

MISSISSIPPI
ACADEMY OF SCIENCES



SEVENTY-THIRD ANNUAL MEETING

February 25-27, 2009

Whispering Woods Hotel and Conference Center
Olive Branch, MS

Supported by
University of Mississippi Medical Center

Journal of the Mississippi Academy of Sciences

Volume 54

January 2009

Number 1



Contents

Editor	3	ACADEMY OFFICERS & DIVISION CHAIRS 2007–2008
Michelle Tucci University of Mississippi Medical Center	4	GENERAL SCHEDULE
Associate Editor	5	DIRECTIONS TO CONFERENCE CENTER
Edwin Swiatlo University of Mississippi Medical Center	6	CONFERENCE CENTER FLOOR PLAN
Editorial Board	6	SUSTAINING MEMBERS
Gregorio Begonia Jackson State University	7	LIFE MEMBERS
Maria Begonia Jackson State University	8	EXHIBITORS
Ibrahim O. Farah Jackson State University	9	DODGEN LECTURE
Robin Rockhold University of Mississippi Medical Center	10	SPECIAL PRESENTATIONS
Program Editor	12	OVERVIEW OF DIVISIONAL PROGRAMS
Ann Marie Kinnell University of Southern Mississippi	28	ABSTRACTS
Abstracts Editor	28	Agriculture and Plant Science
John Boyle Mississippi State University	35	Cellular, Molecular and Developmental Biology
	45	Chemistry and Chemical Engineering
	57	Ecology and Evolutionary Biology
	59	Geology and Geography
	64	Health Sciences
	81	History and Philosophy of Science
	83	Marine and Atmospheric Sciences
	88	Mathematics, Computer Science and Statistics
	93	Physics and Engineering
	100	Psychology and Social Sciences
	111	Science Education
	117	Zoology and Entomology
	121	AUTHOR INDEX

The Journal of the Mississippi Academy of Sciences (ISSN 0076-9436) is published in January (annual meeting abstracts), April, July, and October, by the Mississippi Academy of Sciences. Members of the Academy receive the journal as part of their regular (nonstudent) membership. Inquiries regarding subscriptions, availability of back issues, and address changes should be addressed to - The Mississippi Academy of Sciences, Post Office Box 55709, Jackson, MS 39296-5709, telephone 601-977-0627, or email msacad@bellsouth.net.



OFFICERS OF THE MISSISSIPPI ACADEMY OF SCIENCES

President
President-Elect
Immediate Past-President
Executive Officer
Journal Editor
Directors

Rodney Baker
Shane Burgess
Joseph A. Cameron
Hamed A. Benghuzzi
Michelle Tucci
John Boyle
Michelle Tucci
Ann Marie Kinnell
Cynthia Huff

Administrative Assistant

Division Chairs 2007–2008

AGRICULTURE AND PLANT SCIENCE
Md. S. Zman, Alcorn State University

CELLULAR, MOLECULAR AND DEVELOP. BIOL.
Lauren Brandon, Mississippi University for Women

CHEMISTRY AND CHEMICAL ENGINEERING
Ken Lee, Jackson State University

ECOLOGY AND EVOLUTIONARY BIOLOGY
Robert Hamilton, Mississippi College

GEOLOGY AND GEOGRAPHY
Zachary Musselman, Millsaps College

HEALTH SCIENCES
Kenneth Butler, Univ. of Mississippi Medical Center
Stacy Vance, Univ. of Mississippi Medical Center

HISTORY AND PHILOSOPHY OF SCIENCE
Mac Alford, Univ of Southern Mississippi

MARINE AND ATMOSPHERIC SCIENCES
Hyun J. Cho, Jackson State University

MATHEMATICS, COMPUTER SCI. AND STATISTICS
Elgenaid Hamadain, Univ. of Mississippi Medical Center

PHYSICS AND ENGINEERING
Alaina Gearba, University of Southern Mississippi

PSYCHOLOGY AND SOCIAL SCIENCE
Madhu Singh, Tougaloo College

SCIENCE EDUCATION
Samuel Clardy, USM Gulf Coast Research Laboratory

ZOOLOGY AND ENTOMOLOGY
Julius Ikenga, MS Valley State University



GENERAL SCHEDULE

**MISSISSIPPI ACADEMY OF SCIENCE
Seventy-Third Annual Meeting
February 25-27, 2009**

GENERAL SCHEDULE

WEDNESDAY, FEBRUARY 25, 2009

<u>TIME</u>	<u>EVENT</u>	<u>LOCATION</u>
4:00 PM to 6:00 PM	Board of Directors Meeting	TBA

THURSDAY, FEBRUARY 26, 2009

<u>TIME</u>	<u>EVENT</u>	<u>LOCATION</u>
7:30 AM to 5:00 PM	Registration	Lobby
9:00 AM to 5:00 PM	Exhibits	
8:00 AM to 4:00 PM	Divisional Programs	See program for rooms
Noon to 1:00 PM	Special Presentation (p. 10)	Grand Ballroom
4:00 PM to 4:30 PM	Set up for 6:00 PM Poster Session	Grand Ballroom
5:15 PM to 6:00 PM	2009 Dodgen Lecture (p. 9) & Presentation of Awards	Grand Ballroom
6:00 PM to 7:00 PM	Reception and Poster Session	

FRIDAY, FEBRUARY 27, 2008

<u>TIME</u>	<u>EVENT</u>	<u>LOCATION</u>
7:15 AM	Past-Presidents' Breakfast	To Be Announced
8:00-8:45	MAS Business Meeting	Grand Ballroom
8:00 AM to 2:00 PM	Registration	Lobby
8:00 AM to 12:00 PM	Exhibits	
8:00 AM to 4:00 PM	Divisional Programs	See Pages 12-27 for overview
8:45 AM-9:45 AM	Ecology and Evolutionary Sciences Round Table Discussion	Dogwood Room
9:00 AM to 10:30 AM	Health Fair	Grand Ballroom
10:00 AM to 12:00 PM	Rural Health Symposium	Ampitheater
10:45 AM to 11:45 AM	Mississippi Center for Supercomputing Research User Advisory Group Meeting	Hickory Room
Noon to 1:00 PM	Special Presentation (p. 11)	Grand Ballroom
1:00 PM to 3:00 PM	Drug Delivery Symposium	Ampitheater



**11200 East Goodman Road
Olive Branch, MS 38654**

Directions to Conference Center From:

Memphis International Airport - Exit airport to I-240 East towards Nashville to 385 East/ Bill Morris Parkway. Exit Hacks Cross Road south; continue for 4.5 miles. Whispering Woods is on left.

I-40 Westbound from Nashville - Go West to I-240. Take I-240 South to 385 East/Bill Morris Parkway. Exit Hacks Cross Road south; continue for 4.5 miles. Whispering Woods is on left.

I-40 Eastbound from Arkansas - Go East to I-240. Take I-240 towards Jackson, MS; continue on I-240 towards Nashville (not I-55 South) to 385 East/Bill Morris Parkway. Exit Hacks Cross Road south; continue for 4.5 miles. Whispering Woods is on left.

I-55 Southbound from Arkansas - Go South to I-240 East towards Nashville to 385 East/Bill Morris Parkway. Exit Hacks Cross Road south; continue for 4.5 miles. Whispering Woods is on left.

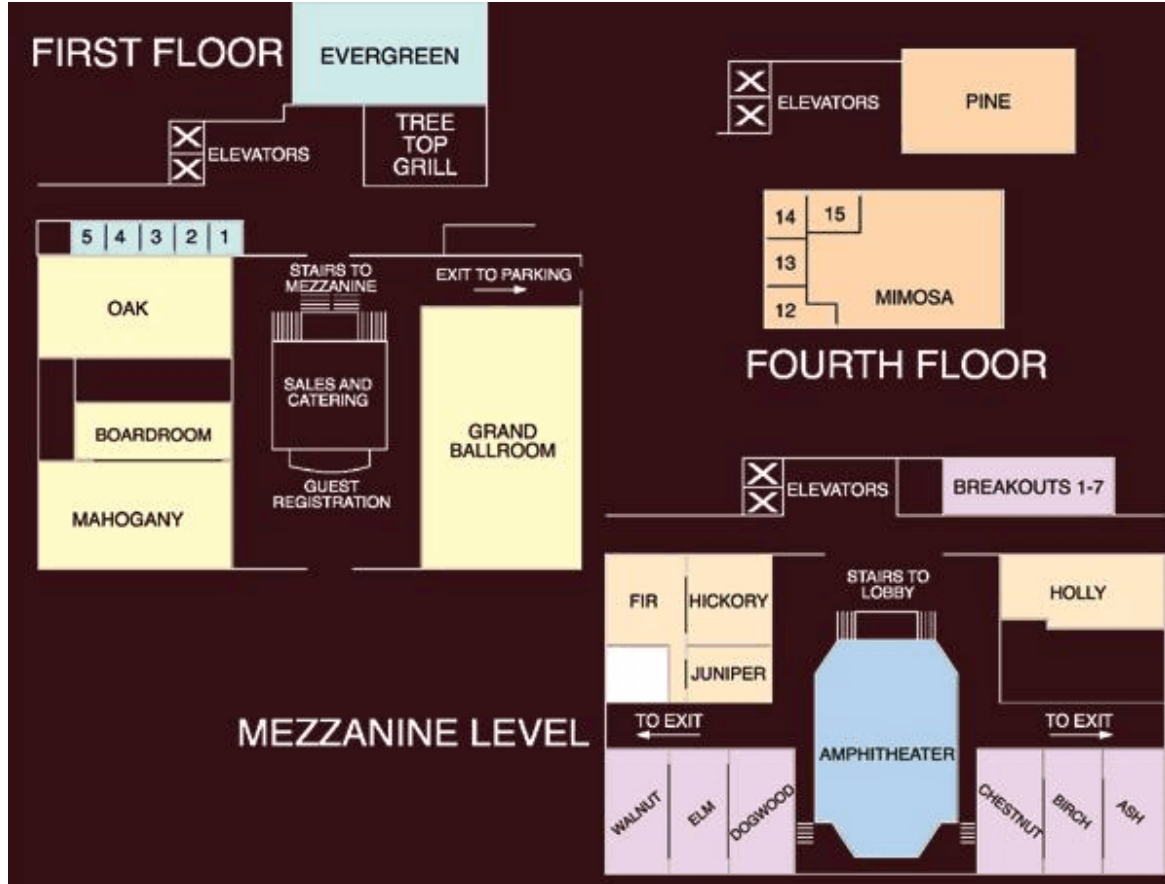
I-55 Northbound from Jackson, Mississippi - Exit State Highway 302 East/Goodman Road; continue East for 14 miles. At Hacks Cross Road intersection, turn left. At second light, turn right. Whispering Woods is straight ahead.

The Hacks Cross entrance to Whispering Woods is now traffic light controlled making access into the hotel easier and safer. A green "Whispering Woods Hotel" directional sign is mounted next to the traffic light.

Complimentary airport shuttle service is available to and from Memphis International Airport from 7:00 am to 10:30 pm daily. Upon arrival, call 662-895-2941 for pick outside baggage claim. Contact the front desk 24 hours prior to departure to arrange return transportation to Memphis International Airport.

<http://www.wwconferencecenter.com/directions.htm>

Whispering Woods Conference Center Floor Plan



Sustaining Members

Alcorn State University
 Belhaven College
 East Central Community College
 Holmes Community College
 Itawamba Community College
 Jackson State University
 Mississippi Gulf Coast Community College
 Mississippi Museum of Natural Sciences

Mississippi State University
 Mississippi Valley State University
 Northwest Mississippi Community College
 Pearl River Community College
 University of Mississippi
 University of Mississippi Medical Center
 University of Southern Mississippi
 William Carey University

LIFE MEMBERS

Junius G. Adams, III, Gaithersburg, MD
Charles C. Alexander, University, MS
Alex D. W. Acholonu, Alcorn State, MS
Vernon L. Asper, Stennis Space Center, MS
Robert Bateman, Hattiesburg, MS
John D. Bower, Jackson, MS
Carolyn R. Boyle, Starkville, MS
John A. Boyle, Starkville, MS
Charles T. Bryson, Stoneville, MS
C. Eugene Cain, Jackson, MS
Gordan Cannon, Hattiesburg, MS
C. T. Carley, Starkville, MS
Steven T. Case, Jackson, MS
Alfred P. Chestnut, Jackson, MS
Prentiss S. Cox, Clinton, MS
Crayton M. Crawford, Mississippi State, MS
David Creed, Hattiesburg, MS
Roy A. Crochet, Stennis Space Center, MS
W. Lawrence Croft, Mississippi State, MS
Asok K. Dasmahapatra, University, MS
Alice L. Douglas, Jackson, MS
Ben H. Douglas, Jackson, MS
Roy J. Duhe, Jackson, MS
Stephen Ekunwe, Clinton, MS
Stella D. Elakovich, Purvis, MS
Atef Elsherbeni, University, MS
Peter Fleischer, Stennis Space Center, MS
D.J. Grimes, Ocean Springs, MS
Mary Lou Gutierrez-Mohamed, Jackson, MS
Gordon Gunter, Ocean Springs, MS
Margot Hall, Hattiesburg, MS
Burnette Hamil, Mississippi State, MS
Robert G. Hamilton, Clinton, MS
Andrew W. Harrell, Vicksburg, MS
Thomas J. Herrin, Jackson, MS
Sabine Heinhorst, Hattiesburg, MS
Huey-Min Hwang, Jackson, MS
Jerome A. Jackson, Mississippi State, MS
Phillip Kelly, Madison, MS
Paul K. Lago, University, MS
Mary C. Landin, Utica, MS
Jerzy Leszczynski, Jackson, MS
Ken Lee, Jackson, MS
Tim Lockley, Gulfport, MS
Julia S. Lytle, Ocean Springs, MS
Thomas F. Lytle, Ocean Springs, MS
David H. Magers, Clinton, MS
Harihara M. Mehendale, Jackson, MS
L. Hollis Melton, Ocean Springs, MS
Joan Messer, Sumrall, MS
Lyle E. Nelson, Starkville, MS
Clifford Ochs, Oxford, MS
Ervin G. Otvos, Ocean Springs, MS
Robin M. Overstreet, Ocean Springs, MS
Dudley F. Peeler, Jackson, MS
A. Louise Perkins, Bay St. Louis, MS
John A. Pojman, Hattiesburg, MS
Aaron D. Puckett, Jackson, MS
Zahir Qureshi, Memphis, TN
Dero S. Ramsey, Starkville, MS
James Rawlins, Hattiesburg, MS
Robin W. Rockhold, Jackson, MS
Bennie Rohr, Pascagoula, MS
Muhammad I. Shafi, Holly Springs, MS
Sandra L. Sharp, Ocean Springs, MS
Troy J. Stewart, Sr., Lorman, MS
Richard Sullivan, Jackson, MS
Charles Swann, Oxford, MS
Robert D. Taylor, Houston, TX
Shelby F. Thames, Hattiesburg, MS
Joyce Titus, Madison, MS
Salil C. Tiwari, Fayette, MS
Suresh C. Tiwari, Fayette, MS
Warren E. Traub, Diamondhead, MS
Gregory S. Tschumper, University, MS
Suresh Tyagi, Louisville, KY
S. Kant Vajpayee, Hattiesburg, MS
Rosa Lea Walker, Jackson, MS
W. Lamar Weems, Jackson, MS
Denis A. Wiesenburg, Stennis Space Center, MS
John S. Williamson, Oxford, MS
C. A. Wilson, Mississippi State, MS
Hongtao Yu, Madison, MS
Jeffrey D. Zubkowski, Brandon, MS



