies Inc.
Jacob Green	Jacob.green@smail.AState.edu	Smart Sport Headphones
Jacob Sanders	jacob.sanders1@smail.AState.edu	VoiceGate: Background Noise Filter for Smartphones
Jake Hickman	jake.hickman@smail.AState.edu	Delivery/Storage/Pickup Solutions

April 18th, 8:30 a.m. - 10:15 a.m.

NEIL GRIFFIN COLLEGE OF BUSINESS - BUSINESS ELEVATOR PITCH

BLACK RIVER ROOM

John Carlile	johnatha.carlile@smail.AState.edu	Cell Phone Lockdown
Jordan Kasza	jordan.kasza@smail.AState.edu	Gas Station Remodeling
Joshua Goldsmith	joshua.goldsmit@smail.AState.edu	Future of Rugby Mouth Guards
Kirk Kalson	kirk.kalson@smail.AState.edu	Bath Accessories Technologies
Leslie Rogers	leslie.rogers@smail.AState.edu	Just In Case Laptop Case
Mallory Long	mallory.long@smail.AState.edu	‘The Buzzed Cut’
Meng-Fan (Jackson) Wu	mengfan.wu@smail.AState.edu	Screeming- a new way to enjoy movies
Miranda Keys	miranda.keys@smail.AState.edu	Rollin’ in the Dough
Nathan Bailey	Nathan.bailey@smail.AState.edu	Dam-Right Company LLC: Fight floods the Dam-Right Way
Nicholas Mero	Nicholas.mero@smail.AState.edu	100% Plant-Based Biodegradable Grocery Bags
Peyton Roe	peyton.roe@smail.AState.edu	Smart Study App

Oral Presentations

April 18th, 8:30 a.m. - 10:15 a.m.

NEIL GRIFFIN COLLEGE OF BUSINESS - BUSINESS ELEVATOR PITCH

WHITE RIVER ROOM

Rylee Lewis	rylee.lewis@smail.AState.edu	Yesterday’s Dollars, Today’s Investments
Sadie Johnson	sadie.johnson@smail.AState.edu	Immerse: Get Involved
Skylar Staib	skylar.staib@smail.AState.edu	LockdUp: A Solution to Keeping Property Secured
Thomas Hills	thomas.hills@smail.AState.edu	Instant Result STD Test
Tristan Tippitt	tristan.tippitt@smail.AState.edu	Solar energy
Tromiyah Jacobs	Tromiyah.jacobs@smail.AState.edu	CLC campus life connected
Tyler Clement	tyler.clement@smail.AState.edu	Innovative break light solutions
Westen Wagner	westen.wagner@smail.AState.edu	Game Processing in NEA
William Crowley	william.crowley@smail.AState.edu	Apache: A New POS System That Offers Many Other Benefits To Your Business
Dylan Quickel	william.quickel@smail.AState.edu	Mobile Billboards
Yagiz Akkoc	yagiz.akkoc@smail.AState.edu	Secure Mailbox

Oral & Creative Presentations

create

April 16th, 9:00 a.m. – 11:00 a.m.
Creative Musical Performances, Riceland Hall

SPECTRAL MUSIC: A CREATIVE PERSPECTIVE ON LISTENING AND AURAL ANALYSIS

Connor Scroggins - Undergraduate
connor.scroggin@smail.AState.edu

Spectral music is the study of timbre and its basis in harmonic relationships. This paradigm of composition is named after "spectral analysis," the study of harmonics, or overtones, present in a single sounded pitch. Except for a pure sine wave, a sounding pitch is comprised of many overtones that are mathematically related to the sounded frequency. These rational relationships to the "fundamental frequency" produce resonances that we perceive not individually but rather as a composite sound, shaping the timbre of the sounded pitch. Furthermore, spectral composition involves the use of "inharmonic" frequencies that do not rationally relate to the fundamental frequency, serving to artificially affect the composite resonance and tone. Spectral music challenges us to listen to music with a significant focus on timbre. This contrasts with conventional styles of composition. Normally, motifs create structure, and timbre is a secondary musical detail that serves the motifs; however, in spectral music, timbre is the primary concern, with motivic ideas and structure developing from timbre itself. This sort of listening gives us a new perspective with which to listen and study music of the past and serves as a gateway to refine our creation of music of the future.

Mentor: Timothy Crist, tcrist@AState.edu

MIRAGE

Tye Crawford - Undergraduate
tye.crawford@smail.AState.edu

As humanity begins to advance our understanding of science, we look back on our past innovations and look to see how far we've come. From the wheel to the iPad, we have improved upon everything by looking at the defective problems we had. In this piece, I explore the nostalgia of our past and recreate some of the things we remember, either with happiness of simpler times, or from frustration of defective equipment. The sound of glitching software is a sound my generation has come to know as something that happened when we were kids and our computers couldn't handle the input we put into them. This piece is an original sound scape created to revisit some of the feelings my generation had as kids in an atmospheric way. I took recordings of various noises in my house, put pitches in, and chopped up the whole recording to replicate the sound of glitching software.

Mentor: Timothy Crist, tcrist@AState.edu

EVERYONE HAS THEIR OWN SONG

Callie Clark - Undergraduate
callie.clark@smail.AState.edu

There exists a correlation between music and human personality. The attributes of a person including their personality, behaviors, appearance, actions and language form an impression that provokes musical imagery. There is a fluid connection that can be learned between the human experience and the artistic experience. When new human connections are made, those points of contact contain expressive content that may be translated into musical material and meaningful artistic designs. This presentation will involve examples of how human engagement inspires the formation musical content in my original music composition and the nature of the resulting musical argument. Everyone has a theme song, different and unique.

Mentor: Timothy Crist, tcrist@AState.edu
Mentor: Derek Jenkins, djenkins@AState.edu

THE SONGS OF BEN MOORE: A CREATIVE APPROACH TO ENGAGING THE MODERN AUDIENCE

Crystal Kachevas - Undergraduate
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Today, the words "opera" and "recital" have a negative connotation that goes hand-in-hand with the words "outdated" and "boring." In response, composers like Ben Moore are starting to take a creative approach to engaging the modern audience with music that is written specifically for them. My PowerPoint presentation over Moore's musical process accompanied by musical examples encompasses not only the analytical aspects of Ben Moore's music but the issue regarding the modern audience's feelings toward operatic and recital repertoire. I will present his use of tempi, meter, key and text painting to portray a certain mood to his audiences. My musical examples will highlight the main musical elements used to draw in the modern audience culminating in a lengthy example of one work, "I Love Teaching Voice." My research explores the concept of performers connecting to an audience through a hybrid of composing that allows all to enjoy the beauty of operatic and recital repertoire despite their musical background or lack thereof.

Mentor: Marika Kyriakos, mkyriakos@AState.edu

"CATCHING SHADOWS" BY IVAN TREVINO

James Washam - Graduate
james.washam@smail.AState.edu

"Catching Shadows" was composed by Ivan Trevino (b. 1983) in 2013. Trevino originally wrote the piece as a duet and later, wrote a sextet version. "Catching Shadows" was commissioned by the Eastman School of Music percussion ensemble at 2013 Percussive Arts Society International Convention (PASIC). The piece is based from rock music, and contains riff-based grooves and pop-inspired melodies. One feature of the piece is the development of a marimba riff that is established by marimba 2. The riff is enhanced by two cajons that resemble a drum set groove, and a melody that is played by marimba 1. The riff continues to develop with added layers of melody from the vibraphone players. "Catching Shadows" not only has rhythmically syncopated parts that cause a rock like groove, but also has a big dynamic and emotional range. The middle section is more beautiful, delicate, and legato. The piece then builds back up for one last powerful section. The piece ends with a decrescendo from the keyboard instruments of material from the beginning of the piece, ending on one last note from the marimba 1.

Mentor: Craig Collison, ccolliso@AState.edu

SATIE'S INFLUENCE ON COMPOSITIONAL THOUGHT

Jordan Moquin - Undergraduate
jordan.moquin@smail.AState.edu

Erik Satie's musical influence has inspired many composers. His music is unique in its use of registral and textural space, minimalist tendencies, presence of short, fragmented and contained musical ideas, and a curious playfulness and theater that provokes imagery. Perhaps most fascinating about Satie is that his music inspired the work of artists across genres of music including rock, progressive rock, and psychedelic music, but also impacted film and visual artists as well. This presentation will involve the direct and indirect influence of Satie's music on my creative musical thought. Aspects of melody, harmonic language, musical growth, stasis, texture and perceptual aspects will be discussed. Comparisons of Satie's piano music and my own creative work will be illustrated.

Mentor: Timothy Crist, tcrist@AState.edu

FROM PAPER TO DISK: THE MUSIC MAKING PROCESS

Samantha Holt - Undergraduate
samantha.holt1@smail.AState.edu

The intent of this creative thesis is to explore the process by which music is transformed from an idea into a fully edited recording which an audience can enjoy. This presentation will showcase three distinct pieces that varied in instrumentation, compositional technique and style. Each piece will be played from a recording, with a discussion about the creative process behind each piece. Each piece began as a simple motif, or musical idea, and was developed into a full musical score. One piece is Latin in style and brings the audience to a place of improvisation, where the performers that are recorded fully express themselves within the context of the piece. Another brings elements of joy, while alluding to a famous piece in classical music as well as displaying prominent features of minimalism. The final piece explores the realm of electronic music and was created solely with software. The process of editing and recording each piece will also be discussed.

Mentor: Timothy Crist, tcrist@AState.edu
Mentor: Kenneth Carroll, kdcarroll@AState.edu
Mentor: Tara Schwab, tschwab@AState.edu

April 16th, 11:00 a.m. – Noon
Creative Theatrical Performances, Simpson Theatre

100 HUNDRED WOMEN

Hannah Cummins - Undergraduate
hannah.cummins@smail.AState.edu

How can stories be told through movement? These are questions I sought to answer through directing this performance of Kristina Halvorson's 10-minute play, 100 Women. Rehearsals focused on improvisational movement through techniques such as Gabrielle Roth's 5 Rhythms as well as Tina Landau and Anne Bogart's adaption of Viewpoints allowed the actors connect to their bodies and use them to express meaning and emotion. These physical explorations helped the actors find movement and pictures to help bring Halvorson's story to fruition on stage. Through extensive research and discussion of the script, my rehearsals nailed down stage pictures and guided actors through choosing tactics and objectives to tell this story in the clearest way possible. While set in the contemporary world, the story is product of women's history and women's ever-changing place in society. This performance, feminist in nature, asks the question, "What is the value of female friendships and what are the dangers of limiting our relationships to romantic love?"

Mentor: Timothy Bohn, tbohn@AState.edu

JOAN OF ARKANSAS

David Norris - Undergraduate
jonathan.norris@smail.AState.edu

People allow themselves to become trapped in society; their lives become stagnant and unchanging until the life they have built becomes a prison. Joan of Arkansas is a 10-minute play that explores this idea and presents it to us in the form of two college students studying for final exams. The two are studying Joan of Arc and Oscar Wilde respectively, and all the while a bird is present, distracting the pair from their studies. The artistic struggle is accurately portraying these historical figures through the college students, and accurately presenting the bird as a metaphor of their lives and struggles. Joan of Arkansas takes two relatable students, one of whom hails from Arkansas, and uses these familiar figures to show us how we can let our everyday lives and stresses trap us in a prison of our own design and keep us from actually living. The audience gets a glimpse into the lives of these two students, and hopefully will see themselves reflected on stage; possibly they will leave the performance and reflect on what their own lives and make an effort to break free from their own prisons.

Mentor: Timothy Bohn, tbohn@AState.edu

AN EXPERIMENTAL CREATION OF THE JOHN PHILIP SOUSA WORKSHOP BY STEPHEN GREGG

Davis Polston - Undergraduate
davis.polston@smail.AState.edu

Stephen Gregg's The John Philip Sousa Workshop is a great example of the creation and exploration needed to make theatre. This witty, creative, and far-from-ordinary play tells the story of audience members watching and reacting to a musical performance allegedly arranged by John Philip Sousa. The structure of the show comments on the environment in which art is developed, critiqued, analyzed and even performed. The staging challenges specific paradigms that the theatre has established for itself. Additionally, the show requires an incredible amount of research to ensure it is given necessary justice. With extensive preparation, explorative rehearsals, and an ultimate sense of fun, The John Philip Sousa Workshop will be a bold creation orchestrated through the student body of Arkansas State University.

Mentor: Timothy Bohn, tbohn@AState.edu

April 16th, 11:00 a.m. – Noon
Creative Visual Performances, BAM Hallway Exhibit & Conference Area

SOMNIA

Madeline Jennings - Undergraduate
madeline.jennings@smail.AState.edu

When I began my academic career at Arkansas State, my work had no consistent direction. It was in my second painting class that I began to develop an artistic voice of my own, and it was my work with printmaking that led me to voice an identification with surrealism as a form of artistic expression. Surrealism, the offspring of the anti-war Dadaist movement and Freudian psychoanalytic theory, provided artists in the early 20th century with a vehicle to marry the conscious and subconscious in their work. In my opinion, surrealist works have remained relevant in the decades following the world wars because of a pressing awareness that real life often makes no rational sense. This frightening feeling of not having the capability to explain one's own world and mind is even more poignant for individuals such as myself who suffer from mental illness. I am especially mindful that I cannot trust my own perceptions. I believe that this has further fueled my love for art that depicts nonsense. Just as I have found refuge in the works of artists such as Ronit Baranga and René Magritte, my wish is that others will find a place of safety in mine.
(*2 prints, 1 painting, 1 ceramic sculpture)

Mentor: Katherine Baker, katbaker@AState.edu

DISPOSABLE TIME

David Persell - Undergraduate
david.persell@smail.AState.edu

As a team presentation from the 24-hour art event we were given the theme of "disposability ". Our team of four worked on an installation of a large hanging sculpture made largely from disposable items. Our concept was the commodity of time. We are all given the same 24 hours each day to use. Is this valuable gift of time wasted or invested? This commodity cannot be recalled, recycled, saved or stored...it must be used! The way we handle this commodity represents choices and decisions we make. Each choice turns a cog that has a rippling effect not only on our lives but those around us. In the end, our lives will be a reflection of how we have invested our years, our months and weeks, our days down to the last second. This experience not only caused us to reflect on our use of time, but forged a great collaborative friendship even though there was an age span of more than forty years between us!

Mentor: Katherine Baker, katbaker@AState.edu

THROW AWAYS

Autumn Harris - Undergraduate
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Megan Weaver - Undergraduate
megan.weaver@smail.AState.edu
Lauren Bunting - Undergraduate
lauren.bunting@smail.AState.edu
Kierra Crenshaw - Undergraduate
kierra.crenshaw@smail.AState.edu

The bulk of us are coveting trash and giving it value. The theme of "disposability" was set to a 24-hour deadline and the finished result was an installation piece of a cereal box hanging from the ceiling and pouring onto the floor. Initially we had a more abstract idea and eventually after plentiful sketching and discussion we landed on the topic of how wasteful children are. We all compared small stories of what we had once held important in our own childhoods and landed on a common desire: the prize from the cereal box. Going in, we wanted to emphasize the materialistic quality and impulsivity of the wish for the toy, which is why instead of just using physical trash to make our artwork, we also made the cereal trash itself. This is where Gavin the Garbage Can came in as the star of the cereal and the featured prize. We wanted the audience to see how the child viewed the cereal as trash, just the means to get the toy. But in the end, the toy is trash as well, as it will be disposed of once boredom sets in and a new object of desire is discovered.

Mentor: Katherine Baker, katbaker@AState.edu

CREATE@STATE (GROUP DISPLAY): MEDIEVAL INK

Morgan Presley – Undergraduate

Art never goes out of style -- nor does its various materials. As part of a group project in Drawing I, our class examined an ancient media, iron gall ink, which although can show age over time, has been used to create many timeless pieces. While historians still try to concoct an accurate representation of it, iron gall ink was widely known from the fourth century on. The ink is created from crushed oak galls, or the immune response produced by oaks to parasitic gall wasps that deposit their eggs in the trees. Although the word "parasitic" repulses some, the insect still embodies a beautiful lifecycle, and thus prompted us to depict it using contour drawings. To create this media, we crushed twenty gall nuts found underneath local oak trees and put the powder in water. Letting that ferment for three weeks, we then added ferrous sulfate, turning the reddish-brown liquid black and added gum arabic for smoother consistency. Using this natural media, we want to show our appreciation for the wasp itself. These intricate drawings can only show so much of the true beauty of the insect. Forget that it is a parasite, and it too can be charming.

Mentor: Catherine Sullivan, csullivan@AState.edu

April 17th, 8:30 a.m. – 10:15 a.m.
College of Nursing & Health Professions, Mockingbird Room

THE PERCEIVED EFFECTS OF PEER TUTORING ON NURSING STUDENTS

Lauren Gotte - Undergraduate
lauren.gotte@smail.AState.edu

Aim: To explore the effects of being a nursing student peer tutor. Background: Evidence shows that there are benefits for student tutoring by a peer, including development of collaborative skills, teaching skills, and evaluative judgment. However, the benefits of being a nursing peer tutor have not been explored. Methods: A qualitative study was performed using semi-structured interviews. The sample consisted of three nurses that were peer tutor instructors while they were nursing students. Data were collected over a 10-week period. Results: Qualitative data analysis was conducted using content analysis and constant comparison. The three global themes of professional, emotional, and social effects were identified. Within those three themes, seven subthemes emerged. The subthemes included enhanced confidence in knowledge and skill, refinement of leadership skills, encouragement to further education, emotional satisfaction, added stress, time consumption, and enhanced bonding with peers. Conclusion: The findings of this study have the potential to influence more schools of nursing to adopt peer-assisted learning programs. Post-graduate benefits to being a peer tutor may encourage more students to participate and motivate them to dedicate more energy to tutoring. The perceived effects of peer tutoring on nursing students continues to evolve and warrants further research.

Mentor: Krista Snellgrove, ksnellgrove@AState.edu

THE EFFECT OF PHOTOBIOMODULATION THERAPY ON ADULT HUMAN FIBROBLAST CELLS

David Holmquist - Undergraduate
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Fibroblast cells play a key role in skin wound healing. Various techniques including photobiomodulation therapy (PBMT) have been used to facilitate such process in vivo. As a non-invasive method, PBMT carries many advantages and seems to be a promising method for wound healing; however, the standard protocol of PBMT has not been clearly established due to the inconsistence of study results. We hypothesize that different conditions of PBMT may have different effects on fibroblast cell proliferation. Different wavelengths of PBMT including 850nm red light, 625nm infrared light, and 464nm blue light are delivered to cultured human fibroblast cells at different fluences including 1J/cm2, 3J/cm2, 5J/cm2, 7J/cm2, and 9J/cm2. Cells without any light treatment are used as the control. Cell proliferation, oxidative stress levels, and collagen levels are measured following light treatments. Our results indicate that red, infrared, and especially blue PBMT significantly prevent cell proliferation compared to the control. We anticipate that the oxidative stress and collagen levels will correspondingly decrease as well in PBMT treated groups. In conclusion, low doses of PBMT may adversely prevent wound healing in certain conditions. Extended research is needed to further explore the optimize condition of PBMT to enhance wound healing.

Mentor: Junlin Zhang, jzhang@AState.edu

BEHAVIORAL CHANGES IN FRESHMAN STUDENTS

Sandricka Bowen - Graduate
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Introduction: Arkansas consistently ranks among the nation's top three most unhealthy states with high obesity levels, low physical activity rates and tobacco use. A-State has an opportunity to implement positive healthy behavioral changes for freshman students transitioning from adolescence into adulthood. The purpose of this study is to determine current health behaviors in A-State freshman. Methods: An electronic survey on healthy behaviors was developed and piloted in Spring 2017. The final survey was sent to 1,424 freshmen enrolled in First Year Experience class in Fall 2017. Results: The return rate was 23 percent (326 /1,424) for the Healthy Behaviors questionnaire. Results indicated that majority of freshman students eat processed foods, drink sugar-sweetened beverages and do not meet the minimum weekly physical activity requirements. The major reason for not exercising was "not having enough time." Conclusions: Freshman at A-State reported unhealthy behaviors that consistently lead to chronic disease and poor mental health. Providing students with time management skills and implementing behavior change programs is needed on the A-State campus.

Mentor: Shawn Drake, sdrake@AState.edu
Mentor: Pam Towery, ptowery@AState.edu

QUALITY IMPROVEMENT INTERVENTIONS TO IMPROVE ADULT-GERONTOLOGY CLINICAL NURSE SPECIALIST STUDENT COMPETENCIES

Jessica Camp - Graduate
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The Advanced Practice Registered Nurse (APRN) Consensus Model established guidelines in 2008 for states to determine APRN practice through licensing, accreditation, certification and education (LACE). The Master of Science Nursing (MSN) Adult-Gerontology Clinical Nurse Specialist (AGCNS) education curriculum was critically examined for evidence to verify gaps in the incorporation of the national guidelines and competencies. Competencies are used to ensure mastery of content in MSN APRN programs of study. A pilot study was conducted, and it confirmed that there were deficits in the knowledge of some competencies and confusion in the role of the MSNAGCNS by students, preceptors and practicing CNS providers. The purpose of this research project is to examine outcomes of implementing Adult-Gerontology Clinical Nurse Specialist competencies designed to meet the APRN Consensus Model into the CNS program specialty. National certification rates, end-of-course evaluations, scores from the simulation-based case study, student surveys, preceptor feedback and an employer satisfaction survey will be analyzed for this descriptive study. Data collection is ongoing with analysis pending. Program gaps are discussed and student learning is measured by performance on end-of-course exams, program competency exam and the certification pass rate for this specialty.

Mentor: Debbie Shelton, dshelton@AState.edu

INCREASING HEALTH CARE PROVIDERS' AWARENESS OF HEALTH LITERACY TO PROMOTE ADVANCER CARE PLANNING

Tammy Hawkins - Graduate
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Only 18-30 percent of Americans have advance directives despite the passage of the Patient Self- Determination Act of 1991. Futile and unwanted care occurs at the end-of-life. The purpose of this project is to determine if implementation of an advance care plan visit using health literacy interventions will increase advance care plan discussions and completion rates of advance directives/advance care plans. A quasi-experimental design pilot study completed in 2017 consisted of 21 participants from an internal medicine clinic in Northeast Arkansas. A sample t-test comparing pre-test scores and post-test scores demonstrated a statistically significant improvement in scores. A process for advance care plan visits with annual wellness visits for Medicare beneficiaries will be implemented in the internal medicine clinic. Interventions addressing health literacy from the AHRQ Toolkit will be incorporated into advance care plan visits. A quasi-experimental design with convenience sampling of Medicare beneficiaries aged 65 and older will be used. Completion rates of advance directives before and after the intervention will also be analyzed using the t-test. Increasing advance care plan discussions can lead to increased advance directive completion rates promoting patient-centered care, less aggressive and futile treatment with fewer deaths in the acute care setting, and decreased healthcare costs.

Mentor: Debbie Shelton, dshelton@AState.edu

WHICH CO-MORBIDITIES ALIGNED WITH FIM SCORES CONTRIBUTE TO READMISSION RATES?

Rhonda Hill - Graduate
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Readmission rates to acute care during inpatient rehabilitation stays are frequent and expensive. Readmissions cost individual rehabilitation facilities thousands of dollars each year and are reported to cost Medicare over $17 billion annually. HealthSouth Rehabilitation Hospital of Jonesboro reports approximately 200 readmissions to acute care yearly. Preventing one acute care transfer monthly will save HealthSouth approximately $150,000 yearly. Decreasing readmissions by 50 percent has the potential to save the facility $1.2 million annually. The contributing factors of readmission are not known but certain patient populations may be at higher risk. Few studies examining this phenomenon have been conducted, to date. The purpose of this study is to determine if patients with certain functional independence measure (FIM) scores and a diagnosis of diabetes, chronic kidney disease, hypertension or heart failure have a higher probability of acute care readmission. A retrospective chart review of all readmissions from June 2016 to May 2017 was performed to determine if a correlation between FIM scores, comorbidities and readmissions exist. Data has been collected and analysis is underway. Determining which co-morbidities and FIM scores are linked with readmissions will allow rehabilitation facilities to develop protocols for screening patients who can endure a more productive, cost-effective rehabilitation.

Mentor: Debbie Shelton, dshelton@AState.edu

April 17th, 8:30 a.m. – 10:15 a.m.
College of Education & Behavioral Sciences – Sports Management, Pine Tree Room

MEANS TO IMPROVE SOCCER IN THE UNITED STATES

Sean Sanders - Graduate
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The United States men's national soccer team failing to qualify for the 2018 FIFA World Cup was one of the lowest moments in the country's underwhelming men's soccer history. The 2-1 loss at Trinidad and Tobago calls for drastic changes and improvements if the country wants to be relevant in the international soccer community. Research so far indicates that improving the quality of American club leagues will lead to improving the national team. While leagues like Major League Soccer try to improve, players should be exported to better leagues so they can return to strengthen the national team. And if Americans are willing to pay for it through tax dollars, a national soccer center should be built to recruit and train the country's best soccer players. Other means will be explored through the perspective or sport finance.

Mentor: David LaVetter, lavetter@AState.edu

THE ECONOMIC IMPACT OF EUROPEAN MEGA-SPORTING EVENTS ON THE HOSTING CITIES/REGIONS

Julie Gauguery - Graduate
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This paper will provide information about the economic impact of a city for hosting mega sports events using the analysis of events in European cities. The paper will discuss the revenue and the cost of the mega-sport as well as the long-term economic impact of the event, and will analyze the economic growth of the city based on the mega-sport event hosted. The paper will focus on three main mega-sporting events which will be analyzed: The tennis tournament "Rolland-Garros" in Paris, the 2012 Olympic games in London, and the 2014 Ryder Cup in Pertshire, Scotland. This paper contributes to the realistic approach of hosting a mega-event and help cities in bidding for hosting a future sport event.