Exhibitors, 2008 Annual Meeting **Supporters of the Mississippi Academy of Sciences**

Airgas
Biomedical Solutions, Inc.*
Bruker Daltonics, Inc.
Dionex Corporation
Eppendorf
Fisher Safety
Fisher Scientific*
Forestry Suppliers, Inc.*
JSU, School of Graduate Studies*
LECO Corporation*
Mettler Toledo, Inc.*
Mississippi Center for Supercomputing*
Mississippi College*
MS Functional Genomics Network*
Mississippi State University
PerkinElmer Life & Analytical Science, Inc*
Restek Corporation*
Swift Optics, Inc.

UMC, Base Pairs Program*
UMC, Biomedical Materials Science Dept.*
UMC, School of Graduate Studies*
UMC, School of Health Related Professions*
USM, Dept. of Chemistry and Biochemistry*
USM, Gulf Coast Research Laboratory
USM, School of Polymers & High Performance
Materials
Varian Inc.

* Exhibitors, 2008 Annual Meeting

Additional 2008 Exhibitors:

JSU, School of Engineering
Millipore Corporation
UMC, Graduate Studies in Neuroscience
Nikon Instruments, Inc.



**MISSISSIPPI CENTER
FOR SUPERCOMPUTING RESEARCH**

The Mississippi Center for Supercomputing Research (MCSR) provides free, high performance computing cycles and consulting in support of research and instruction, for all interested students, faculty, or researchers associated with any of Mississippi's eight publicly funded institutions of higher learning. The MCSR actively supports the Mississippi Academy of Sciences with regular participation in the Mathematics, Computer Science, and Statistics Division. Please visit <http://www.mcsr.olemiss.edu>, email assist@mcsr.olemiss.edu, or call 662-915-3922 to inquire about how we might support your HPC research or instructional computing projects at your university. Or, simply apply for an account today at <http://www.mcsr.olemiss.edu/accounts>.

<http://www.mcsr.olemiss.edu>, email assist@mcsr.olemiss.edu, or call 662-915-3922 to inquire about how we might support your HPC research or instructional computing projects at your university. Or, simply apply for an account today at <http://www.mcsr.olemiss.edu/accounts>.

2009 Dodgen Lecture

5:15 pm Thursday
February 26, 2009

"Gaseous Inflammatory Mediators: The Good, the Bad, and the Ugly."

given by

Dr. Bruce Freeman, Ph.D., Irwin Fridovich Professor and Chair of the Department of Pharmacology, University of Pittsburgh Medical Center



Dr. Freeman received his BA in Biochemistry and Ph.D. from the University of California, Riverside followed by a post-doctoral fellowship at Duke University. During his fellowship, he was recommended as a Queen's Quest Scholar by Queen's University, London, Ontario. He continued at Duke as a Research Assistant Professor before heading to Alabama as an Associate Professor and the Departments of Anesthesiology and Biochemistry/Molecular Genetics. Within five years at UAB he advanced to the level of Professor. In 1993 he was recognized as a Fulbright Scholar. In 1996 he advanced to Vice Chair of Research in the Department of Anesthesiology and named as the Director of the Center for Free Radical Biology and Professor in the Department of Environmental Health Sciences. In 2002, he was appointed senior scientist of the Comprehensive Cancer Center until 2006. In 2004 and 2007 he was an invited

speaker at the Nobel Conference.

Dr. Freeman has over 200 publications, 4 patents and 7 NIH funded grants since 2000.

Dr. Freeman's research interests focus on the eukaryotic cell production, reactions and signal transduction properties of oxidization and free radical inflammatory mediators (superoxide, H₂O₂, nitric oxide, pernitite, oxidized/nitrated lipids). In particular his lab is interested in the actions of these nitrate species as both redox signaling and pathogenic mediators in inflammatory diseases. His lab revealed new therapeutic strategies for treating acute inflammatory respiratory disorders, and cardiovascular disease based on observation made on these redox mediators.

Special Presentation

Noon, Thursday
February 26, 2009

Introduction to Southeasternflora.com, A Plant Identification web site given by John Gwaltney



Mr. Gwaltney received his undergraduate work/B.S. from Auburn University, Alabama in Biological Science with an emphasis in Wildlife Management. He obtained his Master's Degree from Auburn University in Wildlife Biology. Mr. Gwaltney joined Forestry Suppliers, Inc. in 1976, and worked his way to become the President of Forestry Suppliers, Inc. A position he has held since 1994.

Mr. Gwaltney's interest in developing the Southeastern flora website was driven by his longtime enjoyment of native plant species. He observed that within most school settings, resources were limited for plant identification and studies. The web site creation made it easy for any one to accurately identify native plant species. This valuable tool can be used by students of all ages as well as those who want to simply identify the native plants found within their environment.

Special Presentation

Noon, Friday
February 27, 2009

The Role of Phospholipase D Activity and Phosphatidic Acid Synthesis on The Production of Pro- Inflammatory Cytokine Production

given by **Michelle Tucci, Ph.D.**

Dr. Michelle Tucci is an Associate Professor and Supervisor of the Biological Labs in the Department of Orthopedic Surgery at the University of Mississippi Medical Center. She received her Bachelors Degree from Seton Hill University in Biology, and a Master's Degree from the University of Dayton where she concentrated her studies on chemicals that disrupt biophotosynthetic pathways. After finishing her Master's degree in 1987 she worked as a Research Associate in the Division of Infectious Diseases at the University of Cincinnati, as a Senior Biochemist for Marion/Merrell Dow Pharmaceuticals, and a Senior Research Associate in Division of Pediatric Infectious at University of Michigan, before accepting a position as a Senior Research Associate in the Department of Orthopedic Surgery at the University of Mississippi Medical Center in 1994. She earned her Doctorate Degree from the University of Mississippi Medical Center in November, 1999 in the Department of Pharmacology. She was awarded the Douglas Walker Award from the Mississippi Academy of Science, Health Sciences Division, February 1999, Dean's Graduate Research Dissertation Award in May 2000, Poster Presentation Award, Mississippi Orthopaedic Society, April, 2000, Outstanding Poster Award and Presentation, Academy of Surgical Research, Sept, 2003, Outstanding Contribution to Science Award, Mississippi Academy of Sciences, February, 2007. She has over 200 publications, and 7 grant awards.



Since 1985, Dr. Tucci has worked extensively in biochemical pathways. She was trained in immunological techniques when she worked in the infectious diseases division at both University of Cincinnati and University of Michigan. She continued to seek training in this area and worked extensively in cellular signaling pathways of macrophage and bone cells. After finishing her Ph.D. degree she was appointed as Supervisor of the Biological Labs in Orthopedics where her primary research interest has been the study of cellular signaling in inflammatory processes.



OVERVIEW OF DIVISIONAL PROGRAMS

GENERAL SYMPOSIUM

Thursday, February 26

Location: Grand Ballroom

12:00p INTRODUCTION TO SOUTHEASTERNFLORA.COM, A PLANT IDENTIFICATION WEB SITE

Thursday Evening

LOCATION: Grand Ballroom

5:15p THE DODGEN LECTURE: "GASEOUS INFLAMMATORY MEDIATORS: THE GOOD, THE BAD, AND THE UGLY."

6:00p Dodgen Reception and Divisional Poster Sessions
Please set up between 4:00p and 4:30p

Friday, February 27

Location: Grand Ballroom

12:00p THE ROLE OF PHOSPHOLIPASE D ACTIVITY AND PHOSPHATIDIC ACID SYNTHESIS ON THE PRODUCTION OF PRO- INFLAMMATORY CYTOKINE PRODUCTION

AGRICULTURE AND PLANT SCIENCE

Thursday, February 26

THURSDAY MORNING

DOGWOOD ROOM

- 8:30 THE REDUCTION OF PB TRANSPORT FROM SMALL ARMS TARGET BERMS
8:45 PRODUCTION OF PHYTOCHELATIN BY WHEAT (*Triticum aestivum* L.) GROWN AT DIFFERENT STAGES IN CADMIUM-CONTAMINATED SOILS
9:00 PHYTOEXTRACTION OF CADMIUM AND LEAD FROM CONTAMINATED SOIL BY CABBAGE PLANT
9:15 IDENTIFYING MUTANTS IN *TRITICUM TURGIDUM* L VAR. *DURUM* WHEAT GRAIN PROTEINS
9:30 A WHOLE PINE TREE SUBSTRATE FOR ROOTING STEM CUTTINGS OF ORNAMENTAL CROPS
9:45 EFFECT OF DEFOLIATION FREQUENCY ON GROWTH AND PRODUCTION OF LITTLE BLUESTEM AND INDIANGRASS USED IN CONSERVATION BUFFERS
- 10:00 Break
- 10:15 DISEASE DIAGNOSIS & PLANT PATHOGEN INTERACTION
10:30 PROCESSED PLANT POLYPHENOL (TANNIC ACID) ENHANCES ANTIMICROBIAL ACTIVITY ON FOODBORNE PATHOGENS
10:45 COMPARISON OF MICROBIAL RECOVERY METHODS ON YEAST AND MOLD AND AEROBIC COUNTS OF FROZEN BLEEBERRIES (*VACCINIUM ASHEI*)
11:00 EFFECT OF GRAPE VARIETY AND SOLVENT EXTRACTION METHOD ON THE ANTIPATHOGENIC ACTIVITY OF MUSCADINE (*VITIS ROTUNDIFOLIA MICHX.*) SEED EXTRACTS
11:15 PERFORMANCE OF MUSCADINE (*VITIS ROTUNDIFOLIA*) AND SOIL PHYSICO-CHEMICAL CHANGES DURING TRANSITION FROM CONVENTIONAL TO ORGANIC PRODUCTION
11:30 INHIBITION OF E. COLI O157:H7 BY FRESH AND PROCESSED RED MUSCADINE JUICE AND ANTIMICROBIAL ROLE OF THEIR POLAR COMPOUNDS



**THURSDAY AFTERNOON
DOGWOOD ROOM**

- 1:30 INHIBITORY EFFECT OF ENTEROBACTER SAKAZAKII BY MUSCADINE JUICES AND ANTIMICROBIAL ACTIVITY OF THEIR IDENTIFIED COMPOUNDS AT PH 3.2
- 1:45 PRELIMINARY STUDIES ON RAIN-RELATED SPLITTING OF BLUEBERRY FRUIT
- 2:00 PHYSIOLOGICAL AND IMMUNOLOGICAL RESPONSES OF THE AVIAN EMBRYO TO TEMPERATURE TRANSDUCER IMPLANTATION IN THE EGG AIR CELL
- 2:15 PREHARVEST AND POSTHARVEST FACTORS THAT AFFECT COLOR AND QUALITY OF CATFISH (ICTALURUS PUNCTATUS) FILLETS
- 2:30 OCCURRENCE OF LISTERIA MONOCYTOGENES AND LISTERIA SPP. IN CATFISH PROCESSING PLANTS AND IDENTIFICATION OF CONTAMINATION SOURCES
- 2:45 ASSESSING THE BENEFITS OF EXOGENOUS PROGESTERONE SUPPLEMENTATION ON THE SURVIVAL OF EMBRYOS TRANSFERRED TO RECIPIENT BEEF COWS.
- 3:00 Divisional Business Meeting

**THURSDAY EVENING
GRAND BALLROOM**

- 6:00 Dodgen Reception and Poster Session
Please set up your poster between 4:00 and 4:30p
1. INVESTIGATION OF SALT MARSH PLANTS FOR THE PRESENCE OF MYCORRHIZAL FUNGI
 2. SURVEY AND IDENTIFICATION OF TREES ON CAMPUS OF MISSISSIPPI VALLEY STATE UNIVERSITY
 3. SCREENING DIPLOID WHEAT (TRITICUM MONOCOCCUM) MUTANT POPULATION FOR ALTERED GRAIN PROTEIN PROFILE
 4. METHODS TO DETERMINE CHILLING SUSCEPTIBILITY OF SWEET POTATOES (IPOMOEA BATATAS)
 5. INCIDENCE AND IDENTIFICATION OF MAJOR SPOILAGE AND PATHOGENIC MICROORGANISMS IN FRESH AND PROCESSED CHANNEL CATFISH

CELLULAR, MOLECULAR AND DEVELOPMENTAL BIOLOGY

Thursday, February 26

**THURSDAY MORNING
OAK ROOM**

- 9:00 Opening Remarks
- 9:10 THE EFFECT OF MATERNAL GLUCOCORTICOIDS ON TWO DAY OLD JAPANESE QUAIL EMBRYOS.
- 9:30 SHEAR STRESS INDUCED PLATELET ACTIVATION
- 9:50 EFFECT OF VOLUNTARY EXERCISE NEUROTROPHIC FACTOR EXPRESSION AND INNERVATIONS IN THE RAT CARDIAC MUSCLE
- 10:10 INTEGRIN SIGNALING AND THE MIGRATION OF HUMAN COLON CANCER CELL HCT-15

**10:30 POSTER SESSION
GRAND BALLROOM**

1. ISLET-1 EXPRESSION IN THE ADULT MOUSE HEART
2. MAPPING OF VISUAL ATTENTION
3. PURIFICATION AND RECONSTITUTION OF BACTERIALLY EXPRESSED AROMATASE
4. THE EFFECT OF CEFTRIAZONE AND INTERLEUKIN-10 PRE-NATAL ADMINISTRATION ON SPRAGUE DAWLEY RATS
5. ELUCIDATION OF RANAVIRUS GENE EXPRESSION USING ANTISENSE MORPHOLINO OLIGONUCLEOTIDES



6. SEROTONIN MEDIATED CA²⁺ SIGNALING DYNAMICS IN PULMONARY ARTERIAL MYOCYTES AND THE COMBINED INFLUENCE OF MATURATION AND HIGH-ALTITUDE EXPOSURE
7. THE REGULATION OF TRANSLATION OF THROMBOSPONDIN-1 BY GLUCOSE IN MICROVASCULAR ENDOTHELIAL CELLS
8. EFFECT OF COMBINING HDACI TSA WITH HERCEPTIN® (TRASTUZUMAB) ON CELL PROLIFERATION, SURVIVAL, & PROGRAMMED CELL DEATH IN SKBR3 BREAST CANCER CELL LINE
9. IDENTIFICATION OF THE MICROBIAL COMMUNITY DURING DECAY OF NATURALLY RESISTANT CEDAR AND CHEMICALLY TREATED PINE
10. COMPARISON OF MODULUS OF ELASTICITY, DECAY AND MICROORGANISMS DURING DECAY OF NATURALLY RESISTANT AND TREATED WOOD.
11. QUANTITATIVE GENE EXPRESSIONS OF PROTAMINE TRANSCRIPTS IN SPERMATOZOA: IMPLICATIONS OF PRM 1 ON MAMMALIAN MALE FERTILITY
12. FUNCTIONAL RELATEDNESS OF VIBRIO GENOMES
13. ADENOCARCINOMA COLORECTAL CANCER (HT-29) CELLS IN RESPONSE TO ARSENIC TRIOXIDE
14. ALPHA 2-HS GLYCOPROTEIN (FETUIN-A) ENHANCES MURINE MAMMARY TUMOR GROWTH
15. AN ANALYSIS OF THE PROMOTER REGION OF ADP-RIBO AND RUBISCO WITHIN *KARENIA BREVIS* USING RAPID AMPLICATION OF GENOMIC ENDS
16. INFLUENCE OF ELEVATED PLASMA THYROXINE ON OLFACTORY BULB RETINOID RECEPTORS AND NEUROTROPHINS
17. OVERPRODUCTION OF POLY- β -HYDROXYBUTYRATE IN THE *AZOTOBACTER VINELANDII* MUTANT THAT DOES NOT EXPRESS SMALL RNA ARR^F
18. DO EMBRYONIC STEM CELLS UNDERGO SENESENCE FOLLOWING OXIDATIVE STRESS?
19. QUANTITATIVE PCR VALIDATION OF NOVEL RNAS IN *STREPTOCOCCUS PNEUMONIAE*

**THURSDAY AFTERNOON
OAK ROOM**

- 1:30 IDENTIFICATION OF TARGET PROTEINS OF A COTTON FIBER RING-TYPE UBIQUITIN LIGASE
- 1:50 EXPRESSION OF CHAPERONE PROTEINS INFLUENCES SPONTANEOUS FORMATION OF THE [URE3] PRION IN *SACCHAROMYCES CEREVISIAE*
- 2:10 DELETION OF CHAPERONE PROTEIN GENES EFFECTS RATES OF SPONTANEOUS FORMATION OF THE [URE3] PRION IN *SACCHAROMYCES CEREVISIAE*
- 2:30 USING TORSINA KNOWCKDOWN CELL LINES AND FUNCTIONAL ASSAYS TO UNDERSTNAD THE CELLULAR FUNCTION OF THE AAA+ ATPASE, TORSINA.
- 2:50 THERMALLY TARGETED DELIVERY OF AN AKT INHIBITORY PEPTIDE FUSED TO THERMALLY RESPONSIVE TAT-ELPI POLYPEPTIDE
- 3:10 INDUCTION OF APOPTOSIS BY SOLENOPSIN B: EVALUATION BY DNA MICROARRAY AND RT² PROFILERTM PCR ARRAY ANALYSIS.

Friday, February 27

**FRIDAY MORNING
OAK ROOM**

- 9:00 Opening Remarks
- 9:10 EXPRESSION OF YIN, A PUTATIVE OLIGOPEPTIDE TRANSPORTER, IN THE REPRODUCTIVE TRACT OF *DROSOPHILIA*
- 9:30 CHARACTERIZATION OF THREE NEW *ESCHERICHIA COLI* SPOR DOMAIN PROTEINS INVOLVED IN CELL DIVISION
- 9:50 ANTISENSE TECHNIQUES AS AN APPROACH TO ELUCIDATING RANAVIRUS GENE FUNCTION.
- 10:10 MUTATION OF OPIOID-RECEPTOR-LIKE 1 RECEPTOR AT TWO POTENTIAL PHOSPHORYLATION SITES, S351 AND S363, TO ALANINE
- 10:30 OBSERVATIONAL STUDY OF SILDENAFIL MONOTHERAPY IN PATIENTS WITH IDIOPATHIC AND SCLERODERMA-RELATED IDIOPATHIC PULMONARY ARTERIAL HYPERTENSION.
- 11:30 Closing Remarks/Divisional Business Meeting/Awards for Platform and Poster Presentations



CHEMISTRY AND CHEMICAL ENGINEERING

Thursday, February 21

**THURSDAY MORNING
GRAND BALLROOM**

8:30 POSTER SESSION

1. EXPLORING THE FUNTIONAL DECAPPING ABILITY OF THE DOGFISH SHARK NUDT
2. ANTIOXIDANT EFFECT OF VERNONIA AMYGDALINA ON ACRYLONITRILE-INDUCED OXIDATIVE DNA DAMAGE IN RAT ASTROCYTES
3. STUDY OF CHEMICAL COMPOSITIONS OF A NIGERIAN EDIBLE PLANT *VENONIA AMYGDALINA* (VA)
4. ASSOCIATION OF LIFESTYLE FACTORS WITH SUBCUTANEOUS AND VISCERAL ADIPOSITY: THE FRAMINGHAM HEART STUDY
5. MODELING OF A FULLY FLEXABLE POLARIZABLE WATER FOR THE SIMULATION OF BIOCHEMICAL REACTIONS OF PROTEINS, DNA, AND DRUGS
6. THE OSMOLYTIC EFFECTS ON TOPOISOMERASE-I ENZYMATIC ACTIVITY
7. THE EFFECTS OF DNA TOPOLOGY ON THE ABILITY OF CAMPTOTHECIN ANALOGS TO INHIBIT TOPOISOMERASE I
8. MODIFIED TOPOISOMERASE I GENES IN INTACT CELL LINES USING "KNOCK-OUT" AND "KNOCK-IN" TECHNOLOGY.
9. MOBILITY OF A LOOP OF A B. SUBTILIS CARBOXYLESTERASE AND ITS EFFECT ON SUBSTRATE CONVERSION
10. EXPERIMENTAL DETERMINATION OF CARBON ATOM HYBRIDIZATION USING NMR SPECTROSCOPY
11. ASSESSING THE CHALLENGES AND BUILDING AN EFFECTIVE CHEMICAL LABORATORY PROGRAM: ENTHUSIASM WORTHY OF JUSTUS VON LIEBIG¹ AND OTHER CHEMISTRY LUMINARIES²
12. PROBABILITY BASED MATCHING OF DATA USING SPREADSHEET

**THURSDAY MORNING
MAHOGANY ROOM**

ORAL PRESENTATIONS

- 9:40 USING MALONATES IN THE PREPARATION OF VARIOUS AMINO ACIDS
- 10:00 SYNTHESIS AND FREE RADICAL KINETIC STUDIES OF CARCINOGENIC COMPOUNDS CONTAINING A NITROGEN-NITROGEN SINGLE BOND
- 10:20 LEWIS ACID PROMOTED 1,3-DIPOLAR CYCLOADDITION REACTIONS IN WATER
- 10:40 SYNTHESIS OF SPIRO-ISOXAZOLINES VIA INTRAMOLECULAR CYCLIZATION
- 11:00 TESTING A MODEL: CA2+ INDUCED EXPOSURE OF TRYPTOPHAN
- 11:20 SYNTHESIS OF NEW INHIBITORS FOR HISTONE DEACETYLASES8(HDAC8)
- 11:40 ELECTROCHEMICAL AND ELECTROGENERATED CHEMILUMINESCENT STUDIES OF SQUARAINES AND THEIR APPLICATIONS IN METAL ION SENSING

**THURSDAY AFTERNOON
GRAND BALLROOM**

1:00 POSTER SESSION

13. STRUCTURES OF THIO(SEMI)CARBAZONES OF ACETILPYRAZINE, 2-ACETYLTHIOZOLE AND ACETOPHENONE
14. SYNTHESIS, CHARACTERIZATION AND BINDING STUDIES OF MACROCYCLIC POLYAMINES FOR CATIONS AND ANIONS
15. PRETREATMENT OF USED VEGETABLE OILS FOR BIODIESEL
16. PREPARATION OF PLATINUM COMPLEX WITH AROMATASE INHIBITOR DERIVATIVES, 4-(2-IMIDAZOLYLMETHYL)BENZOATE
17. LEWIS ACID PROMOTED 1,3-DIPOLAR CYCLOADDITION REACTIONS IN WATER
18. SIMULTANEOUS DETERMINATION OF HEAVY METALS BY HYDRIDE GENERATION ICP-AES.



19. SYNTHESIS OF WATER-SOLUBLE CADMIUM SULFIDE NANOPARTICLES
20. A QCM SENSOR FOR THE DETECTION OF CHEMICAL WARFARE STIMULANTS
21. THE USE OF SQUARAIN DYES AS MOLECULAR SENSORS
22. SYNTHESIS, CHARACTERIZATION AND BINDING STUDIES OF MACROCYCLIC POLYAMINES FOR CATIONS AND ANIONS
23. LIGHT SCATTERING AND PHASE BEHAVIOR OF BLENDS BASED ON PHENYLENE COPOLYMERS WITH POLYPHENYLSULFONES
24. POLYELECTROLYTE COACERVATES FROM CATIONIC AND ANIONIC POLYMERS

**THURSDAY AFTERNOON
MAHOGANY ROOM**

Chemistry Lecture Series: Nano-Chemistry and Nano-Technology

- 2:00 NANOMATERIAL BASED NSET RULER FOR ENVIRONMENTAL PROTECTION
2:40 PERFORATED ORGANOMETALLIC NANOTUBES: TOWARD THE DEVELOPMENT OF NANO-ENHANCED SENSORS
3:20 NANOSTRUCTURED POLYMERIC SURFACES
4:00 NANOPARTICLES: DO WE OPEN NEW PANDORA BOX?
- 4:40 **Divisional Business Meeting**

Friday, February 27

**FRIDAY MORNING
MAHOGANY ROOM**

- 8:40 DOES QUEUOSINE NUCLEOTIDE EXIST IN ZWITTERIONIC FORM?
9:00 QUANTUM CHEMISTRY APPLICATIONS FOR ENVIRONMENTAL REMEDIATION OF NITRO COMPOUNDS
9:20 DETECTION OF PEROXIDE-BASED EXPLOSIVE TRIACETONETRIPEROXIDE (TATP) USING ELECTROGENERATED CHEMILUMINESCENCE
9:40 EFFECT OF DIRECT OXIDATION OF METHANOL AND MIXED ALCOHOL FEEDS ON PROTON EXCHANGE MEMBRANE(PEM) FUEL CELL PERFORMANCE
10:00 PREVALENCE OF BPA EXPOSURE FROM FOOD CONTAINERS
10:20 BIOACCUMULATION PROFILE OF QUANTUM DOTS OF CADMIUM SELENIDE ON RATS
10:40 GOLD NANOPARTICLE BASED NSET ASSAY FOR MONITORING RNA FOLDING KINETICS
11:00 ELECTROGENERATED CHEMILUMINESCENCE OF SEMICONDUCTOR
11:20 TiO₂, NANO-SIZED Ag/TiO₂ AIDED PHOTOCATALYTIC DEGRADATION OF SELECTED NITRO-POLYCYCLIC AROMATIC HYDROCARBONS (NPAHs)
11:40 SIZE AND DISTANCE DEPENDENCE NSET RULER FOR SELECTIVE SENSING OF HEPATITIS C VIRUS RNA

ECOLOGY AND EVOLUTIONARY BIOLOGY

Friday, February 27

**FRIDAY MORNING
DOGWOOD ROOM**

- 8:45 **Roundtable Discussion: THE 200TH ANNIVERSARY OF DARWIN'S BIRTH: WHY IS EVOLUTION STILL SO FREQUENTLY DENIED OR MISUNDERSTOOD? APPROACHES TO TEACHING EVOLUTION.**



ORAL PRESENTATIONS

- 9:45 RAPID BIOASSESSMENTS ON STREAMS ALONG THE NATCHEZ TRACE PARKWAY
10:00 THE EFFECTS OF LATE 20TH CENTURY LAND USE ON BIRD POPULATIONS AT PLYMOUTH BLUFF ENVIRONMENTAL CENTER IN NORTHEASTERN MISSISSIPPI.
10:15 SPATIAL AND TEMPORAL VARIATION IN PHYTOPLANKTON PROPERTIES IN THE LOWER MISSISSIPPI RIVER AND CONNECTED FLOODPLAIN LAKES
10:30 TEMPORAL PATTERNS IN CONCENTRATIONS AND DISCHARGE OF DISSOLVED AND PARTICULATE MATERIALS IN THE LOWER MISSISSIPPI RIVER

10:45 Break

11:00 TOWARD A WELL-RESOLVED AND ROBUST PHYLOGENY OF THE TROPICAL PLANT FAMILY SAMYDACEAE
11:15 EXPLORING COMPETITION BETWEEN TWO SPECIES OF MYCORRHIZAL FUNGI
11:30 PRELIMINARY REPORT ON THE STATUS OF GREEN SALAMANDER POPULATIONS IN MISSISSIPPI
11:45 WHAT IS THE SISTER GROUP TO THE WILLOWS AND COTTONWOODS (SALICACEAE)?