Mentor: David LaVetter, lavetter@AState.edu

MEASURING THE GROWTH OF INDIAN PREMIUM LEAGUE (IPL) THROUGH THE YEARS.

Harmanvir Singh - Graduate
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This paper will measure the economic growth of IPL through the years since it started 10 years ago, it will focus on how the lucrative cricket league has impacted the economy of the host country i.e. India. It will focus on the values of the different teams involved, their growth and how it impacts their respective states. To give a general view this season (2018), IPL renewed its media right and bids were placed by social media giants such as Facebook and Twitter and telecom companies such as Airtel and Relience. The bid was taken by Star India for an amount of $2.5 billion, which is an estimated increase of 255 percent.

Mentor: David LaVetter, lavetter@AState.edu

ESPE 6133 SPORT FINANCE & BUDGETING

Itamar Levi - Graduate
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The Effect of Mega Sport Events on the Hosting Cities/Countries. The following paper will explore the economic effects on cities that hosted a mega sport event such as a World Cup or Olympic games. To do so, the paper will analyze three major mega sport events that took place in the past 20 years. The mega sport events that were chosen for the paper are: The London 2012 Summer Olympics, 2010 FIFA South Africa and the 2014 Sochi Olympics. The paper reveals the financial changes that the hosting city/country experienced before, during and after the mega sport event took place. In addition, the paper will discover if the mega event had a negative or positive impact on the local economy and businesses. For better understanding of the financial changes that occurred in the hosting places, the paper will compare different revenues and losses which happened during the events.

Mentor: David LaVetter, lavetter@AState.edu

ATHLETIC DEPARTMENTS AND TICKET PRICES

Kara Deshazo - Graduate
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University athletic departments throughout the nation all have different aspects that make their athletic programs unique. This article takes a look into the understanding how these athletic departments determine the price of tickets to their sporting events. The only consistency between any athletic department stems from the selling of tickets. Ticket prices can be outrageously high for some events while affordable for others, but the question is why? Why do athletic departments decide to raise their ticket prices to their athletic events? "Prices change daily based on factors such as team performance, individual player performance, ticket prices in the secondary market, and weather." (Parris, Drayer, & Shapiro, 2012) When a team is performing well the departments will raise the prices. Other factors that affect ticket pricing are opponents, donations, the type of event, the target audience, and other factors from previous seasons. When athletic departments fluctuate these prices, it can take a toll on sales. "Of course, more frequent price adjustments may lead to other unforeseen consequences such as consumer confusion or perceptions of price unfairness." (Drayer, Shapiro, & Lee, 2012) This presentation will give a greater understanding of how ticket prices are determined and how society views these changes.

Mentor: David LaVetter, lavetter@AState.edu

April 17th, 8:30 a.m. – 10:15 a.m.
College of Education & Behavioral Sciences – Psychology, St. Francis River Room

AFFORDABLE VERSUS FOR-PROFIT CLINICS: CULTURAL ADAPTATION TOWARDS HISPANIC PATIENTS

Cecily Brock - Undergraduate
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The surge of the Hispanic population in the Delta region has outpaced the resources needed to adapt to cultural and lingual barriers in the healthcare field. Part of cultural adaptation is accommodating for these barriers. It was predicted the amount of cultural adaptation would be significantly higher in affordable than for-profit clinics. A sample of all the family healthcare clinics in the Delta Region was surveyed by mail. Questions in the survey focused on accommodations, interpreter/bilingual staff availability, Spanish fluency, and general attitude towards Hispanic patients. After each section of the survey was totaled, the scores of the for-profit and affordable clinics were compared using an independent sample T-Test. Affordable clinics had a greater amount of accommodations, but not a significant difference in the other sections. This research can provide different insights on how to educate clinics about the different accommodations they can provide for their Hispanic patients. If affordable clinics were given more funding to hire bilingual staff or interpreters, they might have a higher cultural adaptation. This is important, because per the literature, Hispanic patients are more likely to go to affordable clinics.

Mentor: Karen Yanowitz, kyanowit@AState.edu

LECTURE NOTE TAKING METHODS FOR STUDENTS WITH ADHD-LIKE SYMPTOMS

Emily Moran - Undergraduate
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College students spend more than 80 percent of class time listening to lectures. This study will help to determine the best method for taking notes for students with and without ADHD-like symptoms. Participants will be organized into two note taking groups (transcription and organizing), and then watch a thought provoking TedxTalk while taking notes in the instructed manner. The participants will then take two tests, a free recall test and an open response test. They then will answer a questionnaire which will evaluate their ADHD-like symptoms. By comparing their success on the tests with their notetaking method as well as their range of ADHD symptoms, results will show the effect that notetaking method has on test success based on the type of test. This information will have a multitude of benefits for students, both with and without ADHD symptoms.

Mentor: Christopher Peters, cpeters@AState.edu

"OH, DID YOU SAY SOMETHING?": MINDFULNESS AND PHUBBING IN COLLEGE STUDENTS

Shelby Daniele - Undergraduate
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Madalyn Crittenden - Undergraduate
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Are you getting the most out of your social interactions? By increasing our level of mindfulness and decreasing how often we partake in phubbing, we are able to increase the benefits we experience from communicating with others. Mindfulness is the state of awareness of the present moment that is known to have an extensive list of benefits; the act of phubbing is quite near the opposite: the act of ignoring someone by being involved in one's phones instead of actively engaging in conversation (Chotpitayasunondh and Douglas, 2016). The aim of this study is to seek out the relationship between the two phenomena and measure how common each concept is amongst college students. We hypothesized that the data would show a negative correlation between mindfulness and phubbing due to their opposing nature. The participants in this study were 66 Arkansas State University students enrolled in Introduction to Psychology courses during the spring term of 2018. The participants responded to an online survey including a 24-item questionnaire measuring five distinct facets of mindfulness, and a seven-item questionnaire measuring the participant's tendency to phub. From our study, we were able to observe a negative correlation between mindfulness and phubbing, as well as notice that students more commonly describe themselves as being mindful than they report engaging in phubbing.

Mentor: Irina Khramtsova, ikhramtsova@AState.edu

EFFECT OF THERAPY DOGS IN COURTROOM ON WITNESS STRESS LEVELS

Sarah Hall - Undergraduate
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Testifying in court can be stressful for individuals of all ages. The combination of being in a novel situation, being on record, and being questioned are just some of the reasons why it can be stressful. To reduce this stress, therapy dogs have been utilized in the courtroom setting. The current study examines whether the presence of a therapy dog in the courtroom significantly decreases witnesses' anxiety (measured by heart rate). In the study, 32 Arkansas State University students participated in a mock trial in which they had to give testimony regarding a crime. Participants first watched a video of the accused stealing an iPad. After watching the video, they had to identify the perpetrator and give testimony in court. During testimony, a therapy dog was brought in before questioning. As a control, some participants were given a glass of water before questioning instead of the dog. As predicted, results showed that participants' heart rate increased when brought into the courtroom, but dropped significantly lower when the dog appeared in comparison to the water condition. These results indicate that therapy dogs are a useful mechanism to help reduce stress in individuals testifying in court.

Mentor: Christopher Peters, cpeters@AState.edu

REACTION TO "PRANKING": PERCEPTIONS OF PRACTICAL JOKES AS A FUNCTION OF RELATIONSHIP

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Pranking is a popular activity; however little research has examined perceptions of pranking. The goal of this research was to examine participants' perceptions of a pranking situation and how gender and relationship impacted the perceptions. Participants received a scenario and were asked a variety of questions to assess their perceptions of the event, using a Likert-type scale (5 = strongly agree). Paired comparisons revealed that participants (80 percent female, 70 percent white) more strongly agreed that the situation described was an example of pranking ($M = 4.0$) compared to bullying ($M = 3.0$), $p < .001$. Participants tended to believe that the target would feel positive emotions (using the PANAS-X inventory of emotional states, $M = 1.9$) when friends with the perpetrator compared to when they did not know each other ($M = 1.4$), $p = .09$. Participants were more likely to agree the perpetrator did the action to get attention from the target when they were friends ($M = 3.7$) compared to when they did not know each other ($M = 2.9$), $p < .05$. No significant differences were found as a function of gender for any measures. Results revealed that the relationship status impacted participants' perceptions of a pranking situation.

Mentor: Karen Yanowitz, kyanowit@AState.edu

April 17th, 8:30 a.m. – 10:15 a.m.
College of Education & Behavioral Sciences – Psychology, Cache River Room

ACHIEVERS AND LEAVERS

Tristan Sweatt - Undergraduate
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We examine the relationship between various academic/non-academic characteristics of undergraduate students and subsequent academic performance. We replicate and extend research by Beattie et al., (2017, 2018) who use survey data provided by University of Toronto students containing open-ended questions about students' college experience, study habits, personal experiences and demographic characteristics to predict undergraduate performance. Our analysis of survey and demographic data provided by 220 undergraduate students at a four-year, public, mid-sized masters level university predicted relationships with student outcome measures such as cumulative and current GPA and yielded results similar to those reported by Beattie et al. (2017, 2018). Additionally, we find significant predictors of student performance that, to our knowledge, have not been examined in previous research. For example, we find that some variables novel to our paper (e.g., students' favorite television shows, stated religion, intramural sports participation, etc.), are statistically significant predictors of student outcomes. These responses were compared with the students' high school and cumulative undergraduate GPAs to establish the non-academic variables which contribute to optimal academic performance. Our analysis of predictors of master's level university student outcomes differed in important respects from the findings reported by Beattie et al. (2017, 2018) in their analysis of students attending a top research university. These findings contribute to the literature on student retention strategies, effective teaching interventions, and student early alert models.

Mentor: John Jackson, johjackson@AState.edu

ENDANGERED RED WOLVES: TRAVELING SUITCASE FOR EDUCATORS

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Our group was introduced to the plight of the endangered red wolves in our First Year Experience Making Connections class. The Secret World of Red Wolves, The Fight to Save North America's Other Wolf by T. Delene Beeland shared the current situation and history of red wolves, including they were once located in North Central Arkansas in the 1800's. This inspired us to create a traveling suitcase for educators that would support classroom teachers with artifacts, books, videos and standards-based lessons as they teach children about endangered species and actions needed for their conservation. We collaborated with campus and community leaders, as well as stakeholders within our geographical region and nationally, to gain support for this STEAM project. This entire unit on wheels was designed to inform and excite students and to inspire them to take action to help conserve the red wolves. We are enthused about Arkansas State University's recent emphasis on "Every Red Wolf Counts", both for its figurative and literal significance. In the literal sense, we are creating this suitcase of resources to educate students in the classroom, but beyond this, we hope to inspire students to advocate for significant issues in their own lives.

Mentor: Sandra Hawkins, shawkins@AState.edu

JURY DECISION-MAKING AND GRAPHIC EVIDENCE: THE EFFECTS OF AUDITORY VS. VISUAL PRESENTATION

Olivia Hitchcock - Graduate
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What evidence matters in a criminal courtroom? Research shows that graphic evidence, especially in the form of visual photographs (e.g., crime scene photos), leads to an increase in guilty verdicts, but we know little about other presentation formats, graphic or not, such as auditory records (e.g. 911 calls). The current research examines the effects of evidence content (graphic or nongraphic) and the presentation format of evidence (visual or auditory) on juror opinions regarding a defendant's guilt. The visual evidence consisted of crime scene photographs; the auditory evidence consisted of a phone call recording. In this four-condition study (graphic vs. nongraphic, visual vs. auditory format), 222 participants read an identical trial summary and examined relevant evidence. Using analysis of variance, the results showed that regardless of presentation format, graphic evidence resulted in more guilty verdicts. This suggests that courts should consider graphic evidence cautiously because of its impactful nature. The present findings can help the justice system gain a better perspective on how graphic evidence affects the jury and develop safeguards to prevent the admissibility of potentially prejudicial graphic material.

Mentor: Christopher Peters, cpeters@AState.edu

JURY TRIALS & INAPPROPRIATE STUDENT-TEACHER RELATIONSHIPS

Jalisa Damron - Undergraduate
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Everyone knows that a relationship between an underage, high school student and a teacher is illegal. However, what factors play into how this crime is punished by the justice system? The current study focuses on how race and sex of both the victim and perpetrator affect the severity of punishment decided by a jury in an illegal sexual relationship case. The participants, 249 Arkansas State University students, were given a vignette containing the facts of the case. Within the vignette, the race and gender of the teacher and student were manipulated. Analysis showed that the black female teacher was punished the least overall. Results also indicated variation in punishment based on participant gender. Male participants punished male teachers harsher than female teachers, while black female teachers were punished the least by male participants. Female participants gave the perpetrators the harshest punishment when the victim was a white female. These results bring up important aspects of illegal sexual relationship cases in today's world. It appears that there is a bias against perpetrators that involves race and gender of both the perpetrator and the juror, and this bias can subsequently change the degree of punishment handed out by the justice system. This research study is innovative, because previous research in the exploration of improper student-teacher relationships has for the most part been left untouched. Despite this, research in this area remains important. It reflects attitudes in real life on how victims and perpetrators alike are affected by factors that may not be an obvious influence on jury decision making.

Mentor: Christopher Peters, cpeters@AState.edu

TOGETHER, THEY ARE TROY AND CHASE: WHO SUPPORTS DEMONETIZATION OF GAY CONTENT ON YOUTUBE?

Stephen Berry - Graduate
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YouTube creators earn money from advertisements placed on their videos. After the posting of videos by terrorists in 2017, YouTube implemented an automated process to identify "controversial" videos that should not have advertisements (called demonetization). However, media outlets reported that videos unrelated to terrorism were demonetized, including thousands with gay-themed content. Although YouTube states that they are protecting advertisers, numerous gay YouTube video creators have been denied revenue from their work. We view demonetization as a form of censorship by a non-governmental actor. We explored the psychological profile of individuals who support the demonetization of gay-themed YouTube videos. Methodological Approach 247 U.S. residents completed an online procedure that included watching a demonetized video from the gay-themed Troy and Chase channel and measures of several attitudinal/ideological variables (e.g., authoritarianism, corporate social responsibility beliefs, homophobia). Higher authoritarianism, homophobia and perceptions that gay content had a negative impact on self and others predicted increased demonetization support. Corporate social responsibility beliefs were related to less support. The regression analysis explained 67 percent of the variance in demonetization support. In addition to being timely, ours is the first study on censorship actions by a non-governmental actor and expands the literature on censorship.

Mentor: Wayne Wilkinson, wwilkinson@AState.edu

April 17th, 8:30 a.m. – 10:15 a.m.
College of Liberal Arts & Communication – Undergraduate Humanities & Arts, Arkansas River Room

COMPOSING ELECTROACOUSTIC MUSIC

Warren Baxter - Undergraduate
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The combination of electronic and acoustic mediums has existed in the field of music composition for many years. New artistic possibilities arise from advances in technology but are often accompanied by logistical challenges involved in the integration of live acoustic and computer-generated media. Live performance in this genre relies on acoustic sounds being captured and then manipulated through the use of interactive computer software. The use of computers in the compositional process profoundly expands the palette of possibilities, increasing the depth of available musical language. Composing electroacoustic music also involves notational issues. Traditional notation conventions may no longer effectively communicate to the performer the proper musical intent, so new graphical notations may need to be adopted. This presentation will discuss the challenges composing electroacoustic music including aspects of composition, notation and performance.

Mentor: Timothy Crist, tcrist@AState.edu

MAKING WALKING BASS LINES FROM SOMEONE NOT QUALIFIED TO TALK ABOUT ANYTHING RELATED TO WALKING

Jeremiah Page - Undergraduate
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An essential component of jazz musical performance is the bass voice. The bass voice serves as a harmonic anchor and informs the listener of the harmonic progression. In performing jazz, a bass player is often provided with only chord progressions in the score. The actually bass part is then improvised based on the harmonic progression. Improvising a bass line involves a number of considerations including key, scale, rhythm, meter, current chord, and approaching chords, as well as structure, mood and support of other parts. "Walking bass" is an industry term to describe the rhythmic consistency of jazz bass lines. This presentation will describe the decision making involved in improvising effective, supportive and interesting walking bass lines.

Mentor: Timothy Crist, tcrist@AState.edu

DEATH, DELAY, AND DEBATE: THE FAILURE OF THE EADS SHIP-RAILWAY

Nathanael Grimes - Undergraduate
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In 1880, American engineer James Eads proposed a grand, trans-isthmian plan. Instead of the Panama Canal, inaugurated in 1914, Eads proposed an as-of-yet unexplored ship-railway system extending across the Isthmus of Tehuantepec in Mexico. This scheme was seriously considered as an alternative to the Canal by the United States government during the late 19th century, but ultimately failed. So, the question is, why did a proposal, one that by many accounts would have been the shortest and cheapest route to construct, fail? By examining the records of congressional debates, scholarship concerning the time period, and James Eads's own papers, it has been determined that the cause was multifaceted. A few among many, some reasons for the failure were the extensive congressional debate, Eads's death, the unprecedented nature of a ship-railway, and the passing of the Hay-Pauncefote Treaty. This issue has never been extensively examined, and this oral presentation will contribute to the field of study because it sheds light on one of the many diverse possibilities for trans-isthmian trade during the period. In the future, the goal is to send the paper to an academic press, and have the work published in an academic journal.

Mentor: Justin Castro, jcastro@AState.edu

WASHINGTON'S SPIES: THE CULPER SPY RING AND THE MYSTERY OF AGENT 355

Joseph Brown - Undergraduate
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Few people are aware of the civilian led Culper Spy Ring that helped George Washington during the Revolutionary War. Many of the members of this spy ring have been identified over time. However, there is still some speculation over the female identity of Agent 355. By creating a digital story map with primary sources, original scholarly research and interactive media, this project introduces the Culper Spy Ring. Taking the user on an interactive journey, they learn how members of the spy ring delivered intelligence on the British military to General Washington, and identifies the woman scholars today believe to be Agent 355. As a future social science educator, I have expanded my pedological content knowledge and increased my knowledge of scholarly research through the process of creating this story map. I have come to believe that this digital tool could be beneficial during classroom instruction. Using a digital story map allows students to view how different people, places and events interact both geographically and historically. By using this tool during instruction, it could increase student's success and enjoyment of learning while generating further interest in history or the humanities.

Mentor: Andrea Davis, andavis@AState.edu

TREASURE ISLAND AND THE ORIGINS OF THE SWASHBUCKLING PIRATE

Bryan Carmer - Undergraduate
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The word "pirate" conjures up a specific image. The purpose of this video is to show where this image comes from, arguing that much of it stems from Robert Louis Stevenson's 1883 work, Treasure Island. Shifting ideals of masculinity as the British empire expanded during the late 19th century helped the swashbuckling attitude of Stevenson's pirates resonate with the population at large. This, in turn, propelled his novel to popularity, giving his images of parrots and peg-legs a fertile environment in which to take root. The novel's success ultimately cemented it as a children's classic, ensuring that this image became a staple through time. Moreover, the popularity of this image was cemented in the mid-20th and early 21st centuries when Walt Disney Studios adapted the novel to film. This video draws on the work of scholars like Bradley Deane and Natalie McManus to clarify these connections. The research is important because it demonstrates where our culture's stereotypical image of pirates came from, and how latent ideas of masculinity have helped to keep this image alive up to the present day.

Mentor: Andrea Davis, andavis@AState.edu

April 17th, 8:30 a.m. – 10:15 a.m.
College of Liberal Arts & Communication – Undergraduate Humanities, White River Room

AN AUTOETHNOGRAPHY OF A FEMALE GAMER

Stephanie Wyatt - Undergraduate
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While some people think that female gamers experience negativity while playing video games either online or offline, not every female finds herself in this situation. This autoethnography shows my memories of experiencing video games for the first time and explains that while there are some cases of negativity towards females in the gaming community, they are usually rare occurrences. I will explain the many studies of female gamers and the results that had been reported. And in using both academic and personal perspectives, my goal is to show how not every online experience is a bad one for females.

Mentor: Janelle Collins, jcollins@AState.edu

HARRY POTTER AND THE RESULTING TRAUMA: PRESENTATION OF AN ORIGINAL ESSAY REGARDING THE MENTAL AND EMOTIONAL DAMAGES IN HARRY POTTER.

Wesley Sanders - Undergraduate
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Harry Potter and the Resulting Trauma is an analytical essay attempting to illustrate a connection between specific traumatic events in J.K. Rowling's Harry Potter series and the effects such experiences have on the characters which experience them, and furthermore, how the author uses these character developments to engage in social commentary. Beyond the content of the essay, the purpose of the oral presentation is to convey the original analysis and thus provide more complex readings of character motivation through a medical lens. While this was originally purely analysis based almost solely on the primary texts, it has been expanded to provide professional opinion on the real-world effects of similar situations for a comparison with the textual characters. The findings should prove that the characters examined have personality traits which were directly influenced by trauma(s) in their lives be it psychological or emotional. Ultimately, this analysis will provide a unique way to interact with the texts and encourage further scholarship regarding character development and social commentary.

Mentor: Catherine Calloway, ccather@AState.edu

THE INESCAPABLE ANGEL STEREOTYPE IN VICTORIAN LITERATURE

Sara Helms - Undergraduate
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It is no secret that traditional gender roles played an important part in Victorian culture. Men played the role of the breadwinner, sent out to face the corrupt world, while women, passive and weak, stayed at home, watching the kids, cleaning the house, doing their best to be perfect in every way and to create a stress-free environment for their husbands to come home to after their long day. This stereotype of women is widely known as the "angel in the house", referring to the idea that women should not only stay at home, but be sinless, pure, and beautiful, like an angel. This stereotype has been addressed and argued against for centuries, but it remained largely intact even well into the more feminist periods of the Victorian era. I address the stereotype by analyzing characters from Oliver Twist by Charles Dickens and Lady Audley's Secret by Mary Elizabeth Braddon. While many critics argue that these two novels present female characters in a feminist light because of their deviant nature, I argue that the way in which both authors excuse the actions of their female characters and make them long to be the perfect woman only underlines the stereotype.

Mentor: Kate Krueger, kkrueger@AState.edu

THE MENTALITY OF SLAVERY: CULTURAL ASSIMILATION IN OCTAVIA BUTLER'S KINDRED

Claire Rowland - Undergraduate
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In Octavia Butler's novel, Kindred, the black American protagonist, Dana, time travels from the 20th century into the antebellum South. This uncontrollable immersion into slave-holding Maryland forces Dana to comply with the cultural norms as it begins to diminish her dignity. She must fight to resist conforming to the culture. Her psyche gradually embraces her ancestors' behaviors instead of maintaining the surface-level mimicry she intends. This paper suggests Dana's efforts aren't for mere survival. She is committed to exploring the culture of the time, and those aspects consume her, resulting in becoming assimilated into a preset racial role. I explore the notion that the story of the American slave isn't new. Butler contrasts the struggles of Dana, a proud, black woman living in a society unaccepting of her against struggles of Alice Greenwood, a submissive black slave who seemingly cannot stop her degradation. Kindred forms a foundation by directing attention to instances where the antebellum South takes away from Dana's overall dignity, confidence and self-worth. Through examination of counterarguments and textual evidence, this work will argue that Dana's behaviors are not purely due to self-preservation, but ultimately a result of her immersion into the culture that begins to define her.

Mentor: Kate Krueger, kkrueger@AState.edu

"CHAVALLION HOUSE PROJECT: HOGWARTS' SCHOOL WEBSITE"

Wesley Sanders - Undergraduate
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Gracie Hicks - Undergraduate
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Talena Ramnath - Graduate
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We developed a website for Hogwarts' campus, basing the content off of information one finds typically on high school and college campuses, with an emphasis on diversity and inclusivity. We mainly used canonical content from the "Harry Potter" series as well as from Pottermore's website, as well as fabricated names primarily using constellation and typical British surnames. This website was created as a term project for our Special Topics: Harry Potter course, and this concept came to fruition after class conversations regarding the use and dearth of modern technology within the series. The website realizes resolutions for those conversations by imagining how Hogwarts students and their families can access a more informed, organized means of communication and learning.

Mentor: Catherine Calloway, ccather@AState.edu

April 17th, 8:30 a.m. – 10:15 a.m.
College of Liberal Arts & Communication – Graduate Humanities, Black River Room

HOW HARRY'S RELATIONSHIP WITH VOLDEMORT EXHIBITS THE GOTHIC DOPPELGÄNGER CONVENTION

Talena Ramnath - Graduate
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J.K. Rowling draws upon multiple literary genres and mythological influences in her seminal "Harry Potter" series. In this essay, I explore how the series specifically utilizes quintessential Gothic fiction motifs to illustrate the relationship between Harry Potter and Voldemort, with an emphasis on how the Gothic literary genre depicts identity crises. I find this topic to be worthy of exploration to investigate the power of cross-genre fiction to make an impact in the literary world, but also to examine the theme of choice through the doppelgänger motif. Furthermore, I address how their connection exhibits the doppelgänger motif by reflecting the polarity of good and evil due to their shared traits as a consequence of Voldemort's grasp on Harry's identity. Harry is transformed into the archetypal Gothic heroine that is pursued by the older, threatening male figure and must separate himself from Voldemort, despite their fated link, by the theme of choice Rowling stresses. How Harry reacts to trauma in this context is telling because Rowling clearly stresses the value of this theme and this main difference between these characters, which is an important, inspirational concept readers can contemplate as they encounter obstacles in real time.

Mentor: Catherine Calloway, ccather@AState.edu

SECONDARY CHARACTERS FINDING AGENCY THROUGH TRAUMA WITHIN THE HARRY POTTER SERIES

Kayla Fonseca - Graduate
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Unlike the majority of essays written on the "Harry Potter" series this essay focuses exclusively on Petunia Dursley, Severus Snape, and Neville Longbottom and their quest for agency despite multiple traumas. Each character is known throughout the "Harry Potter" universe for specific moments, but I chose to look beyond the typical well-known major events in the plot. I decided to read through the series and analyze details that may seem minor, but in reality, are tactfully placed to give insight on the complexity of each character. Reading the novels for the secondary characters rather than the main trio—Harry, Ron and Hermione—was an advantageous experience because I now have a better understanding of how Harry's trauma nearly always affects those around him, creating traumatic experiences for others. This close analysis on secondary characters has taught me to read texts without being solely invested on the protagonist and to read every character as a main character. This new way of reading will benefit me in the future, whether I get involved in publishing or teaching in the college classroom, because it will push me to find depth in every character I encounter.

Mentor: Catherine Calloway, ccather@AState.edu

"THE NOBLE SAVAGE: PARALLELS OF NATIVE AMERICAN SUBJUGATION IN HARRY POTTER CENTAURS"

Samuel Jackson - Graduate
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The "Harry Potter" series is no stranger to posing moral and ethical questions found in that of the "muggle" world. Many scholars have analyzed and compared Rowling's uses of the slavery of house-elves, blood status of witch/wizards, and corruption in the Ministry of Magic to events of the real world. Centaurs, though background characters, provide a scope to show that the belief of racial superiority does not end with one group and instead establishes a social hierarchy of all creatures, magical and muggle. In this paper I analyze their role as a reflection of 19th century Native Americans as they too battled to maintain their individuality and customs. The essay tackles the issue of natural barriers of culture and the stigmatizing nature of these barriers, as well as the term "Noble Savage" and how these "savage traditions" run parallel between Centaurs and Native Americans. The ultimate message of this piece is to advocate for cultural awareness and showcase that books provide a platform to approach social issues and reach out to new audiences.

Mentor: Catherine Calloway, ccather@AState.edu

"HARRY POTTER AND DEATH: A COMPLICATED RELATIONSHIP"

Kayla Davis - Graduate
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In this paper, I discuss the concept of death as it is portrayed in the popular fantasy series of "Harry Potter," focusing primarily on how author J. K. Rowling uses the passing of her characters as well as the depiction of death's power to not only display the complex relationship it has with her protagonist, but to also help her readers cope with it in the "real world."

Mentor: Catherine Calloway, ccather@AState.edu

PRESERVING HISTORIC CEMETERIES: MELDING PRINCIPLES AND PRACTICALITY

Edward Harthorn - Graduate
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Cemeteries are places that everyone has connections to, yet few know how to properly take care of. From cleaning gravestones to more extensive efforts, well-meaning, yet misguided approaches can cause irreversible harm. I begin my presentation by briefly introducing some of the proper procedures of cemetery preservation in layman terms and the most reputable resources for learning more. During the core of my presentation, however, I branch out into case studies of real-world scenarios I have dealt with where a solution is not so clear-cut: vandalized stones thrown in a heap in the middle of a field, a replacement headstone unintentionally featuring the wrong name, a historic iron fence that will be bulldozed unless moved to a nearby cemetery, and more. In both the predictable and the unpredictable, I emphasize that the underlying philosophy of these approaches remains the same: core principles of using gentle and reversible treatments, prioritizing original materials over replacements when possible, and documenting changes carefully. I draw on my experience preserving two Northeast Arkansas cemeteries as well as investigating cemeteries throughout Minnesota, writing a cemetery restoration handbook, and taking graduate-level coursework in historic preservation.

Mentor: Edward Salo, esalo@AState.edu

April 17th, 1:30 p.m. – 3:15 p.m.
College of Agriculture, Engineering & Technology – Mockingbird Room

APPLICATIONS OF NANOTECHNOLOGY TO PREDICT THE MOISTURE SENSITIVITY OF ASPHALT BINDERS

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Stripping or moisture related damage is a complex mechanism, which may attribute asphalt pavement's distresses and reduce its durability. Currently, most of the popular methods for assessing moisture susceptibility in the United States focus on macro-level tests results that neither provide the true pictures of this process nor explain its mechanisms explicitly. Eventually, the use of advanced technologies in predicting moisture damage of asphalt concrete has grown significantly in recent years. In this study, one of the promising microscopic tests, namely, Atomic Force Microscopy (AFM), was used to investigate atomic level effects of moisture on the micromechanical properties of asphalt binders. Binder samples used in this study were collected from two different sources, and they were tested under dry and wet conditions. The Peak-Force Quantitative Nanomechanical Mapping™ (PFQNM™) technique of AFM was used to capture the images of the binder's surface morphology and mechanical properties such as modulus and dissipation energy. The collected AFM-based experimental data were analyzed by using the NanoScope Analyses™ software. The major outcomes of this research will provide a comprehensive understanding the effects of moisture at the molecular level properties of asphalt binders.

Mentor: Zahid Hossain, mhossain@AState.edu

AUTOMATIC ROBOTIC ASSEMBLY PROTOTYPE DESIGN AND FABRICATION

Collin Weatherly - Undergraduate
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Automation plays a crucial part in manufacturing due to their precision and reliability. The Ginsu Brands Manufacturing facility proposed designing a new automation system to assemble a range of their knives. The Engineering Senior Design team took the project and have spent the 2017-2018 school year designing and fabricating a system that will meet production requirements. The team initially started with twelve designs, of which six knife assembly designs were selected for further evaluation. The top four were selected based on the criteria selection. These four were researched in detail by the group members. A weight was assigned to each of the criterion used in selecting the top four designs. The weights were assigned using feedback from the Ginsu personnel on the most to least important criteria. Based on the criteria and feedback, the final design was selected. The primary design process was performed using the solid modeling software, Solidworks, with the insight of Ginsu personnel and the team advisor, Dr. Haran. The final prototype is being fabricated through metal framing and 3-D printing. The final prototype will be accompanied by a detailed report including testing of materials, calculations, details pertaining to the design, and recommendations for operation and cost.

Mentor: Shivan Haran, sharan@AState.edu

CREDIT CARD SKIMMER PROTECTION

Christopher Jones - Undergraduate
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Technological advancements have made a substantial impact on the financial sector. Personal information is being transmitted over open servers on multiple platforms leading to an increased need for secure and convenient methods to protect the public from cyberattacks. Credit fraud is one of the most predominant types of crime committed in the world. Skimming is a type of credit fraud involving the use of an electronic device to read consumer's information at gas stations and ATMs. Cyber criminals use this information to gain access to accounts and personal information. There are currently no standard guidelines for addressing cybercrimes which has led to an increased number of attacks on the public. Government programs have been founded to support the country's ability to address these challenges. The goal of this project is to create a functioning prototype that can be used to protect people from fraudulent activities. The design is aimed to deter credit card fraud. The design intends to utilize Bluetooth for data transfer from a user's personal device to another payment terminal and should be handy as a wallet. The testing and fabrication phase to optimize the overall design will adhere to all cyber physical system service laws and regulations.

Mentor: Shubhalaxmi Kher, skher@AState.edu

PARTICLE MOTION SIMULATOR IN 3-D: A MATLAB PROGRAM

MdSaber Nazim - Graduate
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Particle motions in the dimensions of few microns can be extremely complicated because of the inter-particle interactions. Simulating such a motion using a computer program is of paramount importance in different applications such as physics, colloidal chemistry, printing industry and biology. A few commercially available software are available, however they are based on the discrete element method [DEM] and are used to study the motion of powder, sand, soil grains etc. Their over-complicated algorithms quite often pose a demand for higher processing power. Based on these facts, we have implemented a 3-D particle motion simulator based on the DEM. However, our motion simulator is best suited for studying electrostatic interactions among the particles with good agreement with theoretical observation and with less processing power.

Mentor: Brandon Kemp, bkemp@AState.edu

SOIL EXCHANGEABLE N RETENTION AT VARIOUS SOIL DEPTHS IN NE ARKANSAS COTTON

Hunter Wood - Graduate
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Improvements in nitrogen fertilizer management efficiency in agricultural systems are more likely if farmers have a better understanding of the effects of tillage and fertilizer practices on the spatial and temporal variations of soil exchangeable nitrogen in the soil profile. In a 2017 field study with cotton (Gossypium hirsutum L.) in Northeast Arkansas, N variability in the soil was compared with different furrow tillage (conventional and conservation plow) and fertilizer treatments (broadcast urea and side dressed UAN). The experiment was designed as a 2*2 factorial arranged in a randomized complete block with three replications. Cultivar ST4946 was planted 16 May in a Dundee silt loam; plots were 12 rows wide and 162 m long. Fertilizer was applied 36 days after planting at a rate of 101 kg N ha-1. Soil samples collected at four depths (0-15, 15-30, 30-60, and 60-90 cm) through the season and analyzed for concentrations of NH4, NO3, and NO2. Results indicate that N fertilizer source influenced the concentrations and type of N found throughout the soil profile, but tillage had little effect. Higher concentrations of NH4-N and NO3-N were typically found in early season in the shallower depths, while NO2-N was more concentrated at lower depths.

Mentor: Arlene AdvientoBorbe, aadvientoborbe@AState.edu
Mentor: Tina Teague, Agriculture and Technology Studies, tteague@AState.edu
Mentor: Michele Reba, USDA - ARS, mreba@AState.edu

April 17th, 1:30 p.m. – 3:15 p.m.
College of Sciences & Mathematics – Graduate, St. Francis River Room

SYNTHESIS, ANTIBACTERIAL, AND CYTOTOXICITY STUDIES OF PYRAZOLE-DERIVED COMPOUNDS

Harold Jack Laws - Undergraduate
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The Center for Disease Control stated that more than 2 million people are infected each year with antibiotic-resistant infections, and at least 23,000 people are dying as a result of these infections in the United States alone. ESKAPE bacteria (Enterococcus faecium, Staphylococcus aureus, Klebsiella pneumoniae, Acinetobacter barman, Pseudomonas aeruginosa, and Enterobacter spp.) cause 80 percent of nosocomial infections in the United States. They are of special concern because multi-drug resistance among them can cause life-threatening nosocomial infections. It is difficult to get effective antibacterial agents to treat Gram-negative bacterial infections due to the complex nature of bacterial cell walls and outer membranes preventing drug entry, efflux pumps keeping the drug from reaching high intracellular concentrations, defensive enzymes such as -lactamases destroying the drugs, and complex carbohydrate networks that create a protective capsule coating. Pyrazole moieties are found in many best-selling drugs. Pyrazole-derived compounds have exhibited analgesic anti-inflammatory, anticonvulsant, antidepressant, antimicrobial, anti-mycobacterial, anti-tumor and antiviral activities. The research, which I have done in the last three semesters, consists of three stages: organic synthesis of approximately 40-50 pyrazole-derived compounds, antibacterial testing of these compounds against the ESKAPE bacteria, and cytotoxicity studies of these compounds against human embryonic kidney (HEK 293) cells.

Mentor: Mohammad Alam, malam@AState.edu
Mentor: Dave Gilmore, dgilmore@AState.edu
Mentor: John Hershberger, jhershberger@AState.edu

DISSECTING THE ROLE OF ADHESION KINASE FAK IN MEDIATING CAP1 REGULATION OF ERK AND BREAST CANCER CELL FUNCTIONS

MdRokib Hasan - Graduate
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Faith Allen - Undergraduate
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We recently identified a novel role for the actin-regulating protein CAP1 (Cyclase-Associated Protein 1) in controlling both the invasiveness and proliferation of breast cancer cells through ERK (External signal-Regulated Kinase). However, CAP1 as a cytoskeletal protein is unlikely to regulate ERK directly; unravelling the signaling molecules that may link CAP1 to ERK will provide mechanistic insights into normal cell functions of CAP1 as well as its roles in human cancer. We reported that FAK (Focal Adhesion Kinase) physically interacts with CAP1, and knockdown of CAP1 in Hela and breast cancer cells also led to alterations in FAK activity and cell adhesion. Moreover, FAK has been reported to also regulate ERK, making it an attractive candidate that may link CAP1 to ERK and the invasiveness and proliferation of cancer cells. To test FAK's role, we are using a combination of approaches including RNAi silencing of FAK, as well as inhibition of its kinase activity using chemical inhibitors, to determine if these manipulations rescue the elevated ERK activity and enhanced proliferation and invasiveness in metastatic breast cancer cells caused by CAP1 knockdown. Our preliminary results suggest that FAK likely indeed mediates CAP1 regulation of ERK. This study carries important translational implications.

Mentor: Guolei Zhou, gzhou@AState.edu

GENETIC TRANSFORMATION OF MUSCADINE GRAPE TO PRODUCE ARACHIDIN-2: A BIOACTIVE STILBENOID WITH MULTIPLE BENEFITS FOR HUMAN HEALTH

Mohammad Fazle Azim - Graduate
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Stilbenoids are phenolic compounds found in a small number of plant species including muscadine grape and peanut. These compounds have shown biological activities including anticancer, cardioprotective, anti-inflammatory and neuroprotective properties in vitro. However, several stilbenoids have exhibited poor bioavailability limiting their application in vivo. Recently, our group identified prenyltransferases in peanut which can produce more bioavailable stilbenoids. Therefore, the goal of this project is to express the peanut stilbenoid prenyltransferase in muscadine grape to ultimately increase its health benefits. In this study, hairy roots of muscadine grape were developed via transformation with an engineered Agrobacterium rhizogenes harboring a peanut stilbenoid prenyltransferase. We have found that four muscadine grape hairy root lines showed the presence of the peanut prenyltransferase gene along with aux1 and rolC genes from A. rhizogenes. Furthermore, prenyltransferase activity and production of arachidin-2 were confirmed by enzymatic assays and HPLC-mass spectrometry analyses, respectively. Our results demonstrated the successful production of arachidin-2 in muscadine grape hairy roots and the potential to leverage this metabolic engineering strategy to develop muscadine grape fruits with enhanced health benefits.

Mentor: Fabricio Medina-Bolivar, fmedinabolivar@AState.edu

NEST SITE SELECTION OF EASTERN WILD TURKEY (MELEAGRIS GALLOPAVO SILVESTRIS) IN A SHORTLEAF PINE–BLUESTEM GRASS ECOSYSTEM IN WESTERN ARKANSAS.

Robert Vernocy - Graduate
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Nest site ecological parameters of eastern wild turkey (Meleagris gallopavo silvestris) hens were analyzed from a study population residing in Management Area 22 of the Ouachita National Forest, a heavily managed shortleaf pine – bluestem grass ecosystem. The goal of this study was to model nesting habitat use and utilized GPS satellite transmitters deployed on wild turkey hens in order to accomplish this. These PTTs (platform transmitter terminals) were deployed annually for three consecutive years (2012-2014) and monitored movements and locations of the wild turkey hens year-round. Wild turkey nests were monitored and various ecological parameters were measured. Understory density, overstory density, slope, aspect, litter depth, duff depth and basal areas of both conifers and hardwoods were analyzed to the level of bivariate modeling. Modeling of the nest sites utilized GLMMs (general linear mixed models) and were prioritized using AIC (Akaike Information Criteria). Understory density from 0-50 cm univariate model was the top and only model that showed support that it was a better fit than the null. A positive direct relationship existed between nest site selection and understory density (0-50 cm) and was shown to be the best fit model for nest site selection in the study area.

Mentor: Thomas Risch, trisch@AState.edu

QUANTITATIVE FRESHWATER MUSSEL (BIVALVIA: UNIONIDA) SURVEYS IN THE LOWER STRAWBERRY RIVER

Irene Sanchez Gonzalez - Graduate
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Freshwater mussel assemblages of the lower Strawberry River were assessed quantitatively. The Strawberry River, a tributary of the Black River in the White River drainage in Arkansas, historically hosted 41 species of freshwater mussels. The objectives of this study were to determine environmental factors that could drive species composition in mussel assemblages and to establish a population baseline. Four sites were quantitatively assessed during the Summer of 2017 following a simple stratified random design. Biodiversity in the Strawberry River consisted of 34 species recorded, including Cyclonaias Lampsilis siliquoidea, which had not been previously encountered in the system. Abundance was calculated using Sampford population estimates and ranged from 4,632±760 to 6,708±560 individuals. Density varied from 6.3 to 19.2 individuals/m² and had a mean of 15.5. Overall, Cyclonaias pustulosa (17.6 percent), Pleurobema sintoxia (13.2 percent) and Tritogonia verrucosa (12.5 percent) were the most predominant species. Two federally protected species were found during the surveys, the threatened Theliderma cylindrica and the endangered Leptodea leptodon. Overall, the Strawberry River provides diverse habitat and sustains high freshwater mussel diversity, however threats to mussel assemblages are already observable. Decreased water quality and sedimentation and flooding events can directly affect mussel population in the Strawberry River.

Mentor: Jennifer Bouldin, jbouldin@AState.edu
Mentor: John Harris, joharris@AState.edu

RECOMBINANT PRODUCTION AND BIOACTIVITY OF CATFISH INTERLEUKIN-22 AS A NATURAL IMMUNE STIMULANT FOR IMPROVED AQUACULTURE FISH HEALTH

Lana Elkins - Graduate
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As the world population increases and wild caught fisheries decline, aquaculture offers an important sustainable solution addressing this global challenge. In fact, aquaculture now provides more than half the world's food fish. With this rapid rise in production, has come the problem of disease management. Current options are limited and there is a great need for innovative solutions to this problem. The cytokine interleukin-22 (IL-22) has emerged as a therapeutic target for fish and is correlated with protection under pathogen challenge. Plant bioproduction has the potential to effectively manufacture recombinant IL-22 and offer advantages of low cost for commodity markets, ready scalability, and is environmentally friendly. Recombinant catfish IL-22 (cfIL-22) was expressed using the Agro-mediated transient tobacco production system and purified for establishing functional activity of this therapeutant to trigger the fish's immune system. As IL-22 is known to induce production of natural antimicrobials and tissue repair proteins, it may provide an alternative to antibiotics or a disease preventative in aquaculture production. To assess activity of cfIL-22, in vitro bioassays using a catfish ovary cultured cell line were established. The cell proliferation assay and gene expression analysis confirmed recombinant cfIL-22's activity through expression of antimicrobials and tissue repair markers.

Mentor: Maureen Dolan, mdolan@AState.edu

RELATIVE HABITAT USE OF THREATENED AND ENDANGERED BAT SPECIES ON THE BUFFALO NATIONAL RIVER

James Gore - Graduate
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With White-nose syndrome (WNS) severely impacting cave bats and beginning to affect populations within Buffalo National River, we require a better understanding of foraging habitat requirements for our threatened and endangered resident bat species. Bats are a very important group of animals to the terrestrial ecosystem at Buffalo National River by providing valuable ecological services such as the controlling of nocturnal insect populations, and providing food resources to nutrient poor cave ecosystems. To improve survival rates of cave dwelling bats with WNS, and to speed population rebound from the few survivors, it is very important that foraging habitat requirements be better understood. Ultrasonic bat surveys were performed during April-October, 2014-2015 targeting the various habitat types and structures, within the Buffalo National River. Each site type was surveyed for a varying numbers of survey nights each season each year. The numbers of bat calls from each habitat were then pooled according to species, and the numbers of calls per species per habitat were then divided by the number of nights surveyed, then divided by the total number of species calls across all habitats to give a proportion of foraging effort used in each habitat for each species.

Mentor: Thomas Risch, trisch@AState.edu

THE EFFECTS OF INFRARED RADIATION ON LESSER GRAIN BORER (RHYZOPERTHA DOMINICA F.) DEVELOPMENT AND GRAIN DAMAGE

Rachel Hampton - Graduate
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Flameless catalytic infrared radiation (IR) is being explored as a method to dry rice; however, it is unknown if IR can change the grain's structure possibly increasing susceptibility to insect infestations. This study was conducted to determine whether IR treated rice is more susceptible to development and feeding damage of lesser grain borer (LGB), an insect that feeds and develops internally on intact grain. XL745 (hybrid) and CL152 (pureline) rice cultivars were dried using 0 (control), 2.15, 2.83, and 10.84 kW/m2 of IR. LGBs developed 50 days on treated brown and rough rice, and a subsample of kernels were examined internally for LGB using x-ray technology. The number of progeny were counted and each larva was measured. Damaged kernels were categorized (0 percent, 1-25 percent, 25-50 percent, 50-75 percent, and 75 percent+) and frass produced was weighed. LGB progeny and kernel damage was significantly higher for rice dried at 10.84 kW/m2; however, lower intensities had no difference compared to the control. No significant differences in larval sizes and frass weights were observed among the IR treatments. IR can be used for drying rice; however, an intensity of 10.84 kW/m2 should be avoided as it appears to increase grain susceptibility to LGB development and damage.

Mentor: Tanja McKay, tmckay@AState.edu

April 17th, 1:30 p.m. – 3:15 p.m.
College of Sciences & Mathematics – Undergraduate, Cache River Room

ADSORPTION OF VOLATILE ORGANIC COMPOUNDS ON THE SURFACE OF AEROSOL SALTS

Jesse Brown - Undergraduate
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Volatile organic compounds (VOCs) are found in the atmosphere and often contribute to the climate chemistry and therefore influence the climate in general. For example, some low molecular weight acids such as succinic and malonic acid have been found to contribute to the formation of smog and acid-rain. To study their chemistry, an aerosol flow reaction system was constructed and integrated into an attenuated total-reflection Fourier transform infrared spectrometer (ATR-FTIR). This system was then used to study the adsorption of such acids on the surface of aerosol particles, in this case calcium carbonate. The data collected through this method was then referenced against time to investigate the kinetics of such reactions. This analysis resulted in the conclusion that the reaction follows first-order rate kinetics with saturation equilibrium being reached in about 60 minutes; such a rate implies a fast neutralization of the acid in the atmosphere. The application and success of this analytical approach will be utilized in the investigation of other VOC's.

Mentor: Hashim Ali, hali@AState.edu

EXTRACTION OF ESTRADIOL FROM PLASMA USING LOW HAZARD AND LOW COST ORGANIC SOLVENTS

Sara Brown - Undergraduate
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From analyzing the reproductive fitness of viviparous snakes to diagnosing human diseases, estradiol quantification is a common and important laboratory procedure across many disciplines. Before accurate measurement, estradiol must be extracted from the plasma matrix. There are several approaches to extracting estradiol from plasma, however, few are simultaneously low-hazard and low-cost. The most common practices include chromatographic methods such as high-performance liquid chromatography (HPLC) and liquid-liquid extractions. Although HPLC is a sensitive and low-hazard technique, it requires experience with the equipment and can be costly. In comparison, extractions using ether are cost effective but involve using hazardous ether solvents. This project aimed to optimize liquid-liquid estradiol extraction using various concentrations of the non-ether based organic solvents iso-octane and ethyl acetate. The results of each extraction were validated using an enzyme immunoassay. The optimal concentration of the iso-octane and ethyl acetate was determined by comparing nonspecific binding, parallelism, and spike recoveries. Information gathered during this project provides a protocol for liquid-liquid estradiol extraction from plasma that is both low-hazard and low-cost.