12:00 Divisional Business Meeting

**FRIDAY AFTERNOON
GRAND BALLROOM**

- 1:00 POSTER SESSION
1. HEMATOLOGICAL PARAMETERS IN THE FRESHWATER TURTLE, *TRACHEMYS SCRIPTA*.
 2. FOOD INTAKE RATES AND RATE OF ASSIMILATION BY JUVENILE SIREN *INTERMEDIA*

GEOLOGY AND GEOGRAPHY

Thursday, February 26

**THURSDAY MORNING
WALNUT ROOM**

- 9:00 UPDATE ON A REVISED GEOLOGIC MAP OF MISSISSIPPI
9:15 THE SECOND OLDEST REPORTED PRIMATE *TEILHARDINA MAGNOLIANA*, NAMED AFTER THE MAGNOLIA STATE, DESCRIBED FROM EARLY EOCENE FOSSILS FOUND AT MERIDIAN, MISSISSIPPI
9:30 EXCAVATION OF A PARTIAL SKELETON OF A JUVENILE *ZYGORHIZA KOCHII* IN THE LOWER YAZOO CLAY, YAZOO COUNTY, MISSISSIPPI
9:45 THE BLUE SPRINGS FOSSIL DECAPOD HORIZON IN THE COON CREEK TONGUE OF THE RIPLEY FORMATION IN UNION COUNTY, MISSISSIPPI
10:00 LATE QUATERNARY VEGETATION CHANGES IN THE MISSISSIPPI-ALABAMA BLACK PRAIRIE

10:15 Break

10:30 GEOLOGICAL EXHIBITS AT THE MISSISSIPPI CHILDREN'S MUSEUM
10:45 SLOPE FAILURE AT MILLSAPS COLLEGE, JACKSON, MISSISSIPPI
11:00 SOURCE TO SINK SEDIMENTOLOGICAL CHARACTERISTICS WITHIN MILL CREEK, RANKIN COUNTY, MISSISSIPPI

**THURSDAY AFTERNOON
WALNUT ROOM**

- 1:30 TESTING THE HYPOTHESIS OF CHANNEL ARMORING IN THE PEARL RIVER BELOW THE ROSS BARNETT RESERVOIR, JACKSON, MISSISSIPPI



- 1:45 SHALE LAYERS IN THE ALABAMA SMACKOVER FORMATION AND THEIR IMPLICATIONS FOR THE RELATIVE SEA-LEVEL CHANGE AND REGIONAL CORRELATION
- 2:00 NUTRIENT CHEMISTRY OF STORMWATER RUNOFF, LEFLUER'S BLUFF STATE PARK, JACKSON, MS
- 2:15 Break
- 2:30 GROWTH RESPONSE OF DOUGLAS FIR TO THE RED CANYON FAULT, SOUTHWESTERN MONTANA, USA
- 2:45 SEISMIC TOMOGRAPHY APPLIED TO ARCHAEOLOGICAL EXCAVATION: FIELD TESTS AT THE KIUC SITE, YUCATAN, MEXICO
- 3:00 SHALLOW SHEAR-WAVE SEISMIC VELOCITY TESTING IN JACKSON, MISSISSIPPI
- 3:15 Division Business Meeting and Chair Elections

HEALTH SCIENCES

Thursday, February 26

THURSDAY MORNING AMPHITHEATER

Oral Presentations

- 8:30 PHYSIOLOGICAL RESPONSES ASSOCIATED WITH SSRI IN THE ADRENAL GLAND USING ADULT RATS AS A MODEL
- 8:45 THE FREQUENCY AND PERCENTAGE OF OVERRIDES
- 9:00 INITIATING A LONGITUDINAL STUDY ON BREAST CANCER RISK INDICATORS AND CANCER RECURRENCE RATES IN WOMEN
- 9:15 A MYSTERY DIAGNOSIS: IMMUNE DYSREGULATION, POLYENDOCRINOPATHY, ENTEROPATHY, X-LINKED RECESSIVE
- 9:30 FACTORS RELATED TO MISSISSIPPI HOSPITAL STROKE READINESS
- 9:45 THE EFFECTS OF SELECTIVE SEROTONIN REUPTAKE INHIBITORS ON GLOMERULAR MORPHOLOGY AND AQUAPORIN DISTRIBUTION IN RAT KIDNEYS

10:30 POSTER SESSION 1 GRAND BALLROOM

1. THE EFFECTS OF THYMOQUINONE CONCENTRATION OF MACROPHAGE CELL VIABILITY AND FUNCTION
2. THE ROLE OF IgG ON ATTACHMENT AND PHAGOCYTOSIS BY MACROPHAGE CELLS
3. ALTERCATIONS IN MACROPHAGE CELLULAR MORPHOLOGY IN RESPONSE TO VARYING CONCENTRATIONS OF THYMOQUINONE
4. V. AMYGDALINA EXTRACTS INHIBIT THE GROWTH OF ESTROGEN RECEPTOR POSITIVE/NEGATIVE HUMAN BREAST CARCINOMA CELLS IN VITRO
5. PULSE PRESSURE IS AN INFERIOR PREDICTOR OF INCIDENT CORONARY HEART DISEASE IN AFRICAN-AMERICANS: THE ARIC STUDY.
6. ANALYSIS OF THYMOQUINONE RELEASE FROM BETA TRICALCIUM PHOSPHATE DRUG DELIVERY SYSTEM
7. A ZEBRAFISH MODEL OF SHORT- AND LONG-TERM ETHANOL EXPOSURE
8. RESPONSE OF ALVEOLAR TYPE II CELLS TO LIPOPOLYSACCHARIDE
9. EVALUATION OF LEPTIN AND IGF-1 ON INFLAMMATORY MEDIATORS IN RAW MACROPHAGE CELLS
10. DEFINING THE ROLE OF HIF-1 α AND CTGF IN FIBROSIS
11. THE EFFECTS OF CONTINUOUS ADMINISTRATION OF DBM ON MG63 CELLS.
12. RECOGNITION OF CTGF FROM ACTIVATED MACROPHAGES BY PLATELETS
13. CHARACTERIZATION OF THE RESPONSE OF MACROPHAGE CELLS TO A CHALLENGE WITH GRAM POSITIVE BACTERIA OR LPS
14. BIOCHEMICAL AND MORPHOLOGICAL EVALUATION OF LIPOPOLYSACCHARIDE STIMULATED RAW 264.7 MACROPHAGES
15. CORRELATION BETWEEN CYTOPLASMIC VACUOLES AND ATAXIN-1 NUCLEAR INCLUSIONS IN



- PURKINJE CELLS IN SCA1**
16. **PURINE SAMPLES SCREENING AS A NEW TOOL FOR EARLY DETECTION OF PROSTATE CANCER.**
 17. **THE ROLE OF ESTROGEN, TESTOSTERONE, AND PARATHYROID HORMONES IN COMBINATION WITH CONVENTIONAL AND SUSTAINED ANTIOXIDANT TREATMENT ON LNCAP CELLS**
 18. **THE ROLE OF THYMOQUINONE AND EPIGALLOCATECHIN-3-GALLATE ON THE VIABILITY P6.19**
 19. **DOES THE LEVEL OF HORMONE CHANGE FASTER IN SYNOVIAL FLUID VS SERUM LEVELS OVER TIME?**
 20. **THE EVALUATION OF CONVENTIONALLY DELIVERED TQ IN CSA CHALLENGED RMKEC**
 21. **INDUCTION OF APOPTOSIS BY SOLENOPSIS B: EVALUATION BY MICROARRAY ANALYSIS AND RT² PROFILER™ PCR ARRAYS.**
 22. **THE EFFECT OF HEPATITIS C VIRUS (HCV) INFECTION ON HUMAN IMMUNODEFICIENCY VIRUS (HIV) DISEASE PROGRESSION AT PRESENTATION TO AN HIV TREATMENT CLINIC IN MISSISSIPPI**

**THURSDAY AFTERNOON
GRAND BALLROOM**

Oral Presentations

- 2:30 **A QUEST FOR AN OBESITY INDEX AND ITS RELATION TO TYPE 2 DIABETES IN AFRICAN AMERICANS**
- 2:45 **NO FRESHMAN FIFTEEN**
- 3:00 **COMPARATIVE STUDIES OF GENERIC PARACETAMOL WITH THE BRAND NAME PRODUCT, TYLENOL**
- 3:15 **EVALUATION OF THE ORAL HEALTH OF MISSISSIPPI'S HEAD START POPULATION**
- 3:30 **APPROACH TO IMPROVE THE MODEL PERFORMANCE IN A REAL-TIME AIR QUALITY ESTIMATION SYSTEM USING SATELLITE OBSERVATION DATA**
- 3:45 **TEMPORAL AND SPATIAL VARIATION OF AIRBORNE MOLD SPORES DURING WINTER OF 2007-2008 IN CENTRAL MISSISSIPPI**

**THURSDAY EVENING
GRAND BALLROOM**

- 6:00 **Dodgen Reception and Poster Session**
Please set up between 4:00p and 4:30p
23. **PULSE PRESSURE IS AN INFERIOR PREDICTOR OF STROKE IN AFRICAN AMERICANS: THE ARIC STUDY**
24. **THE HIDDEN CURRICULUM OF SURGICAL RESIDENCY:&NBSP; A QUALITATIVE STUDY OF SURGICAL RESIDENTS' PERCEPTIONS OF TEACHING AND CULTURE.**
25. **A COMPARISON OF TECHNIQUES USED IN BLOOD TYPING BASED ON HOSPITAL SIZE IN MISSISSIPPI**
26. **CAN DEMINERALIZED BONE MATRIX PROTEIN HEAL A 3.5 MM DEFECT IN OSTEOPOROTIC RATS? A HISTOLOGICAL AND BIOMECHANICAL EVALUATION.**
27. **HEALTHY EATING HABITS AND REGULAR EXERCISE AIDS PATIENTS UNDERGOING CHEMOTHERAPY**
28. **DEVELOPMENT OF AN ASSAY FOR PHOSPHATIDYLETHANOL IN BIOLOGICAL SAMPLES**
29. **ZEBRAFISH SIZES, ORGAN WEIGHTS, AND FASTING BLOOD GLUCOSE LEVELS**
30. **EVALUATING AN IMPLANTED CARDIAC PRESSURE SENSOR**
31. **THE RELATIONSHIP OF SLEEP QUANTITY WITH BMI AND TLAS OF SISTERTALK PARTICIPANTS**
32. **IN VITRO STUDIES OF ARTEMISININ DERIVATIVES AND EBSELEN WITH *TRYPANOSOMA SP.*, *LEISHMANIA SP.*, AND *HUMAN MONOCYTES***
33. **METAL CONTENT AND DISTRIBUTION IN PROFILING NORMAL TISSUES, THE A549 AND THE HEPG2 CARCINOMA CELL LINES**
34. **THE EFFECTS OF IgG ANTI D, IgG ANTI D COATED RED BLOOD CELLS AND LYSSED RED BLOOD CELLS ON MACROPHAGE VIABILITY AND FUNCTION**
35. **CONNECTIVE TISSUE GROWTH FACTOR EXPRESSION IN THE TENOSYNOVIUM OF PATIENTS WITH CARPAL TUNNEL SYNDROME**
36. **DOES GOLDENSEAL INGESTION HAVE AN EFFECT ON THC DRUG TESTING OUTCOMES?**
37. **THE INHIBITORY EFFECTS OF EGCG TO INACTIVATE HSV-1 AND HSV-2 IN CLINCIAL ISOLATES.**



- 38. THE USE OF GOLDENSEAL EXTRACTS AS AN ANTIMICROBIAL AGENT AGAINST S. AUREUS AND MRSA.
- 39. THE EFFECTS OF GINGER ON SHIGELLA FLEXNERI AND E. COLI WHEN COMPARED TO THE MIC OF ROCEPHIN.
- 40. PLASMA-CELL DISORDER: HEAVY CHAIN DISEASE
- 41. ARSENIC-INDUCED CYTOTOXICITY AND MODULATION OF p53 EXPRESSION IN HUMAN LIVER CARCINOMA CELLS
- 42. EFFECTS OF BINGE AND CHRONIC ALCOHOL EXPOSURE ON ZEBRAFISH GROUPING BEHAVIOR
- 43. EMBRYONEUROGENESIS: LEVELS OF GABA RECEPTORS AS BIOMARKERS AND PREDICTORS OF DEVELOPMENTAL TOXICITY TO LOW LEVELS OF MERCURY EXPOSURES.
- 44. THE CORRELATION BETWEEN HYPOXIA AND PREECLAMPSIA
- 45. THE EFFECTS OF ESTROGEN ON THE MORPHOLOGICAL FEATURES OF HELA CELLS GROWN IN CULTURE
- 46. KNOWLEDGE VS CHOICE ASSESSMENT IN PURSUING CAREERS IN HEALTH RELATED PROFESSIONS FOR ACADEMIC YEAR 2007-2008

Friday, February 27

**FRIDAY MORNING
GRAND BALLROOM**

Health Fair (Blood pressure monitoring, glucose testing, body mass index, etc.)
9:00-10:30

**FRIDAY MORNING
AMPHITHEATER**

Rural Health Professional Training: Imperatives for Mississippi

- 10:00-10:10 **Welcome and Introductions**
Rob Rockhold, Ph.D. Assistant Vice Chancellor for Academic Affairs, UMMC
- 10:10-10:25 **The Physician Workforce and Its Economic Impact**
Lynne Cossman, Ph.D., Associate Professor of Sociology, PI Northeast Mississippi AHEC
- 10:25-10:40 **Place and the Training of a Health Professional Workforce for Rural Mississippi**
Chris Arthur, Ph.D., Director, Education/Awareness Core, Mississippi Institute for the Improvement of Geographic Minority Health
- 10:40-10:55 **Growing Our Own: Starting High School Students on the Track to a Medical Career**
Bonnie Carew, Rural Health Program Leader, Mississippi State University Extension Service
- 10:55-11:00 Break
- 11:00-11:15 **The Professional Portal Track: Another Pathway to Rural Practice**
Rob Rockhold, Ph.D. Assistant Vice Chancellor for Academic Affairs, UMMC
- 11:15-11:30 **MRPSP: Growing Our Own Primary Care Physicians**
Janie Guice, Executive Director, Mississippi Rural Physicians Scholarship Program
- 11:30-11:45 **Medical Student and Residency Training: Moving Forward, Back to Our Roots**
Diane Beebe, M.D., Professor and Chair, UMMC Department of Family Medicine
- 11:45-12:00 **The Mississippi Health Professional Placement Service: How a Web-based “Compatible Match” Program Can Help Rural Mississippi**
Ed Snodgrass, Ph.D., Director, East Central AHEC

**FRIDAY AFTERNOON
AMPHITHEATER**

Drug Delivery Mini-Symposium: Advances in Implantable Sustained Release Drug Delivery Systems

- 1:00 -1:05 **Welcome and Introductions**
- 1:05 -1:20 The Use of Drug Delivery Systems as a Tool in Tissue Engineering
- 1:20 -1:50 Use of the Osmotic Pump for Delivery of Organic Compounds



- 1:50 -2:20 Development of Elastin-like Polypeptide for Thermally Targeted Delivery of a c-Myc Inhibitory Peptide
2:20 -2:40 The Use of Biocompatible Materials in Bone Healing and Repair Applications
2:40 -3:00 Novel Applications of Sustained Release Technologies

Speakers:

Hamed Benghuzzi, Ph.D., Professor and Chair, UMMC, School of Health Related Professions, Department of Health Sciences
Ateegh Al Arabi, PhD, Professor of Medical Physiology, Johnson County Community College
Gene L. Bidwell, III, PhD, Postdoctoral Fellow, Department of Biochemistry, UMMC
Kenneth R. Butler, Jr., Ph.D., Assistant Professor of Medicine; Division of Geriatric Medicine, UMMC
Michelle Tucci, PhD, Associate Professor, UMMC, Department of Orthopedic Surgery

3:00-4:00 DIVISIONAL BUSINESS MEETING

HISTORY AND PHILOSOPHY OF SCIENCE

Thursday, February 26

**THURSDAY AFTERNOON
CHESNUT ROOM**

- 1:15 PRELUDE TO DARWINIAN EVOLUTION: NATURAL PHILOSOPHY IN THE EARLY NINETEENTH CENTURY
1:45 A 19TH CENTURY "RADICAL" SOLUTION TO THE SPECIES PROBLEM?
2:15 LOGICAL PROBABILITY AS A QUALITATIVE SYSTEM OF EPISTEMIC WARRANT

2:45 Break

3:00 CONCEPT OF A CONCEPT

3:30 HIERARCHICAL MODELING OF BIOGEOCHEMICAL PROCESSES AND MECHANISMS THAT DRIVE CLAY NANO- AND MICROFABRIC DEVELOPMENT

4:00 Division Business Meeting

MARINE AND ATMOSPHERIC SCIENCES

Friday, February 27

**FRIDAY MORNING
HOLLY ROOM**

- 9:00 Division Business Meeting

9:30 A STUDY ON RUPPIA MARITIMA AND HALODULE WRIGHTII BEDS AT GRAND BAY NATIONAL ESTUARINE RESEARCH RESERVE, MISSISSIPPI FOR SEAGRASS HABITAT RESTORATION
9:50 ESTUARINE MIXING BEHAVIOR OF CARBOHYDRATES AND DISSOLVED ORGANIC CARBON IN THE BAY OF SAINT LOUIS ESTUARY AND MISSISSIPPI SOUND
10:10 USING OCEAN COLOR TO MEASURE COASTAL SEA-SURFACE SALINITY OF THE LOUISIANA SHELF
10:30 Break

10:50 MULTI-SPECTRAL VEGETATION INDEX FOR FLOATING AND CANOPY-FORMING AQUATIC VEGETATION
11:10 CLASSIFICATION OF AIRBORNE HYPERSPECTRAL DATA FOR SHALLOW ESTUARINE SEAGRASS BEDS
11:30 WHY RESEARCH SCIENTISTS SHOULD PARTICIPATE IN THE COSEE:CGOM IN 2009
11:50 SUCCESS OF POM-BASED INDONESIAN SEAS MODEL: COMPARING RESULTS WITH 3 YEARS OF IN SITU DATA



**FRIDAY AFTERNOON
GRAND BALLROOM**

1:00-2:00 Poster session

1. **IMPACTS OF GLOBAL/REGIONAL CLIMATE CHANGES ON ENVIRONMENT AND HEALTH: NEED FOR INTEGRATED RESEARCH AND EDUCATION COLLABORATION**
2. **ECOTOXICOLOGY AND RISK ASSESSMENT OF MERCURY IN GRAND BAY NATIONAL ESTUARINE RESEARCH RESERVE**
3. **TROPHIC GUILDS OF TROPICAL WESTERN ATLANTIC FISH**
4. **SURFACE ENERGY BALANCE OVER SOYBEAN CROP IN MISSISSIPPI**
5. **ESTIMATE OF CONTRIBUTION OF MAIN TIDAL COMPONENTS TO THE TRANSPORTATION THROUGH ALEUTIAN PASSES**
6. **A PRELIMINARY STUDY OF THE INFLUENCE OF REGIONAL WINDS ON BERING STRAIT TRANSPORT**
7. **A STUDY ON THE VALIDITY OF BUOY MOUNTED ACOUSTIC DOPPLER CURRENT PROFILERS: A COMPARISON OF UPWARD AND DOWNWARD LOOKING SYSTEMS IN ONSLOW BAY, NC**
8. **A STUDY OF LARGE-SCALE SURFACE FLUXES AND VERTICAL MOTIONS ASSOCIATED WITH LANDFALL OF HURICANE KATRINA**
9. **EXPERIMENTAL INFECTION OF *LITOPENAEUS VANNAMEI*, *PALAEEMONETES PUGIO*, AND *FARFANTEPENAEUS AZTECUS* WITH NECROTIZING HEPATOPANCREATITIS BACTERIUM (NHPB) BY PER OS EXPOSURE**
10. **CARRYING CAPABILITY OF WHITE SPOT SYNDROME VIRUS (WSSV) IN SUB-TERRESTRIAL CRAB CARRIERS**

**FRIDAY AFTERNOON
HOLLY ROOM**

2:00 MULTISCALE MODELING COMPARISON OF AIR QUALITY FOR AN OZONE EVENT DURING THE 1996 Paso del Norte OZONE CAMPAIGN

2:20 Student Awards for Best Presentations

MATHEMATICS, COMPUTER SCIENCE AND STATISTICS

Thursday, February 26

**THURSDAY MORNING
HICKORY ROOM**

- 9:00 DEVELOPMENT OF AN AUTOMATED WEB-BASED FACULTY PERFORMANCE EVALUATION INSTRUMENT**
- 9:25 IMPLEMENTING MIXED CHAINING IN A CLASSIFICATION TYPE EXPERT SYSTEM**
- 9:50 GOOGLE PAGERANK AND MATRIX EIGENVALUE RANKINGS: A COMPARISON**
- 10:15 CREATING APPLICATION SHUTDOWN SCRIPTS FOR THE CATERPILLAR INC. SERVER MAINTENANCE PROCESS**
- 10:40 HIGH DIMENSIONAL DATA MODELING ANALYSIS USING NORMALIZED LATENT SPACE MODEL**
- 11:05 AN EXPERIENCE TEACHING UNDERGRADUATE OPERATING SYSTEMS WITH EMBEDDED XINU**

**THURSDAY AFTERNOON
HICKORY ROOM**

- 1:10 SPECIAL PRESENTATION (Mr. Chad Hicks , Navigation Electronics Inc (NEI)**
- 1:30 AN APPROXIMATION ALGORITHM FOR GENERATING NEIGHBORHOOD GRAPHS**
- 1:55 STRATEGY FOR CONCEPT AND RELATIONSHIP IDENTIFICATION IN CONCEPTUAL MAP CREATION**
- 2:20 DEPLOY1**
- 2:45 WRITING PEOPLE FRIENDLY SOFTWARE**
- 3:10 A COMPUTATIONAL INVESTIGATION OF THE DISTRIBUTED-GENOME HYPOTHESIS IN LISTERIA**



3:35 BAYESIAN NETWORKS FOR MEDICAL DECISION SUPPORT

**THURSDAY EVENING
GRAND BALLROOM**

6:00 Dodgen Reception and Poster Session
Please set up your poster between 4:00 and 4:30p

1. DESIGNING AND DEVELOPING A PORTAL FOR THE POLAR GRID HIGH PERFORMANCE COMPUTING SYSTEM AT ELIZABETH CITY STATE UNIVERSITY
2. TECHNICAL LIBRARY DATABASE UPDATE
3. A MATHEMATICAL SOLUTION TO A MAGIC TRICK AND ITS GENERALIZATION
4. UTILIZING VIRTUAL MACHINES TO IMPROVE PERFORMANCE AT THE MISSISSIPPI CENTER FOR SUPERCOMPUTING RESEARCH
5. FOLD AND BT BIFURCATION ANALYSIS OF TWO COUPLED RELAXATION OSCILLATORS OF THE VAN DER POL TYPE WITH DELAY

Friday, February 27

**FRIDAY MORNING
HICKORY ROOM**

- 9:00 UNITED STATES GRID SECURITY AND RELIABILITY CONTROL IN HIGH LOAD CONDITIONS**
9:25 SIMULATING ACOUSTICS IN 3-DIMENSIONAL POROUS MATERIALS
9:50 A PROBABILISTIC LATENT SEMANTIC ANALYSIS APPROACH TO MOVIE RATING PREDICTION
10:15 A BRIEF DISCUSSION ON POWER AND SAMPLE SIZE ANALYSIS AND COMPARISONS OF AVAILABLE POWER AND SAMPLE SIZE STATISTICAL SOFTWARE
10:50 MISSISSIPPI SUPERCOMPUTER USER ADVISORY GROUP OPEN MEETING
- 11:45 Divisional Business Meeting**

PHYSICS AND ENGINEERING

Thursday, February 26

**THURSDAY MORNING
HOLLY ROOM**

- 8:30 Welcome**
- 8:45 RESPIRATORY AEROSOL CHARACTERIZATION COMPARISONS BETWEEN THE ELECTRONIC SINGLE PARTICLE AERODYNAMIC RELAXATION TIME ANALYZER AND THE TSI AERODYNAMIC PARTICLE SIZER SPECTROMETER**
- 9:00 DEVELOPMENT OF AN OBJECT ORIENTED DATABASE TO IMPROVE LEARNING IN CONSTRUCTION ESTIMATING**
- 9:15 LARGE HADRON COLLIDER AND ITS IMPORTANCE TO UNDERSTANDING THE UNIVERSE.**
- 9:30 AIRSPEED CONTROL TUNNEL**
- 9:45 CLASSICAL ORBITS OF PT-SYMMETRIC QUANTUM POTENTIALS**
- 10:00 Break**
- 10:30 WHAT GOES UP MUST GO ROUND: ANALYSIS OF FALLING MAPLE SEEDS**
10:45 VIBRATION TESTING OF A CARBON COMPOSITE FUSELAGE
11:00 CALCULATED SHELL MODEL STRUCTURE OF THE EVEN MASS ISOTOPES OF ARGON
11:15 MEASURING THE ACCELERATIONS OF SPHERICAL PROJECTILES USING A HIGH-SPEED VIDEO CAMERA



11:30 CENTRIFUGAL SEPARATION OF dsDNA FROM AN ssDNA OLIGOMER MIXTURE

11:45 ANALYSIS OF "BID SHOPPING" IN CONSTRUCTION ETHICS

THURSDAY AFTERNOON

HOLLY ROOM

1:30 MESON MASS SPECTRA IN THE FRAMEWORK OF THE SCHRÖDINGER EQUATION WITH RELATIVISTIC KINEMATICS

1:45 EXTENDING THE SUCHER EQUATION TO INVESTIGATE MESON MASS SPECTRA

2:00 ALTITUDE CONTROL CHAMBER

2:15 MYSTERIES OF THE UNIVERSE NEED SOLUTION

2:30 ACOUSTIC PROPAGATION IN THE OCEAN AND EQUIVALENT-FLUID MODELING OF AN ELASTIC SEAFLOOR

2:45 Break

3:00 GAS TRANSPORT CAPABILITIES OF THE VORTEX RING

3:15 AUTONOMOUS UNMANNED GROUND VEHICLE USING GPS NAVIGATION AT LOW-SPEEDS

3:30 IN BALLISTICALLY PROJECTED SEEDS, LIFT INDUCED BY BACKSPIN SHOWN TO POTENTIALLY INCREASE SEED DISPERSAL DISTANCE IN NATURE.