Mentor: Lorin Neuman-Lee, lneumanlee@AState.edu

OPTICAL HOMODYNE: COMPUTER GENERATED DATA AND RESULTS

Jon Mize - Undergraduate
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Optical homodyne is the process of splitting a laser in two such that we can simulate optical heterodyne with one laser. For many experiments to work, they require a tunable laser, and in some cases, this isn't possible. With the help of Wolfram Mathematica, we created data to simulate our optical homodyne research and determine the effect that temporally delaying one of the beams would have experimentally. By creating two Gaussian curves, delaying one, then summing them together, we simulated the effect of overlapping two beams that we had observed experimentally. This allowed us to determine the amount of noise we can accept and the effect that this delay has on the usable data. By adding noise through the summing of our Gaussian curves with a random variable with a standard deviation of 1 multiplied by a noise factor, we determined the maximum detectable phase drift for that signal-to-noise ratio. Delaying one of the simulated beams also changes how much data is usable, as the higher the delay, the larger the deviation from the un-shifted, original result. This simulation allows us to determine the threshold of noise we can allow, observe the behavior of the manipulated Gaussian curve data, and shows us what to expect from delaying the second part of the beam experimentally.
Mentor: J Bruce Johnson, bjohnson@AState.edu

OPTIMIZING LA-LEAF FOR TRACE-ELEMENT DETECTION

Patrick Tribbett - Undergraduate
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Laser Ablation- Laser Excited Atomic Fluorescence (LA-LEAF) enables rapid trace-level detection of arsenic in a steel matrix. This technique creates a transient ablation plasma and introduces a line-narrowed ArF excimer resonant with the arsenic absorption line at 193.76 nm to induce fluorescence at 234.98 nm. Due to the technique's speed and lack of sample preparation, LA-LEAF may be applicable for detection of the 0.2-0.08 ppm of arsenic in rice (10x higher in the bran). This research examines the variables controlling the limit of detection (LOD) of arsenic in steel; the matrix was chosen as a proxy for rice bran due to its spectral complexity analogous to organic matrices. Preliminary results suggest potential improvements to the LOD of arsenic in steel through manipulation of inter-laser delay, plasma atmosphere, excitation energy, and temporal and spatial position of the ArF excimer. Additionally, use of the line-narrowed laser enabled exploration of the mechanism responsible for laser-induced background fluorescence, which may have implications in other plasma spectroscopy applications limited by matrix interference. Future work will include explorations of different plasma geometries, a more detailed analysis of organic matrices, and additional applications and analyte candidates for line-narrowed ArF resonant excitation.
Mentor: Jonathan Merten, jmerten@AState.edu

REMOVAL OF AN ENDOCRINE DISRUPTOR BY CLAY-LIKE OXIDES

Kristiana Watson - Undergraduate
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One of the results of global climate change is the decrease of water supply, and due to various causes there are contaminants present in this water supply. The purpose of this study was to develop a method to remove contaminants from the water. The contaminant studied in this experiment was 4-n-nonylphenol (4-NP), an endocrine disruptor that causes infertility and birth defects in aquatic life and humans. The adsorption of the emerging contaminant 4-NP onto the surface of hematite and goethite was studied using a spectroscopic instrument known as Attenuated Total Reflectance-Fourier Transform Infrared. Little is known about the interaction of these iron oxides and 4-NP, so this study gave a though observation of the adsorption capacity of oxides. The adsorption characteristics were used to test the feasibility of using iron minerals to naturally remove this persistent emerging organic contaminant from polluted waters. The adsorption kinetics for hematite and goethite showed that equilibrium was reached with the fastest kinetics to saturation achieved on hematite. Adsorption studies showed that Langmuir model bests fits the data with the highest "removal capability" as calculated from adsorption studies, observed with goethite with a calculated 4-NP maximum adsorption that was three times more than hematite. When the pH was varied, uptake of NP increased up to the pKa of 4-NP was reached, and then adsorption decreased. The next steps in our research will be to analyze other oxides to see how they compare to iron oxides.
Mentor: Hashim Ali, hali@AState.edu

SIMULATION STUDY FOR SOME MULTIPLE TESTING PROCEDURES BASED ON COVERING PRINCIPLE

Audrey Kirk - Undergraduate
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Multiple testing procedures are used when researchers consider multiple study subjects simultaneously. These procedures are required to control the probability of rejecting any true null hypothesis, which is referred to as the familywise error rate. Various procedures have been proposed to strongly control this error, including the Holm-Bonferroni method, Hochberg's step-up method, the Fixed Sequence procedure, the Fallback procedure, and graphical methods. Those proposed procedures are based on the closure principle and the partitioning principle which work in the parameter space. The Covering Principle has recently been proposed to deal with this multiplicity issue in the sample space. The Covering Principle first divides the null hypotheses into subsets by using the relationships of the rejection regions in the sample space. Any other multiple testing procedure can then be used on these subsets. In this presentation, an array of new multiple testing procedures have been developed based on the Covering Principle that can strongly control the familywise error rate. The simulation studies have shown the Covering Principle can increase the power for some scenarios compared to the most commonly used graphical methods, which allows researchers to more efficiently compare and analyze hypotheses while still controlling error rates.
Mentor: Hong Zhou, hzhou@AState.edu

THERMOVISCOELASTIC ROD AND NONLINEAR TIMOSHENKO BEAM SYSTEM WITH DYNAMIC CONTACT

Zachary Rail - Undergraduate
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In this work, we consider mathematical and numerical approaches to modeling a rod-beam system. The rod-beam system is motivated by microelectromechanical systems (MEMS). One end of the beam is clamped and another end is jointed to a thin, vertical, thermoviscoelastic rod. The beam moves transversely and the rod moves longitudinally. When the top of the rod touches a rigid obstacle, Signorini's contact conditions and Barber's heat exchange condition are applied. The beam model combines a Kirchhoff type equation with the Timoshenko beam theory. The motion of the jointed rod and beam is described by four partial differential equations and several boundary conditions and complementarity conditions. We employ time-discreatizations on a time interval and finite element methods over the spatial domain to propose the fully discrete numerical schemes. In order to compute each time step's numerical approximation satisfying a nonlinear system in the discrete case, we use the Newton-Raphson method, where the Jacobian matrix is assembled.
Mentor: Jeongho Ahn, jahn@AState.edu

MANGROVE SYSTEMS AS NURSERIES FOR CARIBBEAN CORAL REEF FISHES

Samantha Richter - McKnight – Undergraduate
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Coral reefs support high fish diversity and show great ecological and economic value. Recent work indicates that high coral reef fish biodiversity is affected by both availability of shoreline mangrove forests prop roots as nurseries for juveniles, and by levels of water quality variables. These are well documented on Indo-Pacific reefs, but not on Caribbean reefs. The hypotheses tested were that Caribbean fish populations were affected by 1) proximity to mangroves and 2) water quality variables. Surveys of fish populations on St. John (USVI) were conducted at mangrove sites, "near reef" sites (<2 km distant from mangroves), and "far reef" sites (>5 km distant) and used to determine similarity, biodiversity, species richness, fish size, and density. Water quality variables (dissolved oxygen, pH, temperature, salinity, phosphate, nitrate) were tested at these same survey sites. Species richness in the far sites was found to be higher than the mangrove sites and more juveniles were found on mangrove sites than reef sites. Also, water temperature affected species richness and percent juveniles, while phosphate levels affected fish density, juvenile number and species richness. These results support the mangroves as coral reef nurseries hypothesis but suggest additional influences on fish populations on Caribbean coral reefs.
Mentor: Rich Grippo, rgrippo@AState.edu

OPTICAL HOMODYNE: INTRODUCTION AND MATHEMATICAL ANALYSIS

John Davis - Undergraduate
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There is an increasing demand for advanced laser technology in the world. It can be important to know the coherence of a laser, but this requires a difficult technique. The optical heterodyne technique compares a pulse from one source to that of another. This technique is generally not possible due to the lack of a stable, tunable reference laser. The optical homodyne technique, however, is more practical way to measure the coherence of a pulsed laser. This involves splitting a single pulse into two identical pulses, temporally delaying one, and overlapping them, resulting in some observable beat frequency. Both techniques are similar mathematically, with two notable differences: in optical homodyne, both pulses have the same source, thus an important reduction can be made; waveform analysis by a Fourier transform is unfavorable, as the desired signal overlaps with the data at lower frequencies where substantial noise exists. This technique does not have the same luxury of a shift in frequency, so our data must be directly transformed.
Mentor: J Bruce Johnson, bjohnson@AState.edu

OPTICAL HOMODYNE: EXPERIMENTAL DESIGN AND RESULTS

Katelyn Watson - Undergraduate
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Coherent lasers are used in many research techniques, and knowledge of the coherence of the lasers used is critical to knowing the accuracy of the techniques which require them. The optical homodyne (OH) technique is used to determine the coherence of a pulsed laser. The presented OH technique provides a method for researchers to test their laser's coherence without the need for a separate stable reference laser which is required when using the more established heterodyne technique. Our research determined that factors such as air fluctuations and trigger jitter heavily affected the acquisition of data, and as a result, the design of the experimental setup was reconfigured to remove or minimize these errors. We applied this technique with a seeded nanosecond Nd:YAG laser and a frequency-doubled mode-locked picosecond laser. The picosecond homodyne results were then compared with data from the heterodyne technique to determine the accuracy and sensitivity of our technique.
Mentor: Jeffrey Johnson, Chemistry and Physics, bjohnson@AState.edu

April 17th, 1:30 p.m. – 3:15 p.m.
College of Liberal Arts & Communication – Graduate Communication/Media, Pine Tree Room

HOW UNIVERSITIES HANDLE SEXUAL ASSAULT AND HARASSMENT CASES: A VICTIM'S PERSPECTIVE

Chelsea Hays - Graduate
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This qualitative study looked into how universities handled sexual assault and harassment cases reported to them. It also examined how the victims of these cases felt they were handled. This current research examined three research questions – 1. How do universities handle sexual assault, and are harassment cases handled differently? 2. What are the procedures for handling a sexual assault or sexual harassment case in college? 3. How do victims feel universities handle their sexual assault or harassment cases? The study then presented its methods section. In the methods section, two forms of data collection are present an interview section. The interview section involved two participants who had been sexually harassed while in college. The second data collection was a content analysis of seven blog posts from three different sites for people who have been sexually assaulted. Each section presented three themes each: interview section Reporting, Confronting, and Appreciation and the blog posts Questioning, Punishment and Feeling betrayed. The study also presented a discussion section and possible future studies.
Mentor: Gilbert Fowler, gfowler@AState.edu

SELF-DISCLOSURE IN DIGITAL MEDIA

Jonathan Thibault - Graduate
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The purpose of this study is to see how are the major factors of self-disclosure found in the Social Penetration Theory affected by the use of digital media and what demographic is more susceptible to self-disclosing. As secondary research, a literature review was done through scholarly journals or reports showing current findings about self-disclosure in bloggers and social media users. As primary research, a survey will be conducted to compare and contrast self-disclosure factors with the scholarly articles which will be found in the methodology section of this research. A personal survey was given randomly to 53 people mostly from Paragould, Arkansas. They were asked to fill out the survey and told to rate the three factors (selectivity of identity, dialogue flow, and topic of conversation) on a 3-point scale. Results showed that the survey shows that males are more likely to self-disclose in digital media depending on the factor talked about and females are more likely to self-disclose if there is dialogue flow, education does not play a role either in self-disclosure, races favored that dialogue flow was the most influential factor on increasing self-disclosure, and the overall the top self- disclosing factor for all demographics was dialogue flow.

Mentor: Myleea Hill, mhill@AState.edu

SOCIAL MEDIA'S ROLE IN PROMOTING VOLUNTEERISM AND CHARITABLE WORK IN KUWAITI SOCIETY

Musaed Alshammari - Graduate
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Social networking touts an important role in supporting volunteering. This study aims to elucidate social media's role in promoting volunteerism and charitable work within Kuwaiti society. The researcher chooses to utilize a quantitative approach by using a pre-designed questionnaire to cover the study objectives. This study targets a sample of those who work in voluntary charitable societies in the State of Kuwait. This study will connect their work to social media by using a questionnaire, which will be applied to a sample of over 200 people aged between 18-36 years. The collected data will be analyzed using the Statistical Package for the Social Science (SPSS). To that end, the study results revealed that the majority of Kuwaiti participants strongly agreed that using social media can strongly promote volunteerism and charitable work through several ways, such as, discovering new non-profit organizations, increasing the number of participants, and finding and participating in volunteerism and charitable activities in an easy way. The study also recommends that the Kuwaiti government should encourage their community to engage in volunteerism and charitable work with various non-profit organizations through the use social media.

Mentor: Gilbert Fowler, gfowler@AState.edu

April 17th, 1:30 p.m. – 3:15 p.m.
College of Liberal Arts & Communication – Undergraduate Communication/Media, Arkansas River Room

A GENDERED ANALYSIS OF THE SECOND 2016 PRESIDENTIAL DEBATE: MUTED GROUP THEORY

Christian Canizales - Undergraduate
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This analysis examines the components of the Muted Group Theory that are present in the second 2016 presidential debate between Donald Trump and Hillary Clinton. This analysis is original and innovative as it highlights the intentional and inherent gestures of the male figure, in this case, Donald Trump, towards the female figure, Hillary Clinton, and how they are intended to overpower and intimidate the female figure. The Muted Group Theory states the oppression of a minority group by the "superior" group. I will take the message of this theory to analyze the instances in the presidential debate when Donald Trump interrupts, speaks over, or physically distracts Hillary Clinton. Data for this analysis will be collected from the cited YouTube video link, as well as the transcript feature on the video. This information is important to a research community as it provides insight as to how Donald Trump potentially had some advantages in the primary and general elections. Advantages such as the intimidation factor and negative representation of other candidates as well as making false promises to the American people. This analysis will affect my academic career as I am aspiring to study and work for progressive gender policy in State Education.

Mentor: Sarah Scott, sscott@AState.edu

A LOOK AT THE FIRST FEMALE NOMINEE

Madison Hart - Undergraduate
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Hillary Clinton's speech at the Democratic National Convention. Gender communication history was made when Hillary Clinton made her speech accepting the Democratic nomination for President of the United States. She became the first woman in our nation's history to be selected as a candidate by one of the major political parties. In this speech, she was able to write history in a way that hadn't been done before: through the words of a woman. Standpoint theory explains how women are pushed to the back of society and shut out of main discussions. Throughout my paper I will show how Clinton recognizes the place that has been given to women in politics and stands strongly against it. As the first woman to give an acceptance, she was able to shed a new light on issues that we all face and how she planned to combat them. I will explain how the standpoint theory says that women are inside and outside of society and how Clinton took her place as the first lady and was now ready to take on the role of president.

Mentor: Sarah Scott, sscott@AState.edu

FEMINISM, THE WORKING WOMAN

Amber Blade - Undergraduate
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Traditionally, it was uncommon for women to become police officers. According to the National Center for Women and Policing, women make up 13 percent of the police force in the U.S. Today, many women are dominating the police workforce, even out-excelling most men. The movie "Zootopia" is the perfect example of this stereotype. In the movie, Judy dreams of becoming the first rabbit police officer in her hometown Bunnyburrow after graduating with honors from police academy. Judy must overcome many prejudices preventing her from being the best she can be. Proving that she's more than a meter maid to her colleagues, her determination is outstanding. Zootopia's message of inclusivity, equality and common discriminatory hiring practices was well-received. Examining the complex roles presented in the film can shed light on the struggles women have in the law enforcement system. Muted Theory is the perfect theory to help the argument of power and how it is used against people.

Mentor: Sarah Scott, sscott@AState.edu

IS THERE REALLY LOVE IN HIP HOP?

Tanjala Robinson - Undergraduate
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Love and Hip-Hop is a popular American reality TV drama that peeks into the lives of semi to largely popular figures in the hip-hop community. For a large portion of the show we get to see how these people live their lives but is it really their live? The screenwriters of course set up most of the altercation we see playing out on the screen along with a large amount of smaller things that give us an idea of who these people are. Knowing this should make us ask the question "why," why do they always pit women against each other to make the men of the show look better and maintain the status of what a man should be and act like in this particular subculture of American culture. Rather it be with childish cat fights over something someone else has said or them being left heartbroken and humiliated due to a man publicly cheating on them, these women have been turned into cyborgs for the job of the viewer. With that being said, I will being taking a deeper look into how we can apply the cyborg theory in feminist thought to the very popular American cultural trend.

Mentor: Sarah Scott, sscott@AState.edu

ANALYSIS OF THE CROWN

Jamie Shaw - Undergraduate
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The Crown is a Netflix original series that captures the life of Queen Elizabeth II and the royal family from when she takes over the throne after the passing of her father. Throughout the series, it is evident that being a young, royal woman who had to go from being just a child to becoming the ruler of the Commonwealth in England in a matter of days was not an easy transition. The show also portrays the struggle a young woman endured in a male-dominated world. Through my analysis of The Crown, I will hopefully identify the relations that the show and the history of Queen Elizabeth II have with such theories as the muted group theory and the standpoint theory. I will analyze a specific episode, which portrays real-life events of the royal family, as well as researching on the royal hierarchy from the 1952. I will first analyze one episodes that portray the beginning of Queen Elizabeth's reign, and where she and Prince Phillip start to find it hard to communicate. From this, I will discover common themes that can be found throughout the series. These themes include male-dominance, doubt, and silent opinions. I will then research more and show how these occurrences impact the Queen and the gender roles of the 50's.

Mentor: Sarah Scott, sscott@AState.edu

DEATH BECOMES HER: A VIEW OF GENDER ENHANCEMENT

Christopher Kjorlaug - Undergraduate
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What happens when augmentations and adaptations become so intrinsically connected to people that they are no longer able to be separated from their enhancement? Death Becomes Her, is a film that shows what the future of this level of connection might look like on a deep psychological level, examining how we use our technologies to enhance our own reality, most commonly through creations and connections that help to enhance our own view of gender. The film centers around two women utilizing every method to stay youthful and enhance their own feminine charms as a means to compete with one another for the hand of someone they both claim to want, but instead of utilizing this enhanced gendered nature for the ends of winning the man it centers more around the use of that nature to assault each other over a long period of time. So how then do these enhancements further structure and shape our concept of gender?

Mentor: Sarah Scott, sscott@AState.edu

April 17th, 1:30 p.m. – 3:15 p.m.
College of Liberal Arts & Communication – Undergraduate Communication/Media, White River Room

FORMS OF FEMINISM IN HIDDEN FIGURES

Lamarcus Cole - Undergraduate
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In the biography movie, Hidden Figures by Margot Lee Shetterly, Taraji P. Henson, Octavia Spencer, and Janelle Monae play as Katherine Jonson, Dorothy Vaughan, and Mary Johnson; three brilliant African American women working for NASA who helped launch into orbit astronaut John Glenn. This visionary trio crossed all gender and racial lines and inspired generations. The movie demonstrated many forms of gender communication that the women faced. The plot of the movie takes place during the 1960's when the second wave of feminism began, and racial tensions were at an all-time high in America. During this time frame, women dealt with structuralism along with two forms of feminist communication: Muted Group theory and Standpoint Theory. In the biography, director Theodore Melfi, demonstrated these forms of gender communication frequently. However, gender wasn't the only factor shown in the film; the trio of women faced many racial trials as well. For example, Octavia Spencer (Dorothy Vaughan) wasn't allowed to be promoted; not because she was a woman but because she was African American. No matter how much she spoke out about it, the circumstances didn't change. This is an example of the Muted Group theory.

Mentor: Sarah Scott, sscott@AState.edu

GENDER STEREOTYPES IN TELEVISION SHOWS.

Levi Crawford - Undergraduate
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"Andy, this is my business, it's nothing to do with you. Go down stairs and do what you do best, patrol the couch in your underwear." This is a quote from Nancy Botwin, the lead character who breaks societies expectations of a woman in every episode of the show "Weeds." What's a newly widowed suburban housewife and mom of two supposed to do? Nancy Botwin would answer "Whatever the hell it takes." "Weeds" has comedy and drama to attract the mass consumer but I plan to go beyond the surface level and analyze Nancy Botwin and Andy's character and how they both go against common expectations of gender roles. Furthermore, I plan to focus on the Muted-Group theory and how Nancy and Andy are going against the theory and reinforcing feminism by Nancy being a strong-willed, independent, and successful family provider while Andy is staying home watching the children, cooking, and cleaning. I'll use quotes and scenarios from the show along with articles from Muted-Group theorist to illustrate the vital role of mass media entertainment to advance feminism and equality.

Mentor: Sarah Scott, sscott@AState.edu

GENDERED WOMEN AND MEN IN FASHION MAGAZINES

Ryoko Uchida - Undergraduate
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Models in fashion magazines sometimes show what is expected of women and men in society. These images of women and men are gendered and make the reader believe these gendered stereotypes. Fashion magazines have strong power to reproduce these gendered images. In this study, my objective is to clarify the gendered images in fashion magazines. In order to show these images in magazines, I examine the contents of two fashion magazine, Vogue and GQ, from four different perspectives: health, race, facial expression and color. Firstly, I research what body shapes are desirable in magazines by calculating model's BMI. Secondly, I analyze the races of the models to find out the variety of races in these magazines. Thirdly, I observe the model's facial expression. Finally, I examine the colors which are used in clothes and fonts. I use standpoint theory and show what is expected of women and men and what is not desirable of them. There are many researches focusing on the gendered images in fashion magazines, but researchers who examine and compare both women and men fashion magazines are few. This study will help readers to notice the fixed images of women and men in magazines.

Mentor: Sarah Scott, sscott@AState.edu

WHAT HAPPENED TO MONDAY STANDPOINT THEORY?

Mikka Rolle - Undergraduate
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Standpoint Theory. The purpose of this research is to study the role of the standpoint theory within the framework of the movie, "What Happened to Monday." A film that is centered around seven identical sibling girls that later grow into women. The world they live in forbids a family to have more than one child. Although, they are seven people they live one life as one person in order to mask their true individual identities. They all possess different fields of perspective and provide the viewers with different identity approaches to be explored through their dispositions. They have multilayered experiences and as children began developing multiple tiers of consciousness. From a less privileged position of not truly existing they all become the outsiders within. The standpoint theory is the most applicable theory through which it examines a grouped power & knowledge of authority positioned to eliminate them. Through the goggles of standpoint theory, I aim to evaluate the social science and scientific work associated with identity and multiple births based on an ethnographic approach that can offer understanding for these individuals and the ideas and arrangements of society they live by. By examining the psychology of children involved in multiple births we can verify that family position truly affects intelligence and personality. Tactical insights give us the scoop on the way child development plays a major role into behaviors motivation and a window into applicable strategic insights. This paper reviews the theoretical standpoint of the film, "What Happened to Monday," meanwhile providing real-world evidence to answer the question for How does the framework of the movie provide understanding for the psychology of children born into a set of multiple births as well as; How to use the information to cross apply social science and scientific work.

Mentor: Sarah Scott, sscott@AState.edu

"LIBERTY FOR ALL"

Kyron Henderson - Undergraduate
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The "Let Girls Learn Initiative" speech, presented by Michelle Obama is impactful and centered on why fighting for women's rights is important. During her speech, Obama stated, "These issues aren't settled, these freedoms that we take for granted aren't in stone." These culturally accepted rules/norms are depleting the lives of women all across the world; therefore it is vital that change is not only spoken of, but also implemented. Based on research findings, as well as other documentary sources, the paper will examine the nature of current events and efforts to impact the change that Obama and another theorist suggest. The theory used in this paper is the Muted Group theory; this is a critical theory concerned with power and how it is used against people. I review current cultural expectations and adaptations of women's rights being depleted, as well as traditional beliefs that have contributed to women being view as inferior. This paper encourages the support of implementing change and the essentiality of women gaining equal rights.

Mentor: Sarah Scott, sscott@AState.edu

NAKED HUSTLE

Logan Wescott - Undergraduate
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In the song Naked Hustle artist Twelve'len is speaking to and about the life of a stripper. This critical analysis will analyze the issues around being a female stripper. The lyrics of the song are a clear reality for some women in today's society. I will analyze why there is a status quo around this career path. Usually strippers are single mothers or younger women with no kids, but in this song there is a twist to the so-called stripper norm. I am making a connection to the song from the standpoint theory, from how people view this and the reason why they view it the way they do.

Mentor: Sarah Scott, sscott@AState.edu

April 17th, 1:30 p.m. – 3:15 p.m.
College of Liberal Arts & Communication – Undergraduate Communication/Media, Black River Room

PARKING ISSUES/SOLUTIONS AT ARKANSAS STATE UNIVERSITY

Mckenzie Garrett - Undergraduate
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Parking on Arkansas State University's campus has been an ongoing issue for many years, but never is the issue that is addressed. The primary issues are lack of sidewalks, pedestrian crosswalks, commuter spaces, and even faculty/staff spaces, especially in cases of hazardous weather conditions. The purpose of this campaign is to propose the idea of adding a shuttle/bus service to utilize the currently unused commuter parking lots that are 15-plus minutes away from the center of campus. A quantitative study was conducted in which 100 anonymous students were surveyed between November 8, 2017- November 10, 2017, indicating that more than half of the students were unsatisfied with parking. One of the key goals in this study is to evaluate the opinions of students who attend Arkansas State University on parking issues and innovate a cost-effective way to make parking on campus easier and safer than before. The study showed that 76 percent of students would be more willing to park at further away commuter lots if there were a shuttle/bus service to and from the center of campus. Having an alternative solution to the parking issues will benefit the university by attracting prospective students as well as the current students, faculty and staff.

Mentor: Myleea Hill, mhill@AState.edu

STANDPOINT THEORY AS IT APPLIES TO "THE TOTAL WOMAN"

Kaylianne Weber - Undergraduate
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Huge strides have been made to achieve equality for all genders since 1973. In this year, Marabel Morgan published a self-help book entitled "The Total Woman." This book describes every role a woman should fulfill to satisfy her husband, such as what she should wear, to the schedule of her day. However, the practices described in the work are ridiculous and almost offensive to the modern woman. These standards would only ever be expected of women and never of men. This paper will use the Standpoint Theory to analyze why a woman wrote this book and why it was so popular amongst women. The Standpoint Theory states that a person's perspective is shaped by their identity and their experiences. The analysis will delve into the book's description of a typical woman in the 1970s and society's expectations of her. It will also analyze how the author's standpoint influenced the book and how a reader's standpoint influences the way they perceive the tips presented.

Mentor: Sarah Scott, sscott@AState.edu

THE DIFFERENCE IN RULES AND ACCEPTABLE BEHAVIOR AT SORORITY HOUSES COMPARED TO FRATERNITY HOUSES

Clark Ferguson - Undergraduate
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I plan to conduct my research on the difference between the rules that are in place and the acceptable behavior that is tolerated in and around sorority and fraternity houses. The difference in the two is astounding. I will be conducting a rhetorical analysis by using my own personal experiences from being a member of a fraternity for the last three years and retrieve a list of rules that are in place from various sororities on campus. When doing this research, I hope I can bring to light that the vast difference is damaging to the view of Greek Life. I plan to find the reasons behind why the rules and behavior at fraternity houses are held to such a lower standard than that of sorority houses. With this research, I hope we can have a better understanding of this difference. I believe this research could lead to solutions that would cut down on the behavior that sheds such a negative light on Greek Life activities.

Mentor: Sarah Scott, sscott@AState.edu

USING THE STANDPOINT THEORY TO SHOW HOW MEN ARE MUTED IN "SEVEN BRIDES FOR SEVEN BROTHERS"

Jacey McKinley - Undergraduate
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In the 1954 musical Seven Brides for Seven Brothers, six men that are depicted as rugged and grotesque are trained to properly court a woman and to ultimately obtain a wife. With the sexist notion that a man must act a certain way to get a girl and must get married, the musical was in tune with the times in the 1950's, but a release of a similar musical would be outdated in the 21st century. Standpoint Theory is a communication theory that claims that where we are from (e.g. our experiences, class, nationality) frames our perspective and the way we see the world. By using the Standpoint Theory, we can look at how our different perspectives, standings, and life-experiences are mirrored or neglected in film. Seven Brides for Seven Brothers uses the viewpoint of a woman to focus on how men act without a feminine figure and how a man should act, giving the film a very one-sided perspective and essentially muting the standpoint of the man. The findings of this analysis are still underway.

Mentor: Sarah Scott, sscott@AState.edu

SITUATION OF THE MUTED GROUP THEORY

Coulton Lee - Undergraduate
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Canadian Prime Minister Justin Trudeau came under fire on Tuesday for interrupting a woman to tell her to use the word "peoplekind" instead of "mankind." The word "mankind" developed from the Old English word "man" which primarily describes an adult human male, but as time went on this word was used to describe humanity as a whole. Even though Justin Trudeau was trying to help remove what some people say is a feminist word, he still contradicted himself by interrupting her. There is a feminist theory called the muted group theory that explains this situation. I am going to use this theory to show how Mr. Trudeau demonstrates stereotypical male dominance. Shirley Ardener developed the muted group theory in 1975 and it states that women and men with patriarchal, capitalist societies tend to form two distinct circles of experience and that the women's circle tends to be more muted by the men.