3:45 TIME EVOLUTION OF COHERENT EXCITATION IN A LASER-COOLED, THREE-LEVEL RUBIDIUM SYSTEM

4:00 Divisional Business Meeting

THURSDAY EVENING

GRAND BALLROOM

6:00 Dodgen Reception and Poster Session
Please set up your poster between 4:00 and 4:30p

1. DOCUMENT MANAGEMENT USING MICROSOFT SHAREPOINT, INFOPATH AND GROOVE
2. BENEFITS OF PURCHASING PRIMAVERA P6 VERSUS THE CONTINUED USE OF PRIMAVERA SURETRAK FOR MID SIZED CONSTRUCTION FIRMS
3. BUSINESS INFORMATION MODELING (BIM) FOR PROJECT PLANNING AND SCHEDULING
4. MoO3 NANORODS FOR ELECTRICHEMICAL BATTERY APPLICATIONS

PSYCHOLOGY AND SOCIAL SCIENCES

Thursday, February 26

THURSDAY AFTERNOON

GRAND BALLROOM

1:00 Poster Session

1. GENDER DIFFERENCES IN TRAUMATIC EXPERIENCES OF AFRICAN-AMERICAN ADOLESCENT OFFENDERS
2. POTENTIAL GENDER BIAS IN THE DIAGNOSIS OF BORDERLINE PERSONALITY DISORDER: AN EXPLORATORY STUDY
3. GENDER AND LOGICAL ANALYSIS SKILLS ARE ASSOCIATED WITH ENHANCED CRIMINAL PROFILE ACCURACY
4. FOOD CATEGORIZATION DIFFERENCES IN COLLEGE STUDENTS WITH AND WITHOUT EATING DISORDERS
5. EFFECTS OF SEXUAL IDENTITY AND SEXUAL ATTITUDES AMONG COLLEGE STUDENTS
6. EXPLORING FALSE RECOGNITION IN MULTIPLE CHOICE TESTING AMONG COLLEGE STUDENTS
7. ACTIVITY LEVELS AND BMIS OF STUDENTS AT THE UNIVERSITY OF MISSISSIPPI
8. Withdrawn
9. Withdrawn



10. SELF-EFFICACY AND EMOTIONAL INTELLIGENCE BETWEEN AFRICAN-AMERICAN COLLEGE AND HIGH SCHOOL STUDENTS
11. A COMMUNITY SAMPLE'S RESPONSE TO THE EFFECTS OF RACE AND HELP-SEEKING BEHAVIORS.
12. FAMILIAL PUNISHMENT ON MOTHERS AND THEIR DISCIPLINARY PRACTICES TOWARDS THEIR CHILDREN
13. FIRST IMPRESSIONS: THE EFFECT OF ATTRACTIVENESS AND LIKEABILITY ON VIEWS OF COMPETENCE AND TRUSTWORTHINESS
14. DIFFERENCES IN OUR PERCEPTION OF NAMES AND NICKNAMES.
15. THE EFFECTS OF ATTACHMENT STYLE ON INFIDELITY IN INTIMATE RELATIONSHIPS
16. EXPLORING RELATIONSHIPS BETWEEN TRAIT AND STATE ANXIETY, EXERCISE TOLERANCE, AND PERSONALITY
17. INVESTIGATING CHILDREN'S TOY PREFERENCE: DOES SKIN COLOR MATTER?
18. A NEW MODEL FOR EFFECTIVE WEIGHT LOSS IN ADULTS
19. STRESS, OVER WEIGHT, AND DIETARY HABITS: A CORRELATION AMONG AFRICAN AMERICAN COLLEGE FEMALE STUDENTS
20. ATTENTION AND MEMORY PERFORMANCE ASSOCIATED WITH ANXIETY-RELATED DISORDERS
21. ETHNICITY AND SEXUAL ORIENTATION IMPACT JURORS IN SAME-SEX RAPE TRIAL
22. ASSESSMENT OF THE DISCRIMINATIVE STIMULUS EFFECTS OF COCAINE AND ANTIHISTAMINE COMBINATIONS
23. THE IMPACT OF PARENTAL DISCUSSION ON YOUTH SMOKING SUSCEPTIBILITY
24. NEONATAL SSRI EXPOSURE IN RATS PRODUCES LONG-TERM IMPAIRMENTS IN SOCIO-SEXUAL BEHAVIOR
25. ATTITUDES TOWARDS ABSTINENCE-ONLY VS. COMPREHENSIVE SEX EDUCATION IN MISSISSIPPI: ANALYZING EFFECTIVENESS AND POLICY HISTORY
26. MENTAL HEALTH AVAILABILITY FOR AFRICAN AMERICAN
27. THE ROLE OF AUDITORY INFORMATION IN FOOT RUBBING BEHAVIORS IN GARNETT'S BUSHBABY
28. SLEEP HABITS OF HIGH SCHOOL STUDENTS

**THURSDAY AFTERNOON
AMPHITHEATER**

Oral Presentations

- 1:30 AM I A DISASTER TOURIST?: THE ETHICS AND EMOTION WORK INVOLVED IN TAKING PHOTOS DURING DISASTER RESEARCH
- 1:45 IMPACT OF EMOTIONAL INTELLIGENCE AND PARENTAL ACCEPTANCE/REJECTION ON PSYCHOLOGICAL ADJUSTMENT OF BANGLADESHI STUDENTS
- 2:00 MATHEMATICS TEACHING: DEVELOPING CONCEPTUAL UNDERSTANDING, UTILIZING AUTHENTIC DATA, AND EXPLORING EQUITY ISSUES
- 2:15 RESPONSES OF ADMINISTRATORS TO MEET THE NCLB REQUIREMENTS; A CASE STUDY
- 2:30 EDUCATION AND TRAINING ENHANCE PSYCHOLOGICAL PROFILE ACCURACY FOR SEXUAL HOMICIDE
- 2:45 Break
- 3:00 A STUDY OF SUICIDE BOMBING AND THE REASONS BEHIND IT
- 3:15 HOW DO CULTURAL GROUPS IDENTIFY WITH AND RESPOND TO THE CREDIBILITY OF DIFFERENT SPOKESPEOPLE PRESENTING SIMILAR RISK AND CRISIS MESSAGES?
- 3:30 PERSONALITY TRAITS AND PRESIDENTIAL PREFERENCES OF UNDERGRADUATES
- 3:45 FACTORS INFLUENCE ADOLESCENTS DELINQUENT BEHAVIOR
- 4:00 ARE WORDS A BARRIER TO MENTAL HEALTH SERVICE UTILIZATION FOR A COMMUNITY SAMPLE?
- 4:15 STIGMA AND MENTAL ILLNESS: HOW COMMON IS IT?



SCIENCE EDUCATION

Thursday, February 21

THURSDAY MORNING ASH ROOM

- 8:00 ESTROGEN IMPROVES SPATIAL MEMORY AFTER CEREBELLAR LESIONS
8:20 EDUCATING ELEMENTARY AND SECONDARY SCHOOL STUDENTS IN THE
8:40 NEW WAYS OF TEACHING CHEMISTRY TO PRESENT GENERATION OF STUDENTS
9:00 RESEARCH AND EVALUATION OF THE NSF MISSISSIPPI EPSCOR SUMMER BIOINFORMATICS
WORKSHOPS FOR TEACHERS
9:20 SCIENTIFIC CARICATURES: INCORPORATION OF VISUALIZATION TOOLS FROM THE GOLDEN AGE
OF GEOLOGY (1788-1840) IN MODERN SCIENCE CLASSROOMS
9:40 PHYSICS MAJORS, GRADUATES, AND FACULTY IN MISSISSIPPI
10:00 THE ANTIMICROBIAL EFFECTS OF SOLENOPSIS INVICTA VENOM
- 10:20 Break
- 10:40 DEVELOPMENT OF A SIZE ANALYSIS PROTOCOL FOR TEACHERS USING EASILY AVAILABLE
MATERIALS
11:00 CULTIVATING AN ATMOSPHERE OF HIGH ACHIEVEMENT AMONG GIFTED THIRD GRADE CHILDREN
11:20 UPDATING TUTORIAL VIDEOS CONCERNING PARTS AND FUNCTIONS OF A MICROSCOPE AND PLANT
AND ANIMAL CELLS
- 11:40 Divisional Business Meeting

THURSDAY AFTERNOON ASH ROOM

- 1:00 NATURE GUIDE FOR OCEAN SPRINGS, MISSISSIPPI
1:20 INTRODUCTION OF ELEMENTARY LEVEL SCIENCE OF FLIGHT
1:40 DEVELOPMENT AND IMPLEMENTATION OF AN INTERACTIVE STUDY UNIT ON WASTE MANAGEMENT
FOR ELEMENTARY STUDENTS
2:00 CREATING ACTIVITIES FOR YOUNG MINDS AT THE WALTER ANDERSON MUSEUM OF ART
- 2:20 Break
- 2:40 PREPARATION AND ARTICULATION OF A JUVENILE BOTTLENOSE DOLPHIN (TURSIOPS TRUNCATUS)
SKELETON FOR DISPLAY AT THE J.L. SCOTT MARINE EDUCATION CENTER
3:00 INVESTIGATING THE POLYMATH SYSTEM™ OF SCIENCE TEXTBOOK ANNOTATION
3:20 COMMUNITY AND STUDENT INVOLVEMENT IN SERVICE LEARNING AND RELATED INITIATIVES IN
MISSISSIPPI DELTA
3:40 THE EFFECTS OF OVER THE COUNTER PAIN REMEDIES ON THE HEART RATE OF DAPHNIA MAGNA
AND IT IMPLICATIONS TO HUMAN CARDIOLOGY
4:00 THE MUSE OF FIRE PROJECT: FOCUSING STUDENT INTEREST IN SCIENCE USING REGION-SPECIFIC
BIOLOGY
4:20 INTEGRATION OF TECHNOLOGY IN SCIENCE CLASSROOM: TOOL FOR ENHANCED STUDENT
LEARNING

THURSDAY EVENING GRAND BALLROOM

- 6:00 **Dodgen Reception and Poster Session**
Please set up posters between 4:00p and 4:30p
1. DR. GORDON GUNTER CENTENNIAL: A CELEBRATION OF HIS CONTRIBUTIONS TO MARINE SCIENCE
 2. DELTA STATE UNIVERSITY PROFESSORS TEACH BOLIVAR COUNTY 4-HERS ABOUT BIRD
CONSERVATION
 3. INTEGRATION OF 5E INSTRUCTIONAL MODEL AND TECHNOLOGY IN TEACHING DIABETES MELLITUS



ZOOLOGY AND ENTOMOLOGY

Thursday, February 21

**THURSDAY MORNING
ELM ROOM**

8:50 Introduction

9:00 MISSISSIPPI *LEPOMIS MEGALOTIS* DIVERSIFICATION

9:20 SNAKEBITE-RELATED FATALITIES IN THE UNITED STATES: ANALYSIS OVER 100 YEARS

9:40 SYMPOSIUM ON CRYPTOSPORIDIOSIS IN THE UNITED STATES OF AMERICA AND AFRICA: PREVALENCE OF CRYPTOSPORIDIOSIS AMONG HIV/AIDS PATIENTS AND NON- HIV/AIDS INDIVIDUALS IN MISSISSIPPI AND NIGERIA

10:00 QUALITY OF WATER RESOURCES AT FIVE LOCATIONS IN THE MISSISSIPPI DELTA

10:20 Break

10:40 TSETSE FLY AND ITS IMPACT ON POVERTY IN AFRICA

11:00 SYMPOSIUM ON CRYPTOSPORIDIOSIS IN THE UNITED STATES OF AMERICA AND AFRICA: PREVALENCE OF CRYPTOSPORIDIOSIS AMONG HIV/AIDS PATIENTS AND NON- HIV/AIDS INDIVIDUALS IN LOUISIANA AND GHANA

11:20 IS BRUGIASIS ON THE DECLINE?

11:40 WATER QUALITY STUDIES ON THE LOWER MISSISSIPPI RIVER

**THURSDAY AFTERNOON
ELM ROOM**

1:15 A REGIONAL STATUS OF LOIASIS

1:35 SYMPOSIUM ON CRYPTOSPORIDIOSIS IN THE UNITED STATES OF AMERICA AND AFRICA: PREVALENCE OF CRYPTOSPORIDIOSIS AMONG HIV/AIDS PATIENTS AND NON- HIV/AIDS INDIVIDUALS IN TENNESSEE AND KENYA

1:55 SYMPOSIUM ON CRYPTOSPORIDIOSIS IN THE UNITED STATES OF AMERICA AND AFRICA: PREVALENCE OF CRYPTOSPORIDIOSIS AMONG HIV/AIDS PATIENTS AND NON- HIV/AIDS INDIVIDUALS IN GEORGIA AND TANZANIA

2:15 Divisional Business Meeting

**THURSDAY EVENING
GRAND BALLROOM**

**6:00 Dodgen Reception and Divisional Poster Session
Please set up posters between 4:00p and 4:30p**

- 1. COMPARATIVE STUDY OF PEPPERS (*Capsicum* spp) FOR INSECT RESISTANCE**

AGRICULTURE AND PLANT SCIENCE

Chair: Md S. Zaman, Alcorn State University

Vice-chair: Taejo Kim, Mississippi State University

THURSDAY MORNING
DOGWOOD ROOM
O1.01
8:30 THE REDUCTION OF Pb TRANSPORT FROM SMALL ARMS TARGET BERMS

Afrachanna Butler¹, Victor Medina², Steven Larson², David Carter³, Milton Beverly⁴, Eric Holland⁵, Scott May⁶, Anthony McCarty³

¹US Army Engineer Research and Development Center/Jackson State University, ²US Army Engineer Research and Development Center, ³Alcorn State University, ⁴Environmental Research and Development, Inc., ⁵Mississippi State University, ⁶University of Mississippi

Live fire testing and training on small arm ranges is essential to the U.S. Armed Forces. During practices, bullets are continuously fired into target berms depositing metal into the soil. Berms often lack vegetation, and frequently suffer from soil erosion and heavy metal (ex. lead-Pb) transport in surface water and, more rarely, into groundwater. A large-scale study was conducted to determine the effectiveness of grasses to reduce the migration of heavy metals from a target berm into surface and subsurface water. The study consisted of a soil from a southeastern United States site. *Cynodon dactylon* (Bermuda) and *Eremochloa Buse* (Centipede) grasses, which are both native to the southeast, were planted in a clean soil. Following grass maturity, for ten weeks, M-16 lead rounds were fired into unplanted and planted soil berms and were immediately followed by a rain simulation procedure to create runoff and leachate. Data obtained from the weekly runoff and leachate analyses determined if Pb migrating from the impacted berm were stabilized and reduced in a planted environment. Final plant tissue and soil analyses were measured to investigate possible uptake. Results showed that there was an increase in the lead leachate concentrations of both the planted lysimeters. However, the total mass of lead transported as runoff was reduced in the planted versus the unplanted soils. Lead uptake was present in both plant tissues. These results indicate that the uses of grasses on small arm target berms are promising for the reduction of Pb transport into surface waters.