Mentor: Sarah Scott, sscott@AState.edu

WHAT IS WRONG WITH OUR MUSIC TODAY

Shania McGee - Undergraduate
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In the society that we live in today, it is just seen as part of the "norm" or culture to hear disturbingly derogatory slurs and blatant disrespect toward both gender binaries. I cannot begin to describe the countless song hooks, off the top of my head, that refer to women as "b*tches" or "sluts" and many times, names way worse than that. Even though this may been highlighted more so in "today's" rap and hip-hop culture, it is all throughout the music industry. There are songs and entire albums dedicated to "what the woman is supposed to do" and how the woman should "act" as if a woman's complete existence is to sit and "look pretty" for her husband. Then she must exude some type of submissive behavior and do what he wants her to do, to keep him happy. The most disgusting part is that women actually feed into this mess, sometimes just because it may possess a catchy beat. If she did not give consent, that means no. This is only small portion of what is truly wrong with the music that we allow ourselves to listen to and absorb today.

Mentor: Sarah Scott, sscott@AState.edu

Sales Pitch & Businss Elevator Pitch

April 18th, 8:30 a.m. – 10:15 a.m.
Neil Griffin College of Business, Sales Pitch, Auditorium

Sell me this "pen"!

Sell me this pen is a sales competition designed for Create@State. It is a competition that is designed to have sales students think critically and creatively, improvise and tap into their emotional intelligence and improvisation and sales skills. This competition will begin with students being asked to sell an object they draw out of a bowl. It will be a random object on a random class day. Students will have no prior knowledge to this assignment so they will have to just think on their feet and sell an object. This will become their benchmark for the training. After this initial period, they will work on the skills needed to be able to sell any object listed. Their final test for this competition will be during the Create@State event in April. They will be tasked with pulling a random item out of a grab bag and selling that item to the judges. They will have to focus on the item and have knowledge of it as well as understand how to sell it to a particular customer.

Advisor for this competition: Dr. Katie Hill

Students involved:

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Poster Presentations

P:01
A LOCAL CLINIC'S USE OF LOW-DOSE COMPUTED TOMOGRAPHY FOR LUNG CANCER SCREENING

Leah Young - Graduate
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Lung cancer remains the leading cause of cancer death both worldwide, and in the United States (World Health Organization, 2017). Recommendations for lung cancer screening have evolved over the decades. In 2013, the United States Preventive Services Task Force recommended an annual low-dose computed tomography scan of the chest for at risk patients. After the screening recommendations update, both private insurance companies and the Centers for Medicare and Medicaid Services began mandated coverage for the computed tomography scan in early 2015.
Despite this, studies have shown that the recommended screening process is underutilized. The purpose of this study is to see if local providers are using low-dose computed tomography scans for lung cancer screenings. This study will be conducted using a retrospective chart review of screenings ordered by a set of local providers in Northeast Arkansas. This research will determine if providers have updated their care practices since the publication of screening recommendations. Data collection and data analysis for this research is pending.

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P:02
A LOCAL CLINIC'S ADHERENCE TO JNC 8 GUIDELINES ON MEDICATION THERAPY FOR TREATING HYPERTENSION

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Hypertension is a major risk factor for renal failure, stroke, heart failure and coronary artery disease (Hernandez-Vila, 2015). Although various pharmacological treatments are available to treat hypertension, the number of patients with uncontrolled blood pressure is estimated to be 35.8 million (Scordo & Pickett, 2015). The purpose of this study is to review rates of adherence to the JNC 8 guideline recommendations for initiation of pharmacological therapy in patients age 18-59 in a rural primary care clinic between the dates of November 1, 2015 to November 1, 2017. Through a retrospective chart review, this descriptive study will examine a randomized sample of patients who have a diagnosis of hypertension. Identified data will include demographics, diagnoses, blood pressure readings and medications prescribed. Results are pending at this time. This research will assist in making providers more aware of JNC8 guidelines and ensure that their patients are on a medication that follows best practice.

Mentor: Patricia Cunningham, pcunningham@AState.edu

P:03
A LOCAL MEDICAL CLINIC'S RATE OF FUNDOSCOPIC EXAM VS THE RECOMMENDED ANNUAL EXAM

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Diabetes is a global epidemic with significant morbidity. Diabetic retinopathy is a specific complication of diabetes and affects 1-in-3 people with the disease (ICO Guidelines for Diabetic Eye Care, 2017). Diabetic retinopathy is one of the leading causes of blindness worldwide and primary cause of impaired vision in patients 25 to 74 years (Fraser & D'Amico,2017). Risk increases with age and overall control of the disease. The purpose of this study is to assess how often the annual recommended fundoscopic exam is referred to a specialist and if results are present within the electronic health record at a clinic in rural Arkansas. Data will be obtained through a retrospective review of records from 2017. Criteria for inclusion are patients aged 18-75 with a diagnosis of diabetes who have been followed at the clinic for at least one year. Fifty records will be selected from a report generated from the EHR of all patients with a diagnosis of Diabetes Mellitus. Selection will be randomized via a random number generator, and data analyzed. This study will assist in identifying deficiencies in documentation and with planning process improvement within the clinic. Results/Conclusions: Data collection is ongoing and data analysis is pending.

Mentor: Patricia Cunningham, pcunningham@AState.edu

P:04
A RETROSPECTIVE CHART REVIEW OF COMPLIANCE WITH PREVENTION OF CARDIOVASCULAR COMPLICATIONS IN AT RISK PATIENTS ACCORDING TO HEDIS GUIDELINES

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Prevention of cardiovascular complications in at-risk patients are imperative. Studies have shown that starting a low dose aspirin regimen in at-risk patients decreases risk for blood clots, stroke and heart attack. "Women 56–79 years of age with at least two risk factors for cardiovascular disease; Men 46–65 years of age with at least one risk factor for cardiovascular disease; Men 66–79 years of age, regardless of risk factors, should be started on low dose aspirin therapy." (www.ncqa.org, 2016) Risk factors for cardiovascular disease include: diabetes, hyperlipidemia and hypertension. Utilizing retrospective chart view, data was collected from January 1, 2015 to October 1, 2017. The data was analyzed to determine compliance with current guidelines on aspirin prescribing to reduce cardiovascular events associated with diabetes, hyperlipidemia and hypertension. Data analysis showed non-compliance with aspirin prescribing per HEDIS guidelines. This information indicates that providers need increased teaching and knowledge about current guidelines. By not prescribing aspirin therapy in accordance to HEDIS guidelines, providers are putting patients at increased risk for blood clots, stroke and heart attack.

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P:05
A RETROSPECTIVE CHART REVIEW OF OBESITY DIAGNOSIS IN THE PRIMARY CARE SETTING

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The obesity epidemic is negatively impacting the overall health of the American population and the economy—costing America billions of dollars per year. Primary care providers are on the front lines to combat this epidemic, but provider compliance is unclear. This was a retrospective, observational chart review that evaluated the presence of obesity (BMI of 30.0 or greater) diagnosis/treatment in primary care. This study contained a sample of 203 charts of obese patients, from a cohort of 423 patient charts in a small, primary care clinic in rural Northeast Arkansas. Every patient presenting to clinic is assessed for obesity. Of the total 423 patients seen, 47.9 percent are obese—which is higher than the national average, and only 22.6 percent of obese patients received an obesity diagnosis. Of that 22.6 percent, less than half received treatment, and only five percent of the patients who received treatment were male. Primary care providers are not adequately addressing, diagnosing and treating obesity. Primary care providers are the center pillar to defeat the obesity epidemic; therefore it is imperative that primary care providers are compliant with counseling, treating and referral standards.

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P:06
A RETROSPECTIVE CHART REVIEW TO ASSESS PERCENTAGE OF PEDIATRIC ASTHMATICS WITH ALLERGY TESTING ON FILE

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Asthma is a common chronic childhood disorder affecting six million children. Allergy skin testing is highly recommended to reduce or eliminate exposure to asthma triggers. Diagnosing and treating known key triggers can help to reduce the number of asthma exacerbations experienced by pediatric patients. Decreasing exacerbations also reduces the need for medications and hospitalizations thereby increasing the quality of life for the child. A retrospective chart review of 45 charts from a group of small clinics in rural Northeast Arkansas will be performed to determine if allergy testing has been recommended or performed per National Heart, Lung, and Blood Institute guidelines for pediatric patients who have a diagnosis of asthma, ICD codes 493.00, 493.90 and 493.92. The purpose of this study is to determine if adherence to guidelines related to pediatric asthmatics and allergy testing are conducted in this regional area. Data collection is ongoing with analysis pending. Northeast Arkansas has a high incidence of asthma due to its agricultural environment. Adhering to guidelines for allergy testing for children with a diagnosis of asthma has the potential to decrease health care cost through reduced asthma exacerbations, medications and hospitalizations for children living in Arkansas.

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P:07
ARE ACEI OR ARBS, IN ACCORDANCE WITH ADA GUIDELINES, BEING PRESCRIBED FOR HYPERTENSION TREATMENT IN TYPE II DIABETICS?

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Among patients with diabetes, the incidence of hypertension increases over time from five percent at 10 years, 33 percent at 20 years, and 70 percent at 40 years (Bakris, 2017). "The recommended first-line treatment for hypertension in diabetic patients, according to the American Diabetes Association (ADA), is an angiotensin-converting-enzyme inhibitor or angiotensin II receptor blocker at the maximum tolerated dose" (Jenkins, 2017, p.4). The purpose of this study is to evaluate rates of adherence with ADA guidelines in using ACEIs and ARBs for diabetic hypertension management. Through a retrospective chart review of de-identified data from October 1, 2016 to October 1, 2017 in a rural health setting in Northeast Arkansas, the medical records of patients age 20-70 diagnosed with diabetes and hypertension will be examined. This information will be used for quality improvement measures to meet guideline goals and best practice recommendations. Implications for clinical care will be discussed.

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P:08
ARE HEALTHCARE PROVIDERS FOLLOWING JNC 8 GUIDELINES ON LIFESTYLE MODIFICATIONS FOR HYPERTENSION?

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According to the U. S Department of Health and Human Services, there are approximately 50 million individuals affected in the United States with Hypertension and 1 billion worldwide. The purpose of this study is to determine if healthcare providers are educating patients, over the age of 18, diagnosed with hypertension on at least two different lifestyle modifications according to the JNC 8 guidelines. Lifestyle modifications according to JNC guidelines include; smoking cessation, blood glucose control, lipid control, moderate alcohol consumption, DASH diet, physical activity, weight and sodium reduction. According to research, there has been a 30 percent decrease in hypertension in patients since starting the JNC guidelines. This research study will be conducted using a retrospective chart review at a rural health clinic in Rector, Arkansas. This research study will help indicate that there is a lack of education on lifestyle modifications to patients diagnosed with hypertension and show that providing education may be more beneficial for the patient's health. It has been shown that lifestyle modifications benefit those with hypertension by decreasing further complications, promoting a healthier lifestyle, lower blood pressure, and increasing the effectiveness of anti- hypertension medications. The data collection is ongoing and the data analysis is pending.

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P:09
ARE HYPERTENSIVE PATIENTS OVER THE AGE OF 60 YEARS OLD TREATED IN ACCORDANCE WITH JNC 8 GUIDELINES?

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According to the Centers for Disease Control and Prevention (CDC) as of November 13, 2017, approximately 75 million adults in the United States have been diagnosed with hypertension. The purpose of this study is to determine the rates of adherence to the Eighth Joint National Committee (JNC 8) guidelines when treating and managing hypertension in adult patients over the age of 60 years old that do not have a diagnosis of diabetes mellitus or chronic kidney disease in a small rural health clinic in Northeast Arkansas. A retrospective chart audit will be conducted from existing medical records from February 1, 2017 through February 1, 2018 at a rural health clinic in Northeast Arkansas. At this time data collection is ongoing and data analysis is pending. The results of this research study will indicate the adherence rate of one rural health clinic to the JNC 8 hypertension guidelines and the possible need for further education on the need for adherence to improve successful hypertension management. Information obtained will also be shared with the practice site to assist them in their efforts for quality improvement.

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P:10
ARE LIFESTYLE MODIFICATIONS PRESCRIBED FOR A DIAGNOSIS OF PRE-HYPERTENSION?

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Cardiovascular disease is one of the top diagnoses within the United States. Twenty percent of the population of the United States, approximately 50 million people, have been diagnosed with hypertension. Hypertension can lead to heart failure, kidney failure, heart attack and strokes. Pre-hypertension is defined as a blood pressure reading of systolic pressure ranging between 120-139 mm Hg and diastolic pressure ranging between 80-89 mm Hg according to the JNC-7 hypertension guidelines. Evidence supports the use of lifestyle changes such as maintaining an appropriate body weight, regular exercise and reduced dietary sodium to be beneficial in preventing the pre-hypertensive patient from developing hypertension. This project will utilize a quantitative retrospective chart review from January 2016 to January 2017 for patients who presented with elevated blood pressure without being diagnosed with hypertension. Charts of patients in a small rural primary care clinic in Poinsett County will be examined to determine if lifestyle modification education was given to help reduce the risk of developing the diagnosis of hypertension. Data collection is ongoing with analysis pending. Preventing and controlling hypertension is critical to improve quality of care for patients, improve health outcomes, and decrease overall healthcare expenditures.

Mentor: Debbie Shelton, dshelton@AState.edu

P:11
ARE MALES AGE 30 TO 59 DIAGNOSED WITH HYPERTENSION, RECEIVING JNC-8 RECOMMENDED TREATMENTS, ACHIEVING BLOOD PRESSURES OF LESS THAN 140/90?

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Hypertension is present in approximately one of every three adults in the United States. Hypertension is the most common condition seen in primary care and can lead to severe complications if left untreated. As the prevalence of hypertension has grown, guidelines have been developed by the Eighth Joint National Committee (JNC-8) that allow providers to effectively manage patients with hypertension. These guidelines allow choosing patient-specific pharmacological therapy based on age, race and co-morbidities. The purpose of this study is to evaluate adult males with hypertension, age 30 to 59, who are receiving JNC-8 recommended treatments achieved blood pressure readings of less than 140/90. A retrospective chart review was performed to audit 40 charts that met inclusion criteria during the time frame of January 1, 2016 through October 31, 2017 to determine if adult males, age 30 to 59, who were receiving JNC-8 recommended treatments attained blood pressure readings of less than 140/90. Data collection is ongoing with analysis pending. JNC-8 guidelines should be utilized when choosing appropriate pharmacological therapy and further guidelines can be established based on effectiveness of current guidelines.

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P:12
ARE PRIMARY CARE PROVIDERS DISCUSSING DIET, EXERCISE, AND WEIGHT LOSS WITH PATIENTS WHO HAVE A BMI ≥ 30KG/M²?

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To promote health and reduce chronic disease risk, consumption of healthful diets with achievement/maintenance of healthy body weights is recommended (Healthy People 2020). Obesity is associated with a higher risk for Type 2 diabetes mellitus (18-fold risk), hypertension (sevenfold risk) obstructive sleep apnea, dyslipidemia, many cancers, cardiovascular disease, osteoarthritis and stress urinary incontinence (Hofmann, 2016). The purpose of this study is to evaluate if adults aged 20 to 50 years with a BMI ≥ 30 kg/m2 in a rural health primary care practice have discussions during their visit related to diet, exercise, and weight loss. Through a retrospective chart review of a random sample of medical records dated January 1, 2016 to January 1, 2017, de-identified data will be collected that includes demographic information, weight, BMI and provider coding or documentation related to healthy diets and weight. Data collection is ongoing with analysis pending. The primary care provider's focus is evidence-based practice; therefore, discussion of diet, exercise and weight loss with obese patients as well as ensuring proper documentation of those encounters can improve health outcomes.

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P:13
CIGARETTE SMOKING AND THE EIGHTH JOINT NATIONAL COMMITTEE GUIDELINES

Barbara Coble - Graduate
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Hypertension is a significant contributor of stroke and cardiac disease worldwide. Cigarette smoking is an avoidable factor that contributes significantly to the development of cardiovascular diseases. The first step in the management of hypertension according to the current JNC-8 (Joint National Committee) guideline is to commit to healthy lifestyle changes. The purpose of this study is to investigate smoking cessation education provided to smokers diagnosed with hypertension in a rural healthcare clinic in Northeast Arkansas. A retrospective chart review will include a convenience sample of 100 medical charts. Inclusion criteria are patients aged 40-50 years diagnosed with hypertension that currently smoke cigarettes. Data collection is currently ongoing and includes reviewing records from January 2017 through November 2017. Evidence of cessation education will be measured by documentation of CPT (current procedural terminology) codes. Research results will be shared with the healthcare facility where the data was collected with implications for practice. These findings will contribute to the advancement of evidence-based practice by Advanced Practice Nurses through evaluation of consistency of smoking cessation education.

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Mentor: Debbie Shelton, dshelton@AState.edu

P:14
DESCRIBING THE POTENTIAL EFFECTS OF EDUCATIONAL OFFERINGS ON THE ORGAN DONOR REGISTRY

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There are currently 117,000 people on the national organ waiting list. A new name is added every 10 minutes, and approximately 21 people pass away every day while waiting for an organ transplant. To further raise awareness of organ donation, efforts have become implemented to include organ donor family members and organ recipients within public campaigns and mass media programs. This promotes education, interpersonal communication, and a pro-donation attitude amongst people of all nations. To determine the effect of public education on the organ donor registry in Central Arkansas since donor family members and organ recipients became involved, a retrospective review will be conducted of de-identified, randomized data from 100 donor registry records between years 1996 to 2006 and 2006 to 2016, provided by Arkansas Regional Organ Recovery Agency. The data includes demographics, analysis of age variance between 18 to 40 years of age, and donor registry rates in Central Arkansas. Data collection is underway with data analysis pending. This study should increase awareness of Advanced Practice Nurses and other clinicians, of most effective ways to better promote and impact the community into joining the organ donor registry.

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P:15
DIABETES SELF-MANAGEMENT EDUCATION REFERRAL RATE IN A LOCAL FAMILY PRACTICE VERSUS THE NATIONAL AVERAGE

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Type 2 diabetes mellitus (T2DM) has grown to affect 29.1 million Americans. Hospital charges associated with T2DM with complications has increased to $135 million in Arkansas alone. The American Diabetes Association (ADA) supports Diabetes Self-Management Education (DSME) as a proven method to assist patients manage diabetes on their own. Healthy People 2020 states only 56.8 percent of adults with T2DM report they received formal diabetes education. The purpose of this study is to compare the percentage of patients (age 18-60 years old) who were newly diagnosed with T2DM and were referred to DSME in a North Central Arkansas clinic to the national average of 56.8 percent. This study will be conducted using a retrospective chart review of 50 patient records. Data collection and analysis is pending at this time. Once concluded, this study has the potential to assist in the advancement of clinical practice trough quality improvement at the clinic where data is collected. Also, it has the potential to further validate previous research and to assist professionals with care planning for these with T2DM.In the end, the goal is to lessen complications and costs associated with T2DM for our patients.

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P:16
EFFECT OF ENRICHED TAI CHI EXERCISE PROGRAM ON QUALITY OF LIFE OF OLDER ADULTS RESIDING IN THE ASSISTED LIVING FACILITY.

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Lack of physical activity and sedentary lifestyle are attributed to declining quality of life in elderly in assisted living facilities. Appropriate exercise programs are linked to improving quality of life of frail elders residing in assisted living facilities. This study aimed to test the effects of an enriched tai chi exercise program in improving quality of life in frail elders living in an assisted living facility. We will use a quasi-experimental pretest and posttest design. A convenience sample of 12 elderly residents of an assisted living facility will be divided into an enriched tai chi exercise and control activity group. The outcome measures, 36-Item Short Form Survey and the Beck depression scale, will be used at baseline, at the fourth and eighth week of the study. After eight weeks of performing an enriched tai chi exercise program, we hypothesize participants' quality of life will improve significantly ($p < .05$). In addition, intervention group participants will have better results on all outcome indicators than those of control group participants. With further research in this area, it will open an avenue for the role of occupational therapy profession in assisted living facilities.

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P:17
EVALUATION OF HUMAN PAPILLOMAVIRUS COMPLETION RATES FOLLOWING 2016 CDC TWO-DOSE SCHEDULING UPDATE

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Human papillomavirus (HPV) is the most common sexually transmitted infection in the U.S. and is responsible for infecting over six million individuals annually. Illnesses related to HPV infection are associated with low and high-risk cancers of the genital region. HPV is estimated to be the catalyst cause of over 260,000 cervical cancer-related deaths worldwide. In 2014, the U.S. Food and Drug Administration (FDA) approved Gardasil 9 as a three-dose vaccination to protect male and female patients from nine strands of HPV, thereby providing protection against HPV infection and associated diseases. In 2016, the FDA approved a two-dose HPV vaccine to hopefully improve HPV vaccination completion rates. The purpose of this study will evaluate HPV vaccination completion rates of individuals immunized at a local family practice clinic in Hot Springs, Arkansas before and after the 2016 update for two-dose scheduling. A retrospective chart audit will be used to compare HPV immunization completion rates before and after the 2016 update. Data collection is ongoing with analysis pending. Consistent awareness and appeals from healthcare providers to eligible patients is necessary to increase HPV vaccine completion rates. Decreasing the prevalence of HPV reduces the number of cancer-related diagnoses and deaths.

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P:18
EVIDENCE- BASED TREATMENT CHOICES: INITIAL MODALITIES PRESCRIBED IN NEWLY DIAGNOSED DMT2 PATIENTS WITH HBA1C <7.5%

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The U.S. prevalence of Diabetes Mellitus Type 2 (DMT2) has doubled within 3 decades and accounts for 90 percent of all diabetes cases. As a leading cause of death, DMT2 ranks seventh nationally and fourth in Arkansas. The burden of DMT2 is grossly higher in underserved states. DMT2 related deaths and complications are significantly lower with early diagnosis and consistent treatment/management. First line (tier one) American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD) therapy guidelines involve three steps, lifestyle modification plus oral monotherapy (biguanides when possible), addition of a second oral antidiabetic and/or basil insulin, and intensive insulin therapy. The purpose of this study is to assess the prescriptive frequency of tier one antidiabetic therapies for DMT2 diagnoses in the primary care setting in northeast Arkansas. A retrospective chart audit of 50 convenience sample charts dating January 2015 to November 2017 will be examined. Demographical data will also be analyzed. Data collection and analysis are currently ongoing. Adhering to clinical guidelines set forth by the ADA and EASD can prove beneficial for patients in preventing long-term complications of DMT2, decreasing healthcare cost and improving the quality of life for patients living with DMT2.

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P:19
HEALTHCARE PROVIDERS AND THE USE OF NONPHARMACOLOGIC WEIGHT REDUCTION METHODS IN PATIENTS AGE 65 OR OLDER.

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Obesity, defined as body mass index (BMI) of 30kg/m2 or greater, places people at higher risk for health conditions including stroke, high blood pressure, heart disease and diabetes (American Heart Association, 2016). Currently, the majority of the world's population live in countries where "overweight and obesity kill more people than underweight" (World Health Organization, 2016). Current clinical guidelines recommend that patients adhere to nonpharmacologic weight reduction programs for at least six months before initiating pharmacotherapy (Domino, Baldor, Golding, and Stephens, 2017). The purpose of this study is to determine if healthcare providers at a rural health clinic in Arkansas offered nonpharmacologic weight reduction strategies to obese patients. If healthcare providers adhere to current guidelines for the management of obesity, patients may experience an overall improvement in their weight and BMI. A retrospective chart analysis will be conducted using the following inclusion criteria: age 65 years or older, BMI of 30kg/m2 or greater, and visit dates between January 2017 through June 2017. A randomized sample of 30 records will be reviewed. Data collection and analysis are pending.

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P:20
IS SPIROMETRY BEING USED IN DIAGNOSING COPD?

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Chronic obstructive pulmonary disease (COPD) will be the third leading cause of death worldwide by 2020. The Global Initiative for Chronic Obstructive Lung Disease (GOLD) recommends spirometry be performed for accurate diagnosis of COPD. Current research supports under-utilization of spirometry in formulating a diagnosis of COPD. National utilization rates of spirometry remain low, with 37.68 percent of patients undergoing spirometry before diagnosis of COPD in 2015. The purpose of this study is to determine spirometry utilization in making the affirmative diagnosis of COPD in a rural Northeast Arkansas clinic in patients 40 years and older compared to the 2015 national average of 37.68 percent. A retrospective chart review was performed to audit 40 charts of patients evaluated with COPD during the time frame of January 1, 2016 through October 31, 2017 to determine if spirometry was used to formulate the diagnosis of COPD, ICD J44.9. Data collection is ongoing, with analysis pending. Prevention and treatment of COPD can only occur when a correct diagnosis is made. Standardization of diagnosis, thereby leading to more precise treatment, can improve health outcomes for populations at risk for COPD in the geographical Delta region.

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P:21
METFORMIN AS INITIAL PHARMACOTHERAPY IN PRE-DIABETES A1C LEVELS BETWEEN 5.7 PERCENT AND 6.4 PERCENT; A QUANTITATIVE APPROACH.

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Diabetes mellitus Type 2 (T2DM) affects 18.8 million people annually with another 7 million persons undiagnosed. A diagnosis of T2DM is made when an individual's hemoglobin A1C (HbA1C) is >6.5 percent on two or more occasions. Metformin, a Biguanide pharmaceutical agent, is first-line treatment for T2DM along with dietary changes and glucose monitoring. Metformin effects weight loss, a contributing factor to T2DM, and the body's insulin resistance status. A diagnosis of prediabetes occurs when the HbA1C ranges between 5.7 percent - 6.4 percent. Evidence suggests the treatment of prediabetes with Metformin may prolong or retard T2DM from occurring through improved insulin resistance and weight loss. The purpose of this study is to determine if patients who are diagnosed with prediabetes, HbA1C between 5.7 percent - 6.4 percent, are being treated with Metformin. A retrospective chart audit of 35-50 charts of patients being seen in a rural health clinic from January 01, 2016 – December 01, 2016 will be performed. Data collection is ongoing with analysis pending. Demographical data of age, gender, ethnicity, body mass index and health co-morbidities will be examined as risk factors for T2DM. Preventing the diagnosis of T2DM and advancing the health of patients with prediabetes is a goal of Healthy People 2020.

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P:22
MOVING UPSTREAM: THE PREDIABETES SCREENING OF INDIVIDUALS DIAGNOSED WITH HYPERTENSION, OBESITY, OR DYSLIPIDEMIA IN A NORTHEAST ARKANSAS PRIMARY CARE CLINIC

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With the increase in the prevalence of Type 2 diabetes mellitus, it is of paramount importance that healthcare systems focus more on prevention. Of citizens in the United States with prediabetes, an estimated 90 percent are unaware of this health hazard. It is a far better plan to screen our fellow citizens during the phase of prediabetes so they have the chance to enact lifestyle change and avoid suffering the complications of Type 2 diabetes mellitus. The purpose of this research study was to investigate whether or not patients with hypertension, obesity and dyslipidemia were screened for abnormal glucose levels, and if so, whether a hemoglobin A1C ordered and drawn for those with an abnormal glucose result. Seventy-five patients were randomly selected from a clinic in Northeast Arkansas; 25 diagnosed with obesity, 25 diagnosed with hypertension, and 25 diagnosed with elevated triglycerides. Patients with these diagnoses who also had an existing diagnosis of Type 2 diabetes mellitus were eliminated from the study. Data analysis is under way at this time, and interpretation is pending. It is hoped that study results will provide guidance on whether more attention should be devoted to prediabetes screening in the future.

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P:23
OPIOIDS TREATMENT REGIMEN VERSUS MARIJUANA FOR THE MANAGEMENT OF CANCER PAIN IN CANCER PATIENTS

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With increased prevalence of cancer in the United States and globally, there is an increase in the discussion of best treatment and management options for cancer patients. Pain is one of the most frequent and worrisome symptoms for patients. Pain intensity increases with disease progression. Pain affects all dimensions of patient's lives including the ability to achieve normal day-to-day activities. Different medications are used for cancer pain management. Evidence suggests medical marijuana reduces chronic or neuropathic pain in advanced cancer patients. Many advocates of medical marijuana have argued marijuana is a "miracle drug" and benefits exceed available analgesics/opioids treatment options. The purpose of this study is to determine if oncology/ hematology patients who report persistent pain and are receiving opioid therapy self-report the use of marijuana for pain management. This study will be conducted using a retrospective chart review of patients at a large urban cancer treatment center. Data collection is ongoing with analysis pending. With an increasing number of jurisdictions permitting the legal use of marijuana for patients for medicinal use, it has become imperative clinicians discuss and understand all pain treatment options. Controlling the symptom of pain will improve the quality of life for cancer patients.

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P:24
PRESCRIBER ADHERENCE TO ALLERGIC RHINITIS TREATMENT GUIDELINES

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Allergies are the sixth-leading cause of chronic illness in the United States affecting more than 50 million people and costing an excess of $18 billion annually. Recent clinical guidelines for the treatment of allergic rhinitis strongly recommend the use of intranasal steroids and oral second-generation antihistamines as first-line treatment. Although strongly recommended, in a 2016 national study, it was found that intranasal steroids and oral non-sedating antihistamines were not prescribed in the majority of allergic rhinitis cases. The purpose of this study is to compare the percentage of patients diagnosed with allergic rhinitis in a family practice clinic treated with a non-sedating oral antihistamine or intranasal steroid to the national average in which 29.6 percent of patients were treated with an intranasal steroid and 22.4 percent were treated with non-sedating oral antihistamines. This study will be conducted using a retrospective chart review. This research will show if providers are using the most recent allergic rhinitis guidelines in treating allergic rhinitis to improve their patients' quality of life. Data collection is ongoing and data analysis is pending. The data will be shared with the clinic to improve quality improvement.

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P:25
PROVIDER ADHERENCE TO GUIDELINES FOR PRESCRIBING TOPICAL CORTICOSTEROIDS IN PEDIATRIC ATOPIC DERMATITIS

Julie Keefer - Graduate
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National guidelines for the prescriptive treatment of atopic dermatitis list topical corticosteroids as first line treatment. Adherence to guidelines is crucial to minimize the effects of this chronic, relapsing disease. Indications are this is of particular importance for pediatric populations who have shown no decline in diagnosis of atopic dermatitis year to year. Multiple potential barriers exist for appropriate treatment. These barriers are best overcome when primary care providers follow evidence based national guidelines approach to treatment. This study will indicate the adherence of primary care providers in rural northeast Arkansas clinics to national guidelines. The method is a retrospective chart review using a convenience sample of 30 charts. Inclusion criteria are anyone under 18 years and a diagnosis of atopic dermatitis. Exclusion criteria are anyone over 18 years or lacking diagnosis of atopic dermatitis. The retrospective review includes records dating from November 1, 2015 to November 1, 2017. Data shows a 70 percent rate of provider adherence to guidelines for prescriptive treatment in this study. Results from this review are shared with the collection site for utilization in quality improvement.

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P:26
PROVIDER ADHERENCE TO JNC 8 GUIDELINES FOR THE TREATMENT OF PATIENTS 18 TO 60 YEARS OF AGE

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The Eighth Joint National Committee (JNC 8) in 2014 provided guidelines for treatment of hypertension to maintain blood pressure (BP) of <140/<90 mmhg for persons 18-60 years of age. Early detection of hypertension and intervention management can decrease lifetime risk of death, decrease health care costs and improve patient outcomes. This quality study was performed to evaluate in a local primary care practice, if the provider adheres to JNC 8 suggested guidelines. A descriptive study with inclusion criteria of individuals aged 18-60 years old with a hypertension diagnosis was performed using a report system through a currently implemented electronic health record. Data was gathered from 53 charts. Five age groups were classified with evaluation of medications prescribed identified with JNC 8 drug strategy A, B, and C, JNC 8 BP target goal and instructions on dietary approaches to stop hypertension (DASH). Findings revealed 75 percent of individuals were properly implemented on strategy medications to meet BP target goal and 65 percent were instructed on DASH. This data along with provider adherence of guidelines can be effective in managing hypertension to reduce risks associated with mortality.

Mentor: Mark Foster, smfoster@AState.edu

P:27
PROVIDER ADHERENCE TO NATIONAL STATIN THERAPY GUIDELINES.

Timothy Bass - Graduate
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High-intensity statin use is considered a preventative measure for patients diagnosed with hypercholesterolemia. The use of Atorvastatin (Lipitor) 40-80 mg or Rosuvastatin (Crestor) 20-40 mg can prevent cardiovascular disease, which is the leading cause of death globally. The purpose of this study is to determine whether patients with low-density lipoprotein (LDL) >190 mg/dl are being treated with a high-intensity statin per evidenced based guidelines. The information that was gathered reflects that LDL's >190 is more prevalent in males or females, and whether a high-intensity statin was used or not used to treat this disease process. The research was conducted with a retrospective chart review. The data analysis is currently pending. It is expected that with most of the patient charts reviewed, a finding of high-intensity statin's will not be prescribed. This is due to the increased chance of myalgia or arthralgia that a patient may complain with while undergoing statin therapy. The conclusion that is found with this research can be used to treat patients based on gender, age, and which medications are used more prevalent.

Mentor: Mark Foster, smfoster@AState.edu

P:28
AN ANALYSIS OF EFFECTIVE TEACHING METHODS OF A FINE MOTOR SKILL: GOLF PUTTING

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The purpose of this investigation was to examine the best evidenced-based teaching methods for a novice golfer to learn a new motor skill, putting. Electronic databases were used to locate research regarding motor learning of putting. Synthesis of the best research-based practices was completed. An analysis of the characteristics of putting was presented including learning styles, types of feedback, stages of learning, and types of practice. The main factors affecting learning included deliberate practice, reconsolidation, blocked and random practice, feedback and implicit learning. The results demonstrated that there is not a single best way for a novice to learn a new skill, from the evidence looked at the most successful form of practicing a new skill was deliberate practice, or specific intention to improve. Other factors researched were dependent on the individual necessitating the instructor and learner to both understand all factors. Lastly, when learning a new motor skill, it is important that the entire learning process be specific to the individual to maximize learning. Results from this investigation may be used specifically for golf coaches to improve their teaching methods of putting to novice athletes. Furthermore, professionals in other fields may use these findings to develop their coaching methods.

Mentor: Brian Church, bchurch@AState.edu

P:29
FOOD INNOVATION PRODUCT THROUGH THE USE OF A FOCUS GROUP

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Burrito Bowl To-Go consists of brown rice, baked chicken, corn, black beans, cheddar cheese, avocado, and cilantro with ten grams of fiber in a one-cup serving that can be purchased fully cooked and ready to be microwaved. It appeals to families with children between the ages of 2-15. The product will be a pre-packaged, high-fiber meal. Benefits of fiber include improved bowel health, cholesterol control, control of blood glucose levels and maintenance of weight. The flavors will reflect the preferences of this age group, and the ease of having a ready-to-eat, nutritious meal will be appealing to parents. The aim of this research is to ensure that the product is suited to the specified age and meets the fiber guidelines along with the benefits of fiber. Food safety guidelines will be followed so that the product is safe to consume. Research will be conducted by preparing a tasting for focus groups. A variation will use steak. Adjustments will be made following the recommendations from the comments of the focus group. Age-appropriate packaging will be created that will draw the attention of the age group that accurately describes the dish as well as promoting the benefits of fiber.

Mentor: Susan Motts, smotts@AState.edu

P:30
FOOD INNOVATION THROUGH THE USE OF FOCUS GROUPS

Autumn Forrest - Undergraduate
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For my food innovations project, I will demonstrate knowledge of food science, nutrition, food preparation safety and product marketing through the development of a breakfast item featuring the ancient grain couscous, which appeals to students. Unless you are gluten-free, you may not have experimented with ancient grains, specifically couscous. This ancient grain is a staple product of North Africa. Couscous is a type of semolina in granules made from crushed durum wheat. Being that couscous is such a versatile grain, it can be paired with meat, fish, legumes, vegetables and even fruit. For the project, an original prototype recipe will be created, which will be a blueberry couscous muffin, and tested against an alternative recipe, which will be an apple pie couscous muffin, through the use of a focus group. The focus group will then aid in the determination of the more highly favored prototype, to which then a marketing strategy will be developed. The marketing strategy will include producing a label for the food product which will display appealing nutritional information and pricing to target students.

Mentor: Susan Motts, smotts@AState.edu

P:31
INTERPROFESSIONAL MANAGEMENT OF CLIENTS WITH CHRONIC MUSCULOSKELETAL PAIN: THE USE OF A PLANT-BASED DIET TO AFFECT PAIN AND FUNCTIONAL STATUS

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Chronic musculoskeletal pain affects all genders, ethnicities and age groups. Research suggests consumption of a plant-based diet including fruits, vegetables and whole grains improves the status of persons with chronic pain. The purpose of this study was to examine the value of a plant-based diet in the management of chronic musculoskeletal pain and associated functional limitations. Fourteen subjects participated in the eight-week study. Baseline evaluation included anthropometric measurements and two self-reported outcome measures: Numeric Pain Rating Scale and the Standard Form-36. A registered dietitian provided a sample menu cycle and education on a plant-based diet. Subjects utilized a phone app to log food intake and receive support from the dietitian. Post data collection included a repeat of the baseline measures and the Patients' Global Impression of Change Scale. The eight-week diet intervention was significantly associated with a reduction in pain and improvement in quality of life. Diet adherence by 10-of-14 subjects was 89 percent based on completion of food intake records and adherence to allowed foods. Consumption of a plant-based diet produced positive improvements in chronic pain and functional limitations. Interprofessional collaboration between physical therapists and registered dietitians can encourage and support diet interventions that positively affect chronic pain.

Mentor: Pam Towery, ptowery@AState.edu

P:32
LOW LEVEL LIGHT THERAPY AND PHOTODYNAMIC THERAPY AS POTENTIAL INHIBITORS OF SERRATIA MARCESCENS

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Serratia marcescens, a part of the microbiota of the gastrointestinal tract, occasionally causes hospital- acquired infection. This organism is multi-drug resistant. This research examined the degree to which light alone and light used in combination with sensitizing materials could inhibit the growth of S. marcescens in-vitro. Four strains of S. marcescens (ATCC 8100, Presque Isle strain 361, strain 3611 and strain 3612) were treated with 405nm light, 625nm light, and combinations of these two wavelengths in concert with toluidine blue and neutral red. Colony counts post treatment were compared to non-treated controls to determine kill rate percentages. A one-way analysis of variance was used to determine whether a significant kill rate ($p \leq 0.05$) was achieved. One hundred and two different combinations of dose, wavelength and sensitization were explored. Six conditions were found to inhibit one or more of these strains.405nm light alone was the only effective inhibitor of this organism. Photosensitizing the organism did not produce any enhanced inhibition in these experiments. We conclude that there is at least a limited effectiveness of 405nm light energy in terms of inhibiting S. marcescens. This non-drug therapy should be further examined as a potential treatment therapy against this multi-drug resistant microbe.

Mentor: William Payne, wpayne@AState.edu

P:33
PRODUCT DEVELOPMENT FOCUS GROUP ON BERRY BLAST SMOOTHIE

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Berry Blast smoothie is a 12-ounce beverage loaded with vitamins and protein designed for college students as a healthy alternative snack that not only is of great nutritional value but is tasteful and desirable. The Berry Blast smoothie will be evaluated by a focus group on flavor, texture, appearance, smell, taste and overall score using the hedonic scale and then modified based on the evaluation results. Berry Blast provides a 1 cup serving of fruit along with Greek yogurt packed with protein, skim milk and water. This smoothie is designed for an easily accessible, inexpensive way to help college students on-the-go reach their daily fruit intake goal. MyPlate recommends 2 cup servings of fruit per day for boys ages 14-18 and men and women ages 19-30, and 1½ cups serving per day for girls age 14-18. The Berry Blast smoothie provides approximately one-half of the daily recommended intake of fruit for college age students, while giving the satisfaction of a sweet frozen treat.

Mentor: Susan Motts, smotts@AState.edu

P:34
PRODUCT DEVELOPMENT OF FRUIT AND VEGETABLE SMOOTHIES THROUGH THE USE OF A FOCUS GROUP

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My study is aimed to compare the visual appeal of smoothies to college students. Both smoothies possess the same ingredients but one includes spinach and the other does not. The recommended daily value of fruits for college students is 2-2 ½ cups and 2 ½- 3 cups of vegetables. One smoothie that I will be testing contains one serving of fruit and the other contains one serving of fruit and one serving of vegetable. This comparison will be significant because the two smoothies I will be presenting both possess many health benefits and can fulfill part of their daily needs for fruits and vegetables. Including fruits and vegetables in a person's diet is vital to their health and maintenance of body functions. Eating fruits and vegetables may reduce the risk for heart disease, including heart attack and stroke. It also aids in protecting against cancer and other chronic diseases. Both fruits and vegetables contain a significant number of vitamins and minerals that aid in the body's functions. Some of these are folate, Vitamin A, Vitamin C, fiber, and potassium.

Mentor: Susan Motts, smotts@AState.edu

P:35
PRODUCT DEVELOPMENT THROUGH THE USE OF A FOCUS GROUP ON CRUNCHY CRUNCH GRANOLA

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It is recommended by the Dietary Guidelines for Americans that at least half of an individual's intake of grains be whole grains. Crunchy Crunch Granola serves as a nutrient rich breakfast item that provides energy and flavor while satisfying the need for whole grains in the diet. Crunchy Crunch contains buckwheat, an ancient grain, as well as other nutritious grains like oats and kamut. This product was tested by a focus group to evaluate the flavor, texture, appearance and overall quality. Modifications were made based on the feedback of the focus group. Buckwheat is a pseudo-cereal that contributes vitamins, energy and fiber to the diet. This nutty-flavored ancient grain originated from the Balkan area of Europe around 4,000 B.C. Buckwheat can now be found all over the world, including the United States. Its ability to withstand poor soil and its quick growing rate has led to many farmers planting the grain during the resting period in order to maintain field conditions. Buckwheat has been made popular in various products including honey, pancakes, pilaf, sauces, casseroles, kasha and breakfast cereals. The diversity of buckwheat has led to the grain being widely available in many cultures all over the world.

Mentor: Susan Motts, smotts@AState.edu

P:36
PRODUCT DEVELOPMENT THROUGH THE USE OF FOCUS GROUPS FOR POWERCAKES

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PowerCakes are a flavored, gluten-free, dairy-free, protein-packed pancake product. Most grocery stores do not sell flavored options of frozen, gluten-free pancakes. PowerCakes will provide this option, which will allow it to stand out from the others. Gluten-free products are developed for those with either celiac disease or those with gluten intolerance. Celiac disease is usually accompanied by an intolerance to lactose. This is why PowerCakes are also dairy-free. The protein is added to make the pancake a complete meal. The pancakes will contain carbohydrates, fat and protein. PowerCakes would serve as a quick, ready-made breakfast option for the intended consumer audience. The gluten-free grain used is quinoa. Quinoa was chosen for its health benefits and also because it is a well-known grain. A primary complaint of gluten-free products is the texture. This product should accomplish the goal of a better-quality gluten-free product. The product will be tested in a focus group at Arkansas State University. Feedback from the focus group will be used to better the quality of the product. The goal of PowerCakes is to provide a quality breakfast product for those with gluten intolerances or celiac disease.

Mentor: Susan Motts, smotts@AState.edu

P:37
PRODUCT DEVELOPMENT THROUGH USE OF A FOCUS GROUP

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Fruits contain a great source of important nutrients; calcium, fiber, folate, iron, magnesium, potassium, sodium, Vitamin A and Vitamin C. Fruit provides so many health benefits that can help reduce the risk of some chronic diseases. Most fruits are naturally low in fat, sodium and calories. No fruit has cholesterol. Eating fruits may reduce the risk of stroke, CVD and Type 2 diabetes. Maintaining a fruit-eating pattern is part of an overall healthy diet that may protect you against certain cancers as well. The recommended daily intake of fruit is 1-2 ½ cups of fruit. Depending on the calories you need, you may need more and sometimes even less. This study will incorporate blueberries and strawberries into a smoothie. By presenting the smoothie, I will give the nutritional benefits of this study performed. Once the smoothie is made, it will be presented for feedback through a focus group. The feedback from the focus group will be used to modify the recipe of this product.

Mentor: Susan Motts, smotts@AState.edu

P:38
PRODUCT DEVELOPMENT THROUGH USE OF FOCUS GROUP

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Fruits are an important staple in our diets. Individuals who eat more fruits as a part of an overall healthy diet provide numerous nutrients that are vital for both health and maintenance of our body. Strawberries andbananas are great examples of two fruits that hold these healthy essentials. These two fruits can be incorporated into several dishes and presented in different textures determined by the preparer. Each fruit stabledish will include high counts of fiber and plenty of folate, potassium, vitamin A and C, and phytochemicals. A variety of options are given to incorporate fruit to a meal being raw and sliced, baked, frozen, dried, blended, or heated. The American Dietary Guidelines suggest 1-1/2 to 2 cups of daily fruit. Strawberry Banana Lagoon contains bananas and strawberries that serves as afruit nutrient rich snack as well as providing a deliciously sweet taste. This product will be tested by a focus group to be evaluated. The recipe will be modified determined by audience evaluation of this product.

Mentor: Susan Motts, Physical Therapy, smotts@AState.edu

P:39
PRODUCT DEVELOPMENT WITH FOCUS GROUP ON QUINOA BREAKFAST BAR

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The study will relate to a Quinoa Breakfast Bar. It will include two variations of the bar to discover which one the focus group likes best. Quinoa was chosen as the ancient grain since it has become more popular in the past few years. Most individuals will know what quinoa is and may have tried it before; this makes it more likely to be bought. Quinoa originated from the Incas in the mountains of Bolivia, Chile, and Peru. Quinoa is a very nutritious grain that is higher in calcium, phosphorus, magnesium, potassium, iron, copper, manganese and zinc than most other grains. The bars will be tested on a focus group of about 20 people. The focus group will use a scale of 1-5, one being worse and five being best. The scale will score taste, mouth feel, texture, appearance and aroma. The study will show which variation of the bar will be best to market.

Mentor: Susan Motts, smotts@AState.edu

P:40
THE EFFECT OF PHOTOBIOMODULATION THERAPY ON ADULT HUMAN FIBROBLAST CELLS

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Fibroblast cells play a key role in skin wound healing. Various techniques including photobiomodulation therapy (PBMT) have been used to facilitate such process in vivo. As a non-invasive method, PBMT carries many advantages and seems to be a promising method for wound healing; however, the standard protocol of PBMT has not been clearly established due to the inconsistence of study results. We hypothesize that different conditions of PBMT may have different effects on fibroblast cell proliferation. Different wavelengths of PBMT including 850nm red light, 625nm infrared light, and 464nm blue light are delivered to cultured human fibroblast cells at different fluences including 1J/cm2, 3J/cm2, 5J/cm2, 7J/cm2, and 9J/cm2. Cells without any light treatment are used as the control. Cell proliferation, oxidative stress levels and collagen levels are measured following light treatments. Our results indicate that red, infrared, and especially blue PBMT significantly prevent cell proliferation compared to the control. We anticipate that the oxidative stress and collagen levels will correspondingly decrease as well in PBMT treated groups. In conclusion, low doses of PBMT may adversely prevent wound healing in certain conditions. Extended research is needed to further explore the optimize condition of PBMT to enhance wound healing.

Mentor: Junlin Zhang, jzhang@AState.edu

P:41
THE MRSO EXAM: DOES IT BENEFIT THE MRI CAREER FIELD POSITIVELY?

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Magnetic Resonance Imaging (MRI) is a form of electromagnetic imaging that excites protons in the human body in order to create very detailed scans. Since MRI uses electromagnets (which possess very strong magnetic fields), there are serious safety concerns associated with this field of study. The MRSO (Magnetic Resonance Safety Officer) is a designated employee to supervise all safety aspects of the MRI department. This is a very new field for the medical imaging community and has recently gained its own registry that someone must pass in order to be considered for this position. My research project has consisted of a literary review of the history of MRSO and all of the potential benefits it could bring to a hospital or individual. To enhance this knowledge, I am distributing a survey nationwide to currently registered MRI technologists and gauge their interest in the MRSO field. Survey questions would include their interest in taking the exam, what benefits their particular employer offers for completion of the exam, and if they think a designated person is necessary. I am hoping to raise awareness of this new "specialty" in the MRI job field.

Mentor: Cheryl DuBose, cdubose@AState.edu

P:42
FINANCIAL INSIGHT AND ECONOMIC IMPACT OF PROFESSIONAL SPORT FACILITIES AND STADIA

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In the past two decades there has been a large push to construct new, and renovate existing facilities in the professional sport industry. This mass change of infrastructure has helped in developing new ways of financing these endeavors, and continues to evolve the fiscal side of professional sports. Both private funds and public subsidies have radically increased for the intent of constructing new venues for sport entertainment. The purpose of this research is to delve deep into the rationale behind professional sport financing of stadia and facilities, along with the economic impact they have on developing in metropolitan areas. In previous research that will be used as the main source of data, critical debates have taken place on the topic of professional sport facilities, their benefits and detriments to cities economically, and whether millions of dollars' worth of subsidies can be justified at the end of the day.

Mentor: David LaVetter, lavetter@AState.edu

P:43
RISING COSTS OF INTERSCHOLASTIC SPORTS AND ITS EFFECT ON PARTICIPANTS, PARENTS, AND SPORT ADMINISTRATORS

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Budgets are tight in school districts, and when money becomes scarce, tough decisions must be made. For many schools, budget cuts may come in the athletic departments, with many districts threatening to significantly decrease the athletic programs available to students or do away with sports altogether. Not only does participation in interscholastic sports foster positive relations and civic pride within a community, athletic participation itself helps instill values that translate into better academic performance. As budget cuts continue, the costs associated with interscholastic sports have been on a steady rise which leaves participants, parents, and sport administrators with inevitable funding issues. Whether it is due to reduced budget allocations for sport administrators or the increased burden on participants and parents to pay higher participation fees, the immediate need for adequate funding has increased. This research helps benefit my academic career because it gives me an opportunity to explore complex issues in sport finance that will help aid in my development as a future sport administrator. As sport participation numbers continue to rise at the interscholastic level, participants, parents and sport administrators must adapt to their surroundings and learn how to navigate in an environment that lacks adequate funding.

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P:44
THE FINANCIAL IMPACT OF ALCOHOL SALES ON COLLEGIATE CAMPUSES

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My presentation will focus on the positive and negative effects of selling alcohol on collegiate campuses during sporting events. This topic is sensitive because most collegiate campuses consist of underage students, but with barriers and strict rules enforced – we'll be able to keep it out of their hands. Most collegiate athletic departments are seeing a decline in not only revenue but student/alumni attendance at games. That decline in revenue leads to a huge impact on what the department can and can't do for the remainder of the financial year which limits them in certain areas. My hypothesis states that the sale of alcohol will increase revenue, attendance and all aspects of game experience that one should get while attending college. In disbelief, selling alcohol will come with downfalls, as a part of my presentation will gear solely towards the negative impact it has as I will be sure to stay biased. Universities such as Memphis, Troy, Louisiana-Lafayette and South Alabama all have seen major revenue growth since beginning to sale alcohol during sporting events, why can't we.