O1.02
8:45 PRODUCTION OF PHYTOCHELATIN BY WHEAT (*Triticum aestivum* L.) GROWN AT DIFFERENT STAGES IN CADMIUM-CONTAMINATED SOILS

Maria Begonia, Jennifer Ntoni, Gregorio Begonia, Gloria Miller, Miriam Ighoavodha, Antoinette Taylor

Jackson State University

Phytochelatin are peptides produced by plants in response to metal exposure. We hypothesized that the production of phytochelatin in roots and shoots would vary with time in wheat plants grown in soils amended with cadmium (Cd) and [ethylene bis (oxyethylene nitrilo)] tetraacetic acid (EGTA) as compared to control plants. The study was conducted to determine the effects of Cd on phytochelatin production in wheat plants at different growth stages. Wheat seeds were planted in plastic tubes containing topsoil and peat spiked with different levels of Cd in the form of cadmium nitrate. At six, eight and ten weeks after emergence, aqueous solutions of EGTA were applied to the root zone. Plants were harvested at 5 days after chelate addition. Results revealed that wheat plants were tolerant to treatment combinations of Cd and EGTA as shown by the root and shoot metal uptake. There was an increase in the production of phytochelatin with time in roots and shoots as a tolerant mechanism against cadmium toxicity. This study demonstrated that wheat increase the production of phytochelatin as a means of tolerance mechanism against cadmium toxicity. Financial support provided by NASA to Jackson State University through The University of Mississippi under the term of Grant No. NNG05GJ72H/08-08-012.

O1.03
9:00 PHYTOEXTRACTION OF CADMIUM AND LEAD FROM CONTAMINATED SOIL BY CABBAGE PLANT

Cynthia Addae, Marta Piva, Md Zaman

Alcorn State University Minor Outlying Islands

Phytoextraction is considered as an efficient method to remove heavy metals such as mercury (Hg), cadmium (Cd), zinc (Zn), lead (Pb), copper (Cu), etc. from soil. This study examines the potential of using *Brassica oleracea* (Cabbage) to remove Cd and Pb from contaminated soils. Cabbage plants were grown in soil containing 0, 100, 250, 500, and 1000 ppm Pb; and 100, 250, and 500 ppm Cd. The plants were grown under 240 W color-corrected grow lights on a 16:8 hr light: dark cycle. Plants were harvested after a 30-day growth period. Plants were then dehydrated for one week at 700 C in a laboratory incubator. Dry plant tissues were acid digested and analyzed for tissue metal content using an Atomic Absorption spectrophotometer. Results showed that Cd and Pb accumulations in roots and shoots were significantly higher when compared to the control group and metal uptake was dose related. Results indicated that *Brassica oleracea* could tolerate high levels of Cd and Pb in soil and accumulate considerable amounts of these metals in plant tissue. Therefore, this plant species may be used to phytoremediate Cd- and Pb-contaminated soil.

O1.04
9:15 IDENTIFYING MUTANTS IN *TRITICUM TURGIDUM* L VAR. *DURUM* WHEAT GRAIN PROTEINS

Sonya Hentz¹, Daryl Klindworth³, Steven Xu³, Shahryar Kianian², Rachel Beecham¹

¹Mississippi Valley State University, ²North Dakota State University, ³USDA-ARS, Northern Crop Science Laboratory

The quality of pasta products can be attributed to the unique gluten protein characteristics of durum (*Triticum turgidum* L. var. durum) wheat. There are two types of gluten proteins, gliadins and glutenins. Glutenins subunits play a major role in the improvement in the quality of durum wheat for the elasticity of pasta, and they are classified into two groups based on their mobility, high molecular weight (HMW) and low molecular weight (LMW) subunits. Genetic engineering can be used to manipulate the amount and the composition of the subunits. The goal of this research is to identify important factors in the grain that contribute to the overall quality of durum wheat. We hypothesized that a mutagenic agent like ethyl methanesulfonate (EMS) can cause changes in HMW and LMW glutenin subunit. In this study, we have analyzed a population of 439 seeds from EMS-treated durum wheat Langdon (LDN) 16. Proteins were extracted from crushed endosperm halves and proteins were separated by SDS-PAGE using standard procedures. The results showed that there were 61 (13.9%) mutations out of 439 seeds, including 58 silenced and 3 double band mutations. These mutants will be further investigated for phenotypic alterations and structural changes of the genes for glutenin subunits. We will also investigate the novelties of glutenin subunits in the three double band mutations and their effects on the pasta quality in durum wheat.

01.05

9:30 A WHOLE PINE TREE SUBSTRATE FOR ROOTING STEM CUTTINGS OF ORNAMENTAL CROPS

Anthony Witcher¹, Kenneth Curry², Eugene Blythe³, Glenn Fain⁴, James Spiers¹

¹USDA-ARS Southern Horticultural Lab, ²University of Southern Mississippi, ³Mississippi State University - MAFES, ⁴Auburn University

In 2006, propagative material accounted for \$725 million (8.3%) of the total wholesale value for the nursery and floriculture industries nationwide. Despite a 10% increase in total value from 2003-2006, rising fuel and input costs have reduced profitability for producers. A key component of a propagation nursery is a quality substrate for root development, commonly peat moss or pine bark. Competition for pine bark resources and the increasing cost of peat has increased interest in alternative substrates. Recent research suggests processed whole pine trees can be utilized for growing a variety of nursery and floriculture crops. We evaluated root development of *Salvia leucantha* stem cuttings in pine bark (PB) and whole pine tree (WPT) substrates, with and without peat (P). Stem cuttings were inserted into substrates (PB, PB+P, WPT or WPT+P) and placed under intermittent mist in a greenhouse. At project termination, roots were washed, scanned for digital analysis and dried. Digital images of each root sample were analyzed for root length and root volume. On average, PB+P treatments contained the greatest root lengths, root volumes and dry weights, while WPT substrates had the lowest. The addition of peat increased root

length by 4.5% and 26% in PB and WPT substrates, respectively. Root dry weight was 29% greater in PB+P compared to WPT+P. Although overall root development was lower in WPT substrates, the addition of peat enhanced development. In future experiments, we will investigate WPT particle size and nutrient inputs to potentially improve root development in WPT substrates.

01.06

9:45 EFFECT OF DEFOLIATION FREQUENCY ON GROWTH AND PRODUCTION OF LITTLE BLUESTEM AND INDIANGRASS USED IN CONSERVATION BUFFERS

Vitalis Temu, William Kingery, Brian Baldwin
Mississippi State University

In a tall-grass prairie restoration project at Brayn Farms in Westpoint, a study was designed to evaluate the effect of five cutting frequencies on the forage yield, nutritive value and sward habitat features of conservation field buffers dominated by little bluestem (*Schizachyrium scoparium*) and indiagrass (*Sorghastrum nutans*). Conservation field buffers seeded with a mixture of switchgrass (*Panicum virgatum*), big bluestem (*Andropogon gerardii*), little bluestem (*Schizachyrium scoparium*) and indiagrass (*Sorghastrum nutans*) were used. Cutting to 10-cm stubble height in May was done and repeated every 30, 40, 60 or 120 days. Plant heights on sample bunches, canopy cover (light interception), tiller leafiness, ground cover by grasses, forbs and litter (visual estimates and line intercept methods) were recorded at each cutting. Tiller length (cm), basal thickness (mm) and leaf area (cm²) were recorded and tiller leaf and stem dry weights (mg) measured after oven drying at 60°C. Samples were weighed fresh on-site and after oven drying, then analyzed for nutritive value. Preliminary results show treatment effects on forage yield, nutritive value, inclusion of non grass species and ground space in plots. Little bluestem is less likely to withstand high cutting frequencies compared to indiagrass. Implications on forage production and habitat quality for ground-nesting birds are discussed.

10:00 Break

01.07

10:15 DISEASE DIAGNOSIS & PLANT PATHOGEN INTERACTION

Candace Lee¹, Rubella Goswami², Steven Meinhardt², Shahryar Kianian²

¹Mississippi Valley State University, ²North Dakota State University

Ascochyta blight is an economically important disease of field pea (*Pisum sativum* L.) which can result in significant yield loss. This disease can be caused by three different *Ascochyta* species namely, *Ascochyta pisi*, *A. pinodes*, and *A. pinodella*. All these species can cause leaf, stem and pod spots

but *A. pinodes* and *A. pinodella* cause foot rot as well. The prevalence of these species appears to vary between different regions. This study was conducted to identify the species of Ascochyta most prevalent in the North Dakota region and to validate a recently developed PCR based detection method. The project involved collection of field pea samples from 22 fields in North Dakota region including farms and experimental plots, visual evaluations for disease symptoms and pathogen isolation followed by morphological and molecular identification. According to morphological identification 15 Ascochyta isolates were obtained from the roots and leaves all of which appeared to be *A. pinodes*. DNA extraction and PCR was conducted using 20 Ascochyta isolates. These included 3 isolates from the root samples plated in this study and 17 isolates from seeds collected from these regions which were being evaluated in a separate experiment. According to the PCR results 75% of the isolates tested appeared to be *A. pinodes*. Our study suggests that *A. pinodes* is most prevalent species of Ascochyta on field peas in North Dakota. It also shows that molecular identification using multiplex PCR provides a quick and efficient way to differentiate Ascochyta species that can be difficult to distinguish using conventional methods.

01.08

10:30 PROCESSED PLANT POLYPHENOL (TANNIC ACID) ENHANCES ANTIMICROBIAL ACTIVITY ON FOODBORNE PATHOGENS

Taejo Kim, Juan Silva, Yeansung Jung
Mississippi State University

Polyphenols are beneficial to human health and have the potential to be antimicrobial agents. A simple heat process could enhance their antimicrobial activity on foodborne pathogens. The objective of this research was to investigate heating as a way to enhance antimicrobial activity of tannic acid and, to elucidate a novel molecular structure formed after heat processing tannic acid. A simple thermal process on hydrolysable tannic acid resulted in 213 % higher UV absorption on HPLC and enhanced antimicrobial activity against acid resistant pathogenic strains (*E. coli* O157:H7 ATCC 43895 and 39150) and various other pathogenic microorganisms (*Salmonella* spp., *Listeria* spp., and *Enterobacter sakazakii*) than fresh hydrolysable tannins. MALDI (matrix-assisted laser desorption/ionization) mass analysis showed that this process did not affect the mass change of the tannin molecule. Based on the results we can (1) develop processing technologies to enhance antimicrobial activity of natural plant polyphenols, (2) identify the antimicrobial molecular structural change which is newly formed on processed polyphenol, (3) develop a novel antimicrobial substance which has a bio-active molecular structure, (4) conduct antimicrobial challenge tests on antibiotic resistant microorganisms in food and ingredients, including personal health care products.

01.09

10:45 COMPARISON OF MICROBIAL RECOVERY METHODS ON YEAST AND MOLD AND AEROBIC COUNTS OF FROZEN BLEEBERRIES (*VACCINIUM ASHEI*)

Melody Corbitt, Taejo Kim, Juan Silva
Mississippi State University

Blueberries are gaining demand for their high antioxidant capacity due to their high content of bioactive compounds. Part of the annual crop goes into processing as frozen berries. Buyers have minimum standards for microbial load of frozen blueberries. However, the method of counting microbial load on foods varies and it can affect the final count. This includes yeast and mold counts (YMC), which may affect the quality of the product with which they are going to be made. The purpose of this study was to determine the most effective and accurate methodology of cell recovery in fresh and frozen blueberries

Frozen rabbiteye blueberries (*Vaccinium ashei*) were obtained from a Mississippi blueberry processor in the summer of 2008. The frozen berries were washed, packed in 40 lb boxes and frozen in a blast freezer. Aerobic plate counts (APC) and YMC were determined by taking thawed blueberries and diluting 1:10 with peptone water. The dilution samples were mixed by: hand mixing, machine mixing, stomaching, vortexing, and homogenizing.

Hand and machine mixing were the two methods that resulted in the lowest YMC. Homogenization and stomaching were two methods that resulted in higher counts than mixing. These methods result in cell breakage and leakage. Vortexing resulted in the highest YMC counts. It seems that cell disruption and colony breakage (vortexing) results in higher recovery of yeasts and molds in blueberries.

01.10

11:00 EFFECT OF GRAPE VARIETY AND SOLVENT EXTRACTION METHOD ON THE ANTIPATHOGENIC ACTIVITY OF MUSCADINE (*VITIS ROTUNDIFOLIA MICHX.*) SEED EXTRACTS

Wei-Wei Chen, Taejo Kim, Frank Matta, Juan Silva
Mississippi State University

Muscadine seeds are known to have high antioxidant activity due to high concentration of phenolics and other bioactive components. The objective of this study was to screen antimicrobial activity of seed extracts from various cultivars by various extraction methods. Muscadine seed powders used in this study were made from four types of muscadine grapes: two bronze cultivars, 'Carlos1' (cold break) and 'Carlos2' (hot break), and two red cultivars, 'Noble' and 'Ison'. Ethanol (95% w/w), methanol (100% w/w) and acetone (70% w/w) were used as solvents to obtain seed extracts from each cultivar. Five species of microorganism were used: *Salmonella* spp., *Staphylococcus* spp., *E.coli* spp., *Enterobacter* spp. and *Listeria* spp. Antimicrobial power was determined by

using the Disc diffusion test. Regardless of cultivar, methanol seed extracts had the highest antimicrobial among the three solvents (zone diameter 1.226 cm). Amongst the cultivars, 'Carlos2' seed extracts showed the highest antimicrobial ability (zone diameter: 1.200cm). Of the pathogens tested, *Listeria* spp. was the most susceptible (zone diameter 1.425 cm) while *Enterobacter sakazakii* and *Salmonella* spp. were the most resistant (0.383 and 0.385cm, respectively). Overall, the methanol seed extract from 'Carlos2' was the most effective antimicrobial. This extract was shown to have the highest concentration of tannic acid (14.0 mg/ml) and other organic acids, which were suggested to be related to its higher antimicrobial ability. These results show that muscadine seed extracts could be developed to be used as natural antimicrobials in many food and health care products.

01.11

11:15 PERFORMANCE OF MUSCADINE (*VITIS ROTUNDIFOLIA*) AND SOIL PHYSICO-CHEMICAL CHANGES DURING TRANSITION FROM CONVENTIONAL TO ORGANIC PRODUCTION

Dr. Girish Panicker, Dr. Juan Silva, Dr. Frank Matta
Alcorn State University

Transition from conventional to organic production is a major field in organic research where productivity improves with increasing years under organic farming. Muscadine (*Vitis rotundifolia* var. Summit) was trained to the Geneva Double Curtain Trellis System and grown on a Memphis silt loam soil (Typic Hapludalph, silty, mixed, thermic). Three treatments of organic manure (cow-C; poultry-P; cow and poultry-CP) with weathered pine mulch were applied in basins around each plant in a completely randomized design. Control plants received regular inorganic fertilizers and traditional cultural practices. Biomass development, yield, and fruit and water qualities were evaluated. Biomass and yield remained the same in inorganic plants. However, yield increased with increase in years under organic management. Percent ground cover, leaf area index, and stem diameter were significantly greater in organic plants. There was no significant difference in diameter, length, and degree brix of the fruit. No pathogenic organisms from organic manures were found on the fruit. Soil compaction remained the same in the control, but decreased year after year in organic treatments due to increase in organic matter content in the surface layers. Higher concentrations of nitrate-N and P were noticed in the surface soil after manuring, but there was no trend in N or P enrichment of groundwater.

01.12

11:30 INHIBITION OF *E. COLI* O157:H7 BY FRESH AND PROCESSED RED MUSCADINE JUICE AND ANTIMICROBIAL ROLE OF THEIR POLAR COMPOUNDS

Taejo Kim, Juan Silva, Yeansung Jung
Mississippi State University

Recent research showed that water-soluble muscadine

seeds possessed antibacterial properties against *E. coli* O157:H7. When muscadine are crushed and pressed to extract juice, water-soluble seed compounds could be incorporated into juice to enhance its antibacterial activity against *E. coli* O157:H7.

The objectives of this research were 1) to show the anti-*Escherichia coli* O157:H7 effect of fresh (FRMJ) and processed red muscadine (*Vitis rotundifolia*) juice (PRMJ) 2) to discern the active compounds responsible for anti-*E. coli* O157:H7. Polar and phenolic compounds of FRMJ and PRMJ were analyzed by HPLC. Antibacterial activity of FRMJ, PRMJ, their polar and polyphenol fractions, individual synthetic acids and their mixture with or without sugars were investigated on *E. coli* O157:H7. FRMJ and PRMJ inactivated ($P \leq 0.05$) 5-log cocktail cells of *E. coli* O157:H7 within 4 h at 37 °C. Polar fractions which contained malic, tartaric and tannic acids showed strong antimicrobial activity ($P \leq 0.05$) against *E. coli* O157:H7. Tannic acid among synthetic acids showed the highest antimicrobial activity against *E. coli* O157:H7. FRMJ, PRMJ and their polar compounds showed strong anti-*E. coli* O157:H7 activity. Earlier findings have failed to show any anti-*E. coli* O157:H7 effect of grape juice without adding preservatives. Our findings show that red muscadine juice has natural antibacterial substances and suggest that these can be used as active antimicrobial ingredients against *E. coli* O157:H7 in non-alcoholic beverages.

THURSDAY AFTERNOON DOGWOOD ROOM

01.13

1:30 INHIBITORY EFFECT OF ENTEROBACTER SAKAZAKII BY MUSCADINE JUICES AND ANTIMICROBIAL ACTIVITY OF THEIR IDENTIFIED COMPOUNDS AT PH 3.2

Wei-Lien Chen, Taejo Kim, Juan Silva
Mississippi State University

Enterobacter sakazakii is an emerging pathogen, affecting mainly young babies. Red and white muscadine juices and their main organic phenolic acids were investigated for the inhibition effects on *Enterobacter sakazakii* in this study. Total phenolic content, major phenolic compounds and organic acids of muscadine juices were also analyzed. Within two hours, two strains of *E. sakazakii* were reduced to non-detectable levels (6-log reduction) in both muscadine juices when incubated at 37°C. Red muscadine juice demonstrated stronger inhibition ability, having higher concentrations of organic acids and total phenolics than white muscadine juice. Comparing the antimicrobial effect among juice treatments, pasteurized muscadine juices were less effective against *E. sakazakii* than both cold-filtered and hot sterile juices. Among the main organic and phenolic acids in muscadine juices, tannic acid showed strongest antimicrobial activity at pH 3.2. There were 3-log reductions of viable *E. sakazakii* by tannic acid (1.90 mg/mL), while there were less than 1-log reduction of *E. sakazakii* by tartaric (4.27 mg/mL) or malic (1.60 mg/mL) acids. A synergistic antimicrobial effect

between phenolic compounds, organic and tannic acids in muscadine juices may explain the complete inhibition of *E. sakazakii* by muscadine juice.

O1.14

1:45 PRELIMINARY STUDIES ON RAIN-RELATED SPLITTING OF BLUEBERRY FRUIT

Carrie Witcher¹, Kenneth J. Curry¹, Donna Marshall²

¹University of Southern Mississippi, ²USDA-ARS, Southern Horticultural Lab

A significant problem facing blueberry growers in the southeastern United States is rain-related fruit splitting. The occurrence of fruit splitting is most prevalent after a period of drought followed by intense rain. A 2003 survey of blueberry growers from the Gulf South region showed that a profit loss of as much as \$3,528,000.00 could result from blueberry fruit splitting. Research has focused on a variety of chemical and physiological causes. Here we report our preliminary anatomical study of the blueberry which documents berry development from flower to ripe berry to determine morphological differences among split-resistant and split-susceptible cultivars. Blueberry fruit samples that had been fixed in Bouin's solution, dehydrated in ethanol, embedded in paraffin, sectioned, and variously stained were examined under the light microscope. A digital picture library was created for the different cultivars at various stages of development. The images will be used to evaluate the thickness of cell walls, the number of cell to cell contacts, and the number of cell to air contacts. The number and cellular contacts of stone cells will also be observed and recorded. The details of cell walls were observed using a transmission electron microscope. Berries were fixed in buffered glutaraldehyde, dehydrated in ethanol and acetone, embedded in epoxy plastic, sectioned, and stained with lead citrate and uranyl acetate. Cell wall structure will be evaluated and compared among split-resistant and split-susceptible cultivars.

O1.15

2:00 PHYSIOLOGICAL AND IMMUNOLOGICAL RESPONSES OF THE AVIAN EMBRYO TO TEMPERATURE TRANSPONDER IMPLANTATION IN THE EGG AIR CELL

Radhakrishna Pulikanti, E. David Peebles, Kamalakar Chatla, Sharon Womack, Madhusudhanan M. Keralapurath

Mississippi State University

Eggs from young broiler breeder hens (Ross X Ross 308; 27 wk of age) were weighed and set on 3 replicate trays (incubator levels; approximately 60 eggs per tray) of a single incubator. Each day between Days 10 and 14 of incubation, all eggs were weighed, and the air cell of 4 randomly selected embryonated eggs per tray were subjected to either sham implantation (shell perforated but no transponder inserted) or transponder implantation (shell perforated and transponder inserted). Four untreated control eggs were also assigned to each tray level. On Day 18 of incubation, the weights of 4 eggs and their extracted live embryos from each experimental group on

each tray were determined. Percentages of mean daily incubational egg weight loss between Day 18 and each respective day of implantation were calculated. Furthermore, various blood, internal organ, and tissue parameters were examined. Plasma glucose concentration was higher in embryos from eggs that received transponders on Day 13, and was higher in embryos from eggs that were sham-treated on Day 10 rather than 13. However, in comparison to controls, relative embryo weight (% of set egg weight) was increased in eggs that received transponder implants on Days 11, 12, or 14. It was concluded that temperature transponders may be effectively inserted into the air cell of broiler hatching eggs between Days 10 and 14 of incubation, in order to monitor embryo metabolism, without adversely affecting eggshell porosity or embryogenesis.

O1.16

2:15 PREHARVEST AND POSTHARVEST FACTORS THAT AFFECT COLOR AND QUALITY OF CATFISH (ICTALURUS PUNCTATUS) FILLETS

Juan Silva, Taejo Kim, Yeansung Jung, Youkai Lu, Douglas Minchew, Charles Hoque, Jr.

Mississippi State University

Channel catfish is the largest aquaculture industry in the U.S.A. The catfish are reared in ponds until ready for processing. Stocking rates have increased from 4,000 to over 10,000 per acre now. Harvesting and transport could take hours and increase stress of the fish if not done properly. Postharvest treatments, including bleeding can also affect the quality of the final edible product. The objectives of this study were to study some of the causes that affect the quality and fillet color of channel catfish (*Ictalurus punctatus*). Food size catfish were bled and non-bled after stunning and prior to filleting. Once filleted, the flesh was exposed and rated for redness and the color and total hemoglobin measured. Unbled fillets were redder and had higher Hunter 'a' values than unbled fillets. In another experiment, fillets were sampled from a processing plant before and after chilling. Redder fillets had Hunter 'L' value below 54 and Hunter 'a' values above 1.5. Based on Hunter color values, one can classify marketable catfish fillets from very white to very red. Furthermore, pH of red fillets seems to be slightly lower than white fillets, contributing to a slightly longer shelf life. The redness in catfish fillets is attributed to stress factors imposed on the fish, which are critical during the summer months. Excessive stress (low dissolved oxygen) leads to necrosis and unacceptable fillets.

O1.17

2:30 OCCURRENCE OF LISTERIA MONOCYTOGENES AND LISTERIA SPP. IN CATFISH PROCESSING PLANTS AND IDENTIFICATION OF CONTAMINATION SOURCES

Bang-Yuan Chen, Taejo Kim, Yeansung Jung, Juan Silva

Mississippi State University

It is difficult to remove *Listeria monocytogenes* from fish and processed seafood products because of its ubiquitous presence in the environment and the surface of fish. Therefore, it is a good practice to identify *Listeria* contamination sources in



catfish processing surfaces and in the product and reduce their cross-contamination. The objectives of this work were to monitor the occurrence of *Listeria* on processing surfaces and catfish samples in catfish processing plants and identify contamination sources. Twenty seven different surfaces and 120 catfish (30 skin, 30 intestines, and 60 fillets) samples were tested. All collected samples were incubated at 30°C for 4 h in *Listeria* enrichment broth. These cultures were streaked onto Oxford medium base containing modified Oxford antimicrobial supplement, and incubated at 30°C for 24 h. Multiplex PCR was performed in a thermocycler with 12.5 µl reaction mixtures containing 2.0µl crude bacterial lysate (heated 5 min at 100°C), GoTaq® Green Master Mix and 1.0 µM of each primer.

Nineteen processing surfaces, two fish skins, and 37 fillets were positive for *Listeria* spp. and 15 surfaces and 36 fillets were contaminated with *Listeria monocytogenes*. However, there was no occurrence of *Listeria monocytogenes* in fish intestines and surfaces. The results indicated that *Listeria monocytogenes* inhabit catfish plants, and are mainly plant contaminants. This indicates that an effective sanitation procedure is required for catfish processing plants to reduce the incidence.

O1.18

2:45 ASSESSING THE BENEFITS OF EXOGENOUS PROGESTERONE SUPPLEMENTATION ON THE SURVIVAL OF EMBRYOS TRANSFERRED TO RECIPIENT BEEF COWS. Evelin Cuadra⁴, Rhonda Vann², William Bennett³, Ricky Johnson⁴, Melissa Mason⁴

¹*Brown Loam Experiment Station*, ²*Mississippi State University*, ³*University of Mississippi Medical Center*, ⁴*Alcorn State University*

Survival of transferred embryos begins with tolerance of genetically different embryo to the maternal immune system followed by a successful outcome from the process of implantation. Progesterone coordinates both events; therefore, the objectives of this project were to assess the effects of progesterone supplementation on the survival of transferred embryos and the expression of protein genes and hormones associated with attachment of the embryo to the uterine wall.

In five different studies (June 2003, April 2004, January 2005, May 2006 and August 2008), embryos were inserted in the uterus of cows on day 7 of estrous. Randomly, the animals were divided into two groups. Contrary to the control group, cows in CIDR-group had a CIDR inserted on that same day (removed 14 days later). Blood samples for progesterone analysis were taken at 7 day intervals between insertion and removal of CIDR's. Percent embryo retention for the first, second, third, fourth and fifth studies for the CIDR and control groups are: 64.3 vs 28, 76.9 vs. 61.5, 75.0 vs. 72.73, 60.0 vs. 33.33 and 54.20 vs. 69.60. The first three studies were conducted at the Brown Loam Experiment Station, Mississippi; the fourth study was done at ADC, Kenya, Africa; and the fifth one at UNA, Nicaragua, Central America. Even though variables differ between studies,

these data suggest that progesterone affects survival rate of transferred embryos. It was also noticeable that the magnitude of the gap in between progesterone concentrations determines disparity in percent embryonic retention between the two groups.

3:00 Divisional Business Meeting

**6:00 Dodgen Reception and Poster Session
Grand Ballroom
Please set up between 4:00p and 4:30p**

P1.01

INVESTIGATION OF SALTMARSH PLANTS FOR THE PRESENCE OF MYCORRHIZAL FUNGI

David Richmond¹, Jinx Campbell², Allison Walker²

¹*Mississippi Gulf Coast Community College-Jackson