Mentor: David LaVetter, lavetter@AState.edu

P:45
CRAZY IN LOVE OR JUST CRAZY? LIMERENCE AND PSYCHOLOGICAL MALADJUSTMENT

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According to Tennov (1999) limerence is a form of attraction characterized by fear of rejection, intrusive thoughts, and emotional contagion; however, it is a form of attraction that is commonly experienced. In contrast, Wakin and Vo (2008) viewed the cognitive and affective processes associated with limerent states to be distinct from more common forms of love and representative of maladjustment comparable to obsessive compulsive disorder, depression and addiction. Due to these conflicting views and the lack of empirical evidence, the present study explored the association of different aspects of limerence with indicators of psychological maladjustment. A sample of 205 United States residents (56.5 percent female) recruited through Amazon's MTurk completed an online survey consisting of scales measuring limerence, social anxiety, obsessive beliefs, worry, depression and addiction prone personality. Results suggest that limerence is in fact associated with indicators of psychological maladjustment, however, Tennov's definition of limerence is similarly supported.

Mentor: Wayne Wilkinson, wwilkinson@AState.edu

P:46
FIELD TESTING OF ACTIVITIES FOR A DIGITIZED INTERACTIVE NEUROSCIENCE LAB MANUAL

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In 1996 the National Association for Biology Teachers published Neuroscience Laboratory and Classroom Activities Manual, a highly praised and utilized resource for advanced high school and undergraduate neuroscience courses. Despite changes in technology and neuroscience education, more than 20 years have passed without an updated version of this manual. Our project's goal involves creating a more modern, digitized neuroscience lab manual that is also interactive. We began the project by canvasing numerous hands-on activities from various educational resources, selecting two ("Rewiring the Brain" and "Olfactory Fatigue") that lent themselves well to field testing at the Arkansas Science Festival's 2017 Science Expo. Through naturalistic observation of participants (N= 25), the activities were assessed for interest to participants, feasibility, and educational outcomes. Observations suggest participants were interested in the activities, asked questions relevant to the neuroscience topics, activities were appropriate for mixed ages and abilities, but may require some adaptation for group settings. Revision of these activities is underway and serve as the starting components of the digitized interactive neuroscience lab manual. Though classroom testing is needed, we expect the use of this future manual to help make undergraduate neuroscience courses engaging for students and lab activities more practical for instructors.

Mentor: Amy Pearce, apearce@AState.edu

P:47
IS THERE A CATCH, COACH? PERCEPTIONS AND EFFECTS OF SEXUAL ASSAULT CLAIMS IN ATHLETIC PROGRAMS

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Athletes may weigh great consequences when choosing to publicly expose a sexual assault perpetrator within their own athletic program. Prior research has defined sexual harassment within sport, but has failed to explore gender differences and other factors that may play significant roles. The purpose of this study is to reveal factors that affect perceptions of athletes who chose to come forward with an accusation. Participants will be presented with scenarios of sexual assault accusations in which accusers vary in status and sex. Scenarios involving the workplace will be included to discern differences between accusations within athletics and the workplace, as athletic relationships are much closer. Participants will then be asked to complete a survey consisting of Likert scales to determine the extent to which they believe the subjects portrayed in the scenarios are being honest and their opinions about the effects that these accusations may have. We believe that the sex and status of the accuser will affect perceptions of accusations. The results of this study may allow recommendations to be made as to how athletes can be protected while reporting inappropriate experiences with those in higher positions, as well as decrease the number of unreported sexual assault cases.

Mentor: Karen Yanowitz, kyanowit@AState.edu

P:48
SELF-MYOFASCIAL RELEASE VS. STATIC STRETCHING: THE EFFECTS ON HAMSTRING RANGE OF MOTION

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Physically active individuals endeavor to seek the best warm-up techniques prior to activity on order to prepare muscles for subsequent activity. Static stretching (SS) or holding limbs in extended positions in order to lengthen a muscle, is a common form of pre-exercise warm-up. Self-myofascial release (SMR), also known as foam rolling, has become popular more recently as a warm-up method. In SMR, individuals position the muscle they intend to warm-up on a rigid foam cylinder while rolling back and forth. The rolling pressure is purported to relax muscles. The purpose of this research was to compare the effects of self-myofascial release (SMR) and static stretching (SS) on hamstring range of motion. Twenty participants attended two testing sessions where hamstring range of motion (ROM) was measured before and after either SS or SMR. Data were analyzed using a mixed design repeated measures ANOVA. The results indicated there was an overall effect of warm-up on hamstring ROM ($p=0.014$) but there was no interaction for type of warm-up ($p=0.219$). These results demonstrated that a warm-up was effective in increasing ROM, although the type of warm-up did not produce significantly different results. Active people who engage in pre-exercise warm-up can expect SMR to be as effective as SS for increasing ROM.

Mentor: Brian Church, bchurch@AState.edu

P:49
SNOOPING: INTRUSIVE BEHAVIORS AND CHEATING IN ROMANTIC RELATIONSHIPS

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Undergraduate psychology students at Arkansas State University will be surveyed about their personal opinions and experiences of snooping while in a romantic relationship. Snooping is described as the investigation of intimate partner's private belongings without their knowledge (Derby, Knox, & Easterling, 2012). Research has shown females are more likely than males to partake in snooping behaviors while in a romantic relationship (Vinkers, Finkenauer, & Hawk, 2011). It is also believed that people whom have been cheated on in the past will be more likely to act in snooping behaviors than those who have not been cheated on due to issues with trust. The goal of the research is to explore gender differences in perceptions of snooping behaviors. Furthermore, we will examine differences in perceptions as a function of if participants have ever cheated on their partner, if they have been cheated on in past relationships, and if males or females were more likely to be cheated on. The dependent variable in the study is perception of snooping behaviors.

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P:50
SOBRIETY STRATEGIES AMONG COLLEGE STUDENTS

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The main aim of the research is to understand the methods that 18-22-year-old college students use to prevent alcohol use disorders. This study will examine the behavioral differences between non-drinkers, social drinkers and problem drinkers. The study will also examine the different tactics college drinkers use to maintain recovery. College students will be administered a survey that will question their prior alcohol history, extracurricular activities and personal preferences.

Mentor: Sharon Davis, sharondavis@AState.edu

P:51
THE IMPACT OF REINFORCEMENT CONTINGENCY ON INTERRESPONSE TIME VARIABILITY IN RATS

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Variability is a dimension of responding that can be operantly reinforced. While reinforced variability in location and topography have received attention in the literature, only one study to our knowledge has addressed temporal variation in responding. To this end, we exposed five female Wistar rats to a series of contingencies in which they were required to vary interresponse times between lever presses in order to obtain reinforcement. The results support the notion that reinforcement can control variability in the timing of operant responding. The results of this study lend to the largely unexplored area of response variability in timing.

Mentor: Kristin Biondolillo, kdbiondo@AState.edu

P:52
THE ROLE OF SELF-CONTROL IN THE DAYDREAMING PROCESS

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Daydreaming is a process experienced by everyone. Whether it's thinking about graduating or winning the lottery, we let our minds wander to infinite possibilities. Most research has focused on maladaptive daydreaming (i.e., daydreaming replaces social interaction and hinders daily functioning; Somer et al, 2016). Few studies have investigated the positive benefits. The current project is the first step in providing evidence that daydreaming can be both – that it depends on the individual, specifically their self-control capabilities. If daydreaming is maladaptive and hinders daily functioning then perhaps it's that people low in self-control have trouble overriding daydreaming to complete daily tasks, not that daydreaming itself is maladaptive. We collected online survey data from 489 A-State students who took a daydreaming questionnaire as well as a self-control questionnaire. Our results showed that participants lower in self-control scored higher on negative daydreaming subscales related to feeling guilty about daydreaming and being unable to shift their attention to proper tasks than participants higher in self-control. However, there was no difference between these two groups on the positive daydreaming subscale indicating that both engage in this process regularly. This data provides an important first step in understanding the difference between adaptive and maladaptive daydreaming.

Mentor: Jessica Curtis, jcurtis@AState.edu

P:53
ACHIEVERS AND LEAVERS

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We examine the relationship between various academic/non-academic characteristics of undergraduates and academic performance. We extend research by Beattie et al., (2017, 2018) who analyze student survey data about their college experience, habits and demographic characteristics for predictors of undergraduate performance at an elite research university. We test similar survey data on 220 undergraduate students at a 4-year, public, masters level university for potential correlates with student outcome measures such as cumulative and current GPA. Our analysis yielded results similar to those reported by Beattie et al. (2017, 2018). Additionally, we find significant predictors of student performance that, to our knowledge, have not been examined before. We find that some variables novel to our paper (e.g., students' favorite television shows, stated religion, intramural sports participation, etc.), are statistically significant predictors of student outcomes. Non-academic variables were compared with the students' high school and cumulative undergraduate GPA to find variables that contribute to optimal academic performance. Our analysis of predictors of master's level university student outcomes differed in important respects from the findings reported by Beattie et al. (2017, 2018) in significant respects. These findings contribute to the research on student retention strategies, effective teaching interventions, and student early alert models.

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P:54
TAMING THE TARTAN: ANALYZING THE BREAKDOWN OF SCOTTISH HIGHLAND CULTURE AFTER THE BATTLE OF CULLODEN

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Popular culture, such as the film Braveheart, often portrays Scots as kilted warriors or bagpipers. There was a time when these cultural staples were criminalized and almost wiped out. In the first half of the eighteenth century, there were a series of rebellions that stemmed from a conflict over Scottish and British identity following the Acts of Union in 1707. My research examines the Jacobite Rebellion of 1745, when the grandson of King James II and VII (who was deposed in the Glorious Revolution in 1688) attempted to overthrow the Hanover Dynasty, believing the Scottish Stuarts were the rightful heirs to the throne of the Kingdom of Great Britain. Following this rebellion, the British government attempted to suppress Scottish culture, ultimately destroying the clan system and weakening Scottish identity. This research is relevant because it shapes modern understanding of why Scottish cultural traditions are highly celebrated today, which few scholars have failed to examine.

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P:55
CHARACTERIZATION OF ASPHALT BINDER RESISTANCE TO MOISTURE DAMAGE USING THE MICROSCOPY TECHNIQUE

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Moisture damage of asphalt pavements is considered as one of the major pavement distresses to state Department of Transportations (DOTs). In this study, Atomic Force Microscopy (AFM)-based protocols were followed to observe the moisture effects on asphalt binders. Selected performance grade (PG) binders from two different sources (Source 1 and Source 2) were evaluated in the laboratory. The AFM test results revealed that surfaces of the binders were reformed and/or changed significantly due to the action of water. Surface roughness values of the unmodified PG 64-22 binders from Source 1 and Source 2 were reduced by nearly 71 percent and 24 percent, respectively. It was also observed that polyphosphoric acid-modified PG 70-22 binder from Source 1 had a 46 percent reduction in roughness values, whereas it was increased by approximately 17 percent for Source 2 binder. Test data also showed that modulus and adhesion values decreased for all binders due the action of water. It was also noticed that deformation and dissipation energy values decreased in Source 1 binder, while Source 2 binder showed a different trend. Findings of this study are expected to help transportation agencies to have a better understanding of moisture damage phenomenon in asphalt pavements, and adopt necessary preventing measures.

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P:56
CHARACTERIZATION OF PAVING ASPHALT BINDERS-A CHEMISTRY PERSPECTIVE

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The mechanistic properties of asphalt binders are closely related to their fractional components: Saturates(S), Aromatics (A), Resins (R) and Asphaltenes (A) which are often called SARA fractions. Asphalt binders from different sources differ significantly in their chemical components. Moreover, virgin binders are often modified with additives such as acid, polymer, or a combination of multiple additives to achieve improved performance to sustain heavy loads and adverse weather conditions. The main objective of this research is to correlate the mechanistic properties of a binder with SARA fractions of virgin and modified binders achieved by chromatographic separation. It is observed that Saturates and Aromatic contents provide the matrix for the binders, whereas Resin and Asphaltene contents are responsible for the solid phase that provides the overall strength. The Asphantene fraction is found to be highly correlated with the rutting parameter. Asphaltenes serve as viscosity building component and results an improved rutting resistance pavement. It has also been observed that an acidic environment is more favorable for identifying the degree of acid modification for binder and formation of polar and solid fractions. Findings of this study are expected to develop meaningful correlations among the chemical fractions of asphalt binders and their mechanistic properties.

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P:57
COMPARISON OF SOYBEAN VEGETATION COVERAGE AND CROP RESPONSE TO DIFFERENT COVER CROP TREATMENTS BASED ON AERIAL IMAGES

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Unmanned aerial vehicles (UAVs) are flexible platforms for crop sensing and conducting crop health analyses for, timely and effective crop health management. Using cover crops in cash crop production is an important practice for managing and improving soil quality, preventing soil degradation, and providing sufficient nutrients for future crops. Evaluating the effect that different cover crop treatments prior to planting cash crop would have on crop performance can provide insight into specific benefits for the cash crop. The objective of this sub-study was to use remote sensing technology to compare soybean vegetative coverage and crop response under different cover crop treatments. The research was conducted at the Lon Mann Cotton Research Station in Marianna, Arkansas in year 2017. The results contribute knowledge for better understanding of the benefits of using cover crops in soybean production.

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P:58
GENETIC MODIFICATION OF SWITCHGRASS CELL WALL FOR IMPROVED BIOMASS PROCESSABILITY.

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Switchgrass (Panicum virgatum) is a perennial C4 grass, being considered as a dedicated bioenergy crop. However, efficient conversion of switchgrass biomass to biofuels has been hampered by biomass recalcitrance. Genetic modification of the plant cell wall represents a promising solution to overcome this problem. The goal of this project is to leverage an innovative strategy, hydroxyproline (Hyp)-O-glycosylation "code", for de novo design and engineering in switchgrass of novel designer biopolymers (DBPs) to facilitate cell wall reconstruction. The DBPs are derived from the Hyp-O-glycosylated plant cell wall glycoproteins. The objective of this study was to determine how DBP peptide backbones would be Hyp-O-glycosylated in monocot plants, including switchgrass and rice whose cell wall composition and structure are different from dicot plants. DBPs comprised of two major types of cell wall glycoproteins: an extensin module consisting of 18 tandem repeats of "Ser- Hyp-Hyp-Hyp-Hyp" motif (SP4)18, and an arabinogalactan protein module consisting of 32 tandem repeats of "Ser-Hyp" motif (SP)32, was each expressed in switchgrass and rice as fusion to green fluorescence protein via both transient and stable transformation. The Hyp-O-glycosylation and subcellular localization of the engineered DBPs were characterized. The phenotype of transgenic switchgrass and biomass saccharification will be determined in the future.

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P:59
PERFORMANCE EVALUATION OF SILICA FUME (SF) MODIFIED CONCRETE

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With the increased awareness of using industrial byproducts in the cement industry, Silica Fume (SF) has become an attractive alternative pozzolanic material. In this study, a number of laboratory experiments were conducted by following the American Society of Standard and Testing (ASTM) standards. Two different proportions (10 percent and 20 percent) of SF were used as partial replacements of Type-I Ordinary Portland Cement (OPC) to prepare concrete. Specifically, the effects of SF on strength development, durability in term of freeze and thaw resistance, and alkali-aggregate resistance (ASR) of concrete were examined. Test results of cylindrical samples show that a 10 percent SF in concrete has four percent higher 28-day compressive strength compared to the control sample, and a 20 percent SF has 1 percent increment of strength. Furthermore, mortar cube test results show an increase of strength of 16.5 percent and 12 percent for 10 percent and 20 percent SF-modified concrete, respectively. Concrete samples with 10 percent SF and 20 percent SF yielded about 125 percent and 110 percent of tensile strength of the control sample. The ASR test results show a considerable reduced expansion for SF-modified mortar bars. Findings of the study have proven the feasibility of SF in concrete, and a 10 percent SF is recommended as the optimum dose.

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P:60
SCATTERED MAGNETIC FIELD IN MULTIPLE RAYLEIGH PARTICLES SYSTEMS

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When electromagnetic waves fall on a particle or a system of particles, the eaves are scattered. If the size of the particle(s) is much smaller than the incident electromagnetic wavelength, then such a scattering phenomenon is called Rayleigh scattering. These types of scattering phenomenon have been well investigated and quite a good number of publications are present in the literature. However, much of the research effort has been dedicated to the study of the scattered electric field. In this work, we have investigated the scattered magnetic fields in different types of Rayleigh single particles (i.e. metallic, active, dielectric) and multiple particle systems comprised of these particles.

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P:61
SYSTEM-RELIABILITY CONCEPTS IN BRIDGE PIER DESIGN: INCLUSION OF SCOUR AND SOIL VARIABILITY EFFECTS

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Scouring around bridge piers is one of the main concerns for new bridge foundation design. Analyzing scouring problems is also important for the assessment of reliability of an existing bridge foundation. The system-reliability based approach is an advanced method for considering effect of variability of different governing parameters on a foundation system. In this study, a widely used finite difference-based pier design method is adopted to predict the performance of laterally loaded single piers. For assessment of reliability, un-drained shear strength and density of surrounding soils are considered as a random field. In addition, variability of scour depths around a pier is considered in the analysis based on a widely-used approach named the Scour Rate In Cohesive Soil–Erosion Function Apparatus (SRICOS-EFA) method. Finally, the Monte Carlo simulation is performed to estimate the system reliability. Parametric analysis shows that the consideration of spatial variability of soils and the inclusion of random scour depths have significant influence on the probability of system failure. In addition, the adopted approach can easily quantify the variability and simplify system reliability calculation procedure for pier design. The approach can help practitioners to use more integrated reliability-based methods in pier design and risk analysis.

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P:62
UAS-BASED REMOTE SENSING FOR WEED IDENTIFICATION AND COVER CROP TERMINATION DETERMINATION

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Weeds are very problematic plants in crop production systems and their management is uneconomical. Planting cover crops helps in weed suppression and reduce herbicide application in crop fields. Nevertheless, the timeframe for cover crop termination plays an important role in weed suppression. Employing manual weed surveillance in the crop field to determine the appropriate time for cover crop termination is laborious and time consuming. Utilizing remote sensing can however ease this effort. Therefore, the objective was to demonstrate this utility by using remote sensing to assess the percentage of weeds emerging and vegetative coverage development of cash crop (soybean) at different termination times at different growth stages of cover crop (cereal rye). Termination was done at tillering, stem elongation, booting and milk stages. An unmanned aerial system deployed with an RGB camera was used to acquire aerial imagery of cover crop integrated soybean plots for estimating percentage coverage of weeds and vegetative cover development of the crop. Optimum cover crop termination time was determined through image processing and analysis based on coverage of weeds, vegetative coverage of cash crop and crop yield. The results identify the best-case scenario for integrating cover crop in soybean production for weed control.

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P:63
VISCOSITY TEMPERATURE SUSCEPTIBILITY ANALYSIS FOR NANOCLAY-MODIFIED ASPHALT BINDERS

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Viscosity temperature susceptibility (VTS) is an important factor to characterize dynamic modulus (E*) in hot mix asphalt (HMA). Three different test methods, namely, rotational viscometer (RV), dynamic shear rheometer (DSR), and penetration test were used to evaluate A (regression intercept) and VTS parameters of neat and nanoclay-modified asphalt binders. Three types of commercial nanoclays, namely, Cloisite 10A, Cloisite 11B and Cloisite 15A, were mixed at different proportions (1, 2 and 3 percent, by the weight of the base binder) with neat binder. The RV, DSR and penetration test were conducted at different temperatures ranging from 135oC to 180oC, from 61oC to 82oC, and from 25oC to 135oC, respectively. The values of the A-VTS parameters were found significantly different from one technique to the others. However, a general trend of the absolute value of VTS of neat binder was higher than that of a nanoclay-modified binder, irrespective to the test method. Therefore, the nanoclay-modified binders are expected to be less temperature susceptible than the neat binder. As a result, the E* values of the modified binders are expected to be higher at low frequencies or at high temperatures. This research leads to the use of an alternative polymer instead of expensive polymers.

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P:64
AGROBACTERIUM TUMEFACIENS IN VACUUM INFILTRATION OF ZEA MAYS FOR TRANSIENT EXPRESSION

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Moving genes into corn plants to improve their agricultural performance is a long and difficult process. Therefore, it is desirable to have a faster process to test those genes in a temporary fashion. We have developed a method for “transient” gene testing in corn leaves. Agrobacterium tumefaciens has been a helpful tool for transient and stable transformation of select species, including Zea mays. This study uses vacuum infiltration methods standardized for tobacco to transform corn leaves. Strain EHA101 was successful for gene transfer to corn leaves for transient expression. Factors such as cell concentration, temperature of incubation, time of incubation, and surface area have been standardized for vacuum infiltration. b-Glucuronidase (GUS) is a reporter gene used in this study to verify the success of the vacuum infiltration. Two genotypes of corn were tested: Hi II, a cross between AxB parents, and B73 an inbred variety. Whole young plants were used for infiltration without success. Thus, leaf strips from older plants were used after the surface treated with carborundum. The trials have led to obvious presence of foreign protein in cut leaves with treatment process. This method of transiently transforming Zea mays should allow for future stable transformations.

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P:65
BAJA RACER - DRIVETRAIN DESIGN FOR TRANSFER OF FUNCTIONAL POWER
ALJABER, A., ALSUWAIJ, A., COLE, B., WILLIAMS, C., STAFFORD, W.

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For every competitor of the Baja competition, the race states that the engine used must be the only common feature of the racer. The motor specified is the Briggs & Stratton 10HP Model 20 engine. In order for the Baja racer to travel at functional and safe speeds, a gear reduction will need to be introduced. The transmission is the additional mechanical system that is incorporated into the overall design alongside the engine. The transmission chosen by the A-State Baja team is known as a continuously variable transmission (CVT). Automatic transmissions, compared to manual, shifts automatically between the required gears based on the selected speed. CVTs allow for a more variable gear ratio and smoother transition compared to other automatic transmissions. The transaxle is another important mechanical system as it transfers the reduced, usable, engine power to the tires. The transaxle is a single piece unit that serves as the gearbox, the set of spur gears that transitions from forward, neutral, and reverse, and the differential, a mesh of beveled gears that allow different rotational movement between the two rear tires. Another gear ratio is introduced into the drivetrain that must be accounted for in the final power analysis.

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P:66
CREDIT CARD SKIMMER PROTECTION

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Technological advancements have made a substantial impact on the financial sector. Personal information is being transmitted over open servers on multiple platforms leading to an increased need for secure and convenient methods to protect the public from cyberattacks. Credit fraud is one of the most predominant types of crime committed in the world. Skimming is a type of credit fraud involving the use of an electronic device to read consumer’s information at gas stations and ATMs. Cyber criminals use this information to gain access to accounts and personal information. There are currently no standard guidelines for addressing cybercrimes which has led to an increased number of attacks on the public. Government programs have been founded to support the country’s ability to address these challenges. The goal of this project is to create a functioning prototype that can be used to protect people from fraudulent activities. The design is aimed to deter credit card fraud. The design intends to utilize Bluetooth for data transfer from a user’s personal device to another payment terminal and should be handy as a wallet. The testing and fabrication phase to optimize the overall design will adhere to all cyber physical system service laws and regulations.

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P:67
VALIDATION OF INSECT CONTROL TERMINATION TIMING IN ARKANSAS COTTON

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University recommendations for termination of insect pest control in late season cotton are based on maturity of the last economically significant boll (fruit) population. Cotton bolls have reduced susceptibility to damage from feeding by tarnished plant bugs (Lygus lineolaris) and Bollworms (Helicoverpa zea) by 250 DD60’s and 350 DD60’s, respectively, after flowering. Farmers sometimes make automatic insecticide applications in late season to ensure that all pest risks are eliminated. A study was conducted in 2017 in a 40-acre commercial cotton field in Poinsett County to compare use of integrated pest management (IPM) practices using scouting and plant monitoring compared to the practice of automatic insecticide application. The experiment had two treatments, replicated six times: 1.) automatic insecticide spray and 2.) untreated check. Plots were 100 ft. wide and extended the length of the field. Pest numbers were monitored weekly before and after spray termination. Overall, pest densities and boll damage was low, and there were no significant differences between treatments in cotton yield or fiber quality. The late season application was unnecessary. Unwarranted pesticide use for crop protection may affect environment sustainability and farm profitability negatively. Use of IPM would be more beneficial than automatic sprays.

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P:68
ASSESSING MITIGATIVE PROPERTIES OF VEGETATION IN NORTHEAST ARKANSAS AGRICULTURAL DITCHES USING BIOTIC AND ABIOTIC MEASURES

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Agricultural ditches are important tools for managing water quality because of their ability to settle sediment and sequester nutrients from field runoff. Aquatic vegetation is an important characteristic of these ditches that influences sediment and nutrient values. This study investigated the effectiveness of aquatic vegetation at filtering contaminants from surrounding agricultural landscape. Ten sites within two separate ditch systems in northeast Arkansas were measured weekly for three years to determine upstream and downstream sediment and nutrient loading. Bed and bank vegetation cover was assessed at each site and plants were identified. Water chemistry, turbidity, chlorophyll a, animal surveys and Whole Effluent Toxicity tests were performed to evaluate the vitality of each site. Differences in measured variables will be compared between upstream and downstream sites in each system using analysis of variance tests. Agricultural ditches are established to move water away from fields and discharge into larger streams in the Mississippi River delta. This movement is part of the larger drainage basin that feeds into the Gulf of Mexico and contributes the nutrients that exacerbate hypoxic conditions. This project is still ongoing, but the findings will help to understand the in-stream processes that have the potential to improve downstream water quality.

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P:69
HPLC PROFILING OF PRENYLATED STILBENOIDS IN DIVERSE CULTIVARS OF PEANUT

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Prenylated stilbenoids are inducible defense compounds found in peanut that have potential applications in human health as anticancer, antiviral and anti-obesity agents. In order to study the biosynthesis of these compounds, hairy roots cultures are ideal biological systems because they reproduce the biosynthetic potential of the parental plant. To this end, three commercial cultivars of peanut, i.e. Hull, Andru II and Georgia Green, were co-treated with four elicitors in order to induce the biosynthesis of stilbenoids. The latter were extracted from the culture medium with ethyl acetate after 0, 48, 96, 144 and 192 hours of elicitor treatment and then analyzed via reverse-phase high performance liquid chromatography (HPLC).All cultivars of peanut showed the presence of the non-prenylated stilbenoid resveratrol and prenylated stilbenoids (arachidin-1, arachidin-2, arachidin-3, arachidin-5 and arachidin-5 derivative). Arachidin-1 and arachidin-3 where the most abundant prenlyated stilbenoids and the highest levels were found in cultivar Hull. Whereas arachidin-5 derivative levels were higher in cultivar Andru II. The different levels of stilbenoids observed among the distinct peanut cultivars will be useful to select particular hairy root lines for production of specific types of bioactive prenylated stilbenoids.

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P:70
HYDROXYPROLINE-O-GLYCOSYLATION TAG FOR INCREASING RECOMBINANT PROTEIN PRODUCTION USING THE TRANSIENT PLANT EXPRESSION PLATFORM

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Plant-based recombinant protein production is emerging as a promising approach with significant advantages in cost and safety. Despite the advantages of plant recombinant proteins, the most important bottleneck that limits the commercialization is the low yields. Plants have a unique type of O-glycosylation that enhances the stability and solubility of recombinant proteins. Specifically target gene sequences are fused with a sequence to code for hydroxyproline-O-glycosylated peptide (HypGP) tags. These tags serve to modify the recombinant expressed protein with protective sugars to improve physicochemical stability. Therefore, the overall goal of this project is to understand how these HypGP tags affect protein expression, purification and bioactivity using tobacco transient expression system as a biofactory. We have targeted the transient expression of rainbow trout interleukin 22 (IL-22) in tobacco plants. The “sugar coated” IL-22 expression is significantly enhanced and can be successfully purified by Apoplast wash fluid (AWF) technique and Nickel chromatography. Data showing bioactivity in vitro by gene expression of HypGP-tagged IL-22 confirms this tag does not interfere with the function of this cytokine will be presented. These results suggest we can use this HypGP tag to improve plant therapeutic protein expression and stability.

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P:71
MONITORING WATER QUALITY AT SITES IN THE BAYOU DEVIEW, AR

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Watersheds play an integral role in transporting sediments and toxins to larger bodies of water. Anthropogenic activities have increased the levels of nutrients and toxins degrading freshwater lentic systems. The objective of this study was to assess impairments as a consequence of agricultural modification and non-point source pollution. Bayou DeView, Arkansas has been listed as impaired by the United States Environmental Protection Agency for increased sedimentation and runoff. As a major tributary of the Cache River, the Bayou DeView River is contributing to the hypoxic effect in the Gulf of Mexico. Arguably, surrounding land use has the largest negative impact on increased sedimentation and nutrients within channeled-altered streams. Weekly physiochemical water samples from the Bayou DeView Watershed were collected from October 2016 through November 2017. Data recorded depict a large variation of total suspended solids and turbidity values, suggesting that each site is contributing different levels of total suspended solids to the Cache River and ultimately the Hypoxic zone in the Gulf of Mexico. Employing consistent monitoring and assessment of the sediment levels and impairments of the Bayou DeView will determine the necessity of best management practices to reduce contributions to the hypoxic zone in the Gulf of Mexico.

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P:72
MONITORING WATER QUALITY THROUGH PHYSICOCHEMICAL ASSESSMENTS IN THE UPPER CACHE RIVER WATERSHED, ARKANSAS

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Agricultural land use has negatively impacted water quality of streams in the United States. Nonpoint source pollution from agricultural lands is the leading cause of this decline. A common practice in agriculture lands is channelization. Channelization, a form of channel alteration, involves making stream channels deeper and wider to keep streams within their banks during flood events. This process can lead to increased stream sedimentation, reduced stream water quality, and negatively impacted aquatic biota within watersheds. Agriculture accounts for nearly 35 percent of land use in Arkansas. In the Cache River Watershed, over 70 percent of the land is used for agricultural purposes with nearly 150 kilometers of streams channelized. The goal of the project is to monitor sediment contributions and water quality of the Cache River Watershed. Sampling of physicochemical parameters, turbidity, and total suspended solids in thirteen, spatially independent tributaries in the upper Cache River Watershed has been conducted weekly since October 2017. Preliminary results show some tributaries are contributing more sediment into the Cache River proper than others. Implications from these results are that the increased sediment contributions in the Cache River may be contributing to sediment levels in the Mississippi River and ultimately into the Gulf of Mexico.

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P:73
SUSTAINABLE BIOPRODUCTION AND ANTIOXIDANT ACTIVITY OF PRENYLATED STILBENOIDS FROM PEANUT

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Reactive oxygen species (ROS) are reactive chemical species that cause oxidative stress in organisms by oxidizing important biomolecules in the cell such as lipids, proteins, and DNA. In humans, oxidative stress is associated with several illnesses including cancer and age-related diseases. To counteract ROS, organisms have evolved elaborate enzymatic and non-enzymatic antioxidant systems. In plants, a class of phenolic compounds known as stilbenoids exhibit potent anti-oxidant properties. The goal of this study was to induce the synthesis of stilbenoids in peanut hairy roots and characterize their antioxidant activity. Interestingly in peanut, the majority of stilbenoids are prenylated, which increases the bioavailability. To increase the yield of these compounds, hairy root cultures of peanut were treated magnesium chloride, methyl-beta-cyclodextrin, methyl jasmonate and hydrogen peroxide. The yield of stilbenoids was assessed by high performance liquid chromatography (HPLC). The antioxidant activity of the extract was determined by the 2,2’-azino-bis(3-ethylbenzothiazoline-6-sulphonic acid) [ABTS] assay. The results indicate that the extracts from the culture medium enriched in prenylated stilbenoids showed higher antioxidant activity than the purified nonprenylated stilbenoid resveratrol.

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P:74
THINKING OUTSIDE THE CROPS: MAPPING VASCULAR PLANT SPECIES RICHNESS IN THE ANTHROPOCENE

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With Homo sapiens now driving climatic and geologic processes that are reshaping the terrestrial biosphere, scientists suggest that we are in the midst of a new geological epoch, the Anthropocene. However, current ecosystem assessment models such as ecoregions, likely oversimplify the impacts of human influence on terrestrial biota in areas of human disturbance (e.g., urban centers and agricultural intensive lands). Anthropogenic biomes have emerged as a new way of assessing ecosystems in their human-altered forms, and have the potential to be an essential tool in the future of ecology. This study will assess vascular plant species richness across four Level IV ecoregions and four local-scale anthropogenic systems in the Delta of Arkansas by conducting county floristic inventories in the underexplored and highly disturbed Crittenden and Mississippi Counties of Arkansas. Of the 2,892 known plant taxa in Arkansas, Crittenden County has vouchers available for only 349 taxa (State rank: 75/75 counties), and Mississippi County has vouchers for 487 taxa (State Rank: 73/75). This research will be the first to compare the usefulness of ecoregions and anthropogenic systems in ecosystem assessment on a local scale, and will be useful for developing conservation strategies for plant diversity in the Arkansas Delta region.

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P:75
APPLYING NANO SENSORS USING REDUCED GRAPHENE OXIDE TO DETECT PHOSPHATE

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Phosphate as a product within the agricultural fields cause major problems within water systems due to nutrient loading. Here we propose a graphene-ion transfer stripping voltammetry (ITSV) phosphate analyzer that will allow for real-time monitoring of phosphate on-site. The analyzer is a PVC/PEDOT-C14-poly vinyl chloride/poly(3,4-ethylenedioxythiophene) polystyrene modified glass carbon electrode tested using ion transfer stripping voltammetry. This modified glass carbon electrode offered better detection of phosphate than a basic glass carbon electrode with lower limit of detection (LOD) and less signal-to-noise ratio (SNR). This new sensor will allow for real-time and low-cost monitoring of phosphate in the environment, water treatment, and wastewater treatment as compared to current colorimetric testing methods.

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P:76
ARE RICE SEEDS WITH ELEVATED ASCORBATE LESS PRONE TO CHALKINESS?

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Grain chalkiness represents a major problem for rice producers as it affects the appearance and quality of milled rice. Chalky rice kernels are more prone to breakage during milling and processing due to a lower density of starch granules compared to translucent kernels, thus making this characteristic one of the key factors defining the price of the rice seed. The purpose of this work was to develop a high-throughput phenotyping assay that will allow detection and quantification of chalkiness in rice seeds. Previous studies have shown that rice lines with high ascorbate (vitamin C) content are tolerant to abiotic stresses that are known to be associated with chalkiness. We predict that high-ascorbate lines over-expressing ascorbate biosynthetic enzymes will exhibit less chalkiness than their wild type counterparts. As a first step in the process, images of rice seeds with known high and low-chalkiness percentage were acquired by visible, fluorescence, and near infrared sensors using a Scanalyzer HTS platform. Next, images were analyzed using LemnaGrid, a commercial algorithm for analysis. Our results demonstrate the utility of this digital imaging method to detect and quantify chalkiness in milled rice seeds in a high-throughput fashion. The next step in the project is to use this protocol to test the hypothesis that high-ascorbate content prevents accumulation of reactive oxygen species and development of chalkiness in rice seeds.

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P:77
CAP1 IN PANCREATIC CANCER: A NOVEL ROLE IN MEDIATING GROWTH FACTOR SIGNALS TO CONTROL CANCER CELL INVASIVENESS

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Pancreatic cancer has the worst prognosis among major cancers, with a 5-year survival rate at ~4 percent, largely due to its highly invasive property. Mechanistic insights into the metastatic progression are imperative for improving the treatment outcomes. This project is aimed to determine potential roles and regulation of the actin-regulating protein CAP1 (Cyclase-Associated Protein 1) in the invasiveness and proliferation of pancreatic cancer cells. Knockdown of CAP1 in cancer cells through RNAi reduced cell invasiveness, whereas no evidence supports up-regulation of CAP1 in cancer cells. Interestingly, elevated phosphorylation at the S308/S310 regulatory site on CAP1 was detected in cancer cells. Moreover, re-expression of either the phosphor-mimetic or unphosphorylatable mutants, neither of which can be regulated through transient phosphorylation at the regulatory site, failed to fully rescue the reduced cell invasiveness caused by loss of CAP1. Furthermore, treatment of cells with serum or growth factor PDGF induced CAP1 dephosphorylation, suggesting CAP1 may mediate extracellular signals to control cancer cell functions. Unlike breast cancer cells, no evidence supports a role for CAP1 in the proliferation of pancreatic cancer cells. Findings from this project may ultimately lead to development of novel strategies for suppressing the invasive cycle of pancreatic cancer.

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P:78
DOES AXLE GREASE EFFECTIVELY PROTECT BLUEBIRD NESTS FROM PREDATORS?

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Bird conservation organizations have long promoted the use of predator guards, such as the Kingston stovepipe baffle, to protect nest boxes and increase nest success of birds nesting in cavities. A recent large-scale study showed that predator guards effectively reduce nest predation. However, the effectiveness of axle grease as a common predator deterrent was not tested. Therefore, our objective was to determine the effectiveness of axle grease at increasing nest success. From March to September 2017, we monitored 148 nest boxes at a site 10 km north of Jonesboro, Arkansas, but we focused our study on the 115 nest boxes used by Eastern Bluebirds (Sialia sialis). We divided these nest boxes evenly among three groups: baffle, grease, and no guard. Bluebirds made 238 nesting attempts, 44 of which were depredated, primarily by snakes (48 percent) followed by raccoons/cats (28 percent), squirrels (13 percent), and unidentified predators (11 percent). Our models indicate that grease and baffles equally improved bluebird nest success by about 40 percent. Though not significantly, grease tended to yield a higher nest success than baffles. To conclude, axle grease is a cheap and effective alternative to baffles that owners of bluebird boxes in Arkansas and elsewhere can use to further bluebird conservation.

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P:79
DOES FREQUENTLY VISITING A BLUEBIRD NEST INCREASE PREDATION RISK?

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A review showed that frequently monitoring nests may impact predation risk, but manmade nest cavities were not considered. Thus, our objective was to determine the effect of visit frequency on nest predation of birds nesting in artificial cavities. Between March and September 2017, we monitored 115 nest boxes occupied by Eastern Bluebirds (Sialia sialis), about 10 km north of Jonesboro, Arkansas. We recorded the nest status every 1-6 days from the first egg to fledging or nest failure. Fifteen days after hatching, chicks may fledge prematurely if disturbed. We randomly divided nests with 15-day-old chicks in two groups: checked daily or at the estimated fledging date. We excluded nests of unknown fate, and of the remaining 195 nesting attempts, 44 were depredated. Specifically, we found that frequent visits did not impact risk of predation but increased risk of abandonment. However, all chicks successfully fledged from nests checked daily after day 15, indicating that nests may be most vulnerable at a younger stage. We recommend that bluebird monitors record nest status at a 3-day or longer interval during early nest stages. With caution, monitors may visit nests daily after day 15 to accurately determine nest fate without jeopardizing nest success.

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P:80
METABOLIC ENGINEERING TO ENHANCE THE HEALTH BENEFITS OF MUSCADINE GRAPE

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Muscadine grape is a native species of the southeastern United States that is vital to us in many ways economically and health-wise. The muscadine grape produces resveratrol, a compound which has shown several biological effects with potential applications in human health. However, one major limitation of resveratrol's use in humans is its low bioavailability due to its rapid metabolism. Interestingly, the peanut plant can produce arachidin-2, a derivative of resveratrol which is prenylated. Prenylation provides metabolic stability to arachidin-2 and therefore this compound is potentially more bioavailable than resveratrol. We identified the peanut prenyltransferase gene responsible for the prenylation of resveratrol to produce arachidin-2. To this end, the ultimate goal of this study is to develop transgenic muscadine grape plants with the peanut prenyltransferase gene in order to produce arachidin-2. Towards this goal, our first objective was to develop a micropropagation method for muscadine grape. Plants of two cultivars of muscadine grape (i.e. cultivars Fry and Noble) were grown in the greenhouse. Cuttings were taken from these plants and sterilized to start shoot cultures in vitro using a medium containing benzylaminopurine. Rooting of the shoots was achieved in medium containing indole butyric acid. Polyvinylpyrrolidone was included in the shoot induction and rooting media to prevent browning of the cultures. Plantlets are being propagated in vitro and leaf explants from these plantlets are being placed on medium with 2,4-dichlorophenoxyacetic acid to establish embryonic cultures. The latter will be used for genetic transformation with the ultimate goal of producing arachidin-2 in the transgenic muscadine grape plants.

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P:81
NOISE/VIBRATION REDUCTION IN VACUUM CLEANER USING ACOUSTIC ANALYSIS

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Dynamic mechanical systems are susceptible to excess noise and vibration during their functioning. A requirement for good design is to make sure that these levels are well within acceptable limits during operation, as dictated by industrial standards. The problem under consideration was that of excessive noise/vibration from the rotating brush heads at the end of the vacuum hose for an industrial grade vacuum cleaner. The aim was to analyze and find ways to reduce the noise/vibration to more acceptable levels. Several identical brush heads were considered for analysis, each had some slight modifications done to the assembly; the original brush head was used as a "reference." Using a test rig, time-domain signals for noise and vibration were collected for each brush head while in operation, and were further subject to analysis using frequency spectra, overall sound levels, and other parameters. Noise levels and other frequency and amplitude related characteristics were documented during the tests. The results show that, with certain design changes to the brush head, significant noise reduction could be obtained along with lower vibration levels. Details will be discussed and presented along with the results, conclusions and recommendations.

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P:82
OPTIMIZING THE EXTRACTION PROCESS OF BIO-ACTIVE COMPOUNDS IN HAIRY ROOT CULTURES OF PEANUT

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Hairy roots are "immortalized" tissue culture systems that can reproduce the biosynthetic potential of the entire plant. Our laboratory has developed peanut hairy roots as a bioproduction system of stilbenoids. These compounds have shown a wide range of biological effects and potential benefits to agriculture and human health. For instance, stilbenoids have shown several bioactivities including anticancer and anti-obesity properties. The objective of this project is to optimize the extraction process of stilbenoids from the peanut hairy root cultures. To produce the stilbenoids, peanut hairy root cultures were co-treated with methyl jasmonate, hydrogen peroxide, magnesium chloride, and cyclodextrin for 168 hours. Ethyl acetate extracts were prepared from 900 microliters and 1500 mL of medium from treated cultures. High performance liquid chromatography analyses of the extracts showed the presence of different stilbenoids including resveratrol, piceatannol, arachidin-1, arachidin-2, arachidin-3, and arachidin-5. Higher concentration of stilbenoids was obtained when 900 microliters of medium was used. Current efforts focus on optimizing the extraction process using larger volumes of medium. These studies are necessary for further purification of stilbenoids and their use in different biological assays.

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P:83
OXYGEN MEDIATED CROSS-COUPLING OF SILICON AND BORON COMPOUNDS

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Various research projects in synthetic chemistry have shown that organohalide and organometal hydrocarbons can be paired using metal-catalyzed reactions. The expansion of methods and materials used in these reactions has been the effort of many in the field of synthetic chemistry and play a role in pharmaceutical research. Typically, boron, silicon and tin are used in the synthesis, boron being the most utilized because of its low toxicity and ease of reaction. However, less work has been done using two metals or metalloids to oxidatively form biaryls, a common group found in medications. In this project, an aryl boronic acid with a myriad of substitutions were coupled with a silane compound. In the reaction, oxygen acted as the terminal oxidant instead of a carbon-halogen bond, which produced a variety of biaryl compounds with moderate to good yields. Liquid-liquid extraction was used to remove unwanted byproducts as well as the solvent used for the reaction. Column chromatography and sublimation were used isolate the desired products. Nuclear magnetic resonance and gas chromatography spectra were used to analyze and determine the presence and approximate amounts of products. Further research will consist of increasing yields and further exploration of the limits of the reaction.

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P:84
PHYLOGEOGRAPHIC ANALYSES SUGGEST CRYPTIC DIVERSITY WITHIN THE BLUNTNOSE DARTER, ETHEOSTOMA CHLOROSOMA

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Previous morphological studies of the Bluntnose Darter (Etheostoma chlorosoma) revealed little variation among populations across the Gulf Coastal Plain. Although some western populations (e.g. Colorado River, Texas) showed significant divergence from other populations, there was little support for taxonomic recognition of these populations. In this study, we sampled E. chlorosoma from 12 river drainages across the southeastern United States to examine patterns of phylogeographic structuring among populations throughout its distribution range. A total of 16 individuals were sequenced for the mtDNA cytochrome b gene and six nuclear DNA loci. Phylogeographic reconstructions were conducted with DNA sequence data using the program MrBayes (Bayesian inference of phylogeny). As a part of a larger study to evaluate phylogeographic patterns of Gulf Coastal Plain fishes, we also used these data to evaluate the Mississippi and Tombigbee river discontinuity hypotheses. These hypotheses are based on repeatable patterns of genetic structuring across the Mississippi and Tombigbee River divides for select fish species. However, it is not clear whether these patterns are also replicated for E. chlorosoma. Preliminary analyses of mtDNA revealed a deep phylogeographic break (TMRCA approx. 8 mya) among members east and west of the Mississippi River for E. chlorosoma. Preliminary results from nuclear DNA markers revealed a similar east-west divergence among populations of E. chlorosoma, but phylogeographic breaks do not fully coincide with mtDNA-based patterns of divergence. The deep divergence among eastern and western clades of E. chlorosoma suggests previously unrecognized cryptic diversity within the species, but increased sampling across the distribution will need to be incorporated into this framework in order to fully understand the unique phylogeographic pattern across the Gulf Coastal Plain for E. chlorosoma.

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P:85
REMOVAL OF AN ENDOCRINE DISRUPTOR BY CLAY-LIKE OXIDES

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One of the results of global climate change is the decrease of water supply, and due to various causes, there are contaminants present in this water supply. The purpose of this study was to develop a method to remove contaminants from the water. The contaminant studied in this experiment was 4-n-nonylphenol (4-NP), an endocrine disruptor that causes infertility and birth defects in aquatic life and humans. The adsorption of the emerging contaminant 4-NP onto the surface of hematite and goethite was studied using a spectroscopic instrument known as Attenuated Total Reflectance-Fourier Transform Infrared. Little is known about the interaction of these iron oxides and 4-NP, so this study gave a though observation of the adsorption capacity of oxides. The adsorption characteristics were used to test the feasibility of using iron minerals to naturally remove this persistent emerging organic contaminant from polluted waters. The adsorption kinetics for hematite and goethite showed that equilibrium was reached with the fastest kinetics to saturation achieved on hematite. Adsorption studies showed that Langmuir model bests fits the data with the highest "removal capability" as calculated from adsorption studies, observed with goethite with a calculated 4-NP maximum adsorption that was three times more than hematite. When the pH was varied, uptake of NP increased up to the pKa of 4-NP was reached, and then adsorption decreased. The next steps in our research will be to analyze other oxides to see how they compare to iron oxides.

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P:86
ROLES FOR FAK AND C-ABL IN MEDIATING CAP1 REGULATION OF ERK AND THE INVASIVENESS AND PROLIFERATION OF BREAST CANCER CELLS

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We recently reported that knockdown of the actin-regulating protein CAP1 (Cyclase-Associated Protein 1) led to elevated activity of ERK (External signal-Regulated Kinase), and enhanced invasiveness and proliferation in metastatic breast cancer cells. CAP1 is unlikely to regulate ERK directly as a cytoskeletal protein, and thus other signaling molecules likely mediate CAP1 signals to regulate ERK. Based on previous findings from our laboratory and the literature, we hypothesized that the adhesion kinase FAK (Focal Adhesion Kinase) and the tyrosine kinase c-Abl may serve the role in mediating CAP1 signals to regulate ERK. Both FAK and c-Abl have been reported to interact with CAP1 physically and functionally, at least in certain cell systems, and both are reported to regulate ERK. To test our hypothesis, we are using combined approaches including RNAi silencing of FAK and c-Abl, as well as inhibiting their kinase activities with chemical inhibitors, to determine if these manipulations rescue the elevated ERK activity and enhanced proliferation and invasiveness of cancer cells derived from CAP1 knockdown. Our primary results indicate towards FAK's involvement. Findings from these studies may ultimately lead to the development of these kinases as a therapeutic target for suppressing the uncontrolled proliferation and the invasive cycle of breast cancer cells.

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P:87
STANDARDIZATION OF PHOTOSYNTHETIC EFFICIENCY MEASUREMENTS IN RICE USING A MULTISPEQ INSTRUMENT

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Photosynthesis is an important process needed by plants to function and grow. Plant photosynthetic rates are limited by abiotic factors e.g. heat stress, and biotic factors e.g. fungi and pest infestation. Poor photosynthetic rates result in low crop yield and quality, namely rice chalkiness and unfilled grains. The goal of this work was to optimize a protocol for measuring photosynthetic efficiency in rice (Oryza sativa var. Nipponbare) using a newly developed handheld device called MultispeQ synchronized to the PhotosynQ web portal. This low-cost tool was developed by the Kramer Group at Michigan State University and proven to produce similar results than those obtained with equipment that is 50 times more expensive. However, there are no published protocols to use this tool in rice. We predicted that leaves with high chlorophyll content, and measurements taken during the day would lead to the best photosynthetic efficiency for these plants. Our results showed that measurements taken in the mid portion of the flag leaf during the highest daylight point showed optimum photosynthetic efficiency parameters (e.g. efficiency of photosystem 2, non-photochemical quenching and linear electron flow) for rice plants at the vegetative stage. This standardized protocol will be used in the near future by a group of undergraduate students to characterize the phenotype of a rice diversity panel growing in the field as part of the activities of the Wheat and Rice Center for Heat Resilience (WRCHR, www.wrchr.org), a research consortium funded by the EPSCoR Track 2 program of the National Science Foundation.

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P:88
SYNTHESIS OF NEW DIHYDROPYRIMIDINONES AND THEIR TESTING WITH THE ESKAPE PATHOGENS

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Pietro Biginelli described the first synthesis of dihydropyrimidinones (DHPM) in 1893. These compounds are a popular area of research in organic synthesis. Further development of these molecules can potentially have a great result in terms of discovering new drugs and developing novel synthesis tools. Dihydropyrimidinones are versatile synthons that are frequently seen in medicinal chemistry due to their pharmacological properties, including calcium channel inhibitory, HIV inhibition, neuropeptide antagonist and antitumor activities. We developed an efficient procedure to add functional groups and create DHPM derivatives that will be tested for bioactivity. We first brominated DHPMs with trimethylphenyl-ammonium tribromide and purified the product by trituration. Then the bromide was displaced by a reaction with sodium formate in DMSO. Once extracted from solution, a mixture of methanol and trimethylamine was added to reveal the alcohol. Then the aldehydes were generated by oxidizing with a combination of DHPM and 2,2,6,6-tetramethylpiperidine 1-oxyl (TEMPO). Finally, we added potassium carbonate or 2-aminopyrimidine and ethanol or methanol for cyclization reaction. The products of these methods will be sent to collaborators to determine the biological properties these DHPM analogues may possess. Our research is in progress, so we do have any findings in this project.

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P:89
THE HUNT FOR BIGLEAF

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Rare trees are invaluable for the ecological niches they fill, supporting ecosystems and having potential economic and medicinal values. The bigleaf magnolia, Magnolia macrophylla, is no exception. This aptly named magnolia is a spectacular understory tree that has leaves up to 1 m long and .5 m wide, unlike anything else found in Arkansas! With only one wild population documented west of the Mississippi River, this population is in danger of being lost. Although vouchered specimens exist, the location of this tree remains a mystery. The specimen labels contain errors in counties and coordinates that make it unclear if all known Arkansas specimens have come from a single population or multiple populations in Northeast Arkansas. The mission of this research project is to identify these locations, conduct a thorough search of last-known possible locations to determine if there are living trees in these populations, and to categorize habitat metrics to aid in searching for unknown populations. Located trees will be documented and records shared with the Arkansas Natural Heritage Commission for further study and preservation of the native genotypes. Failure to locate any trees of this species in Arkansas could result in an ecological restoration project for this species.

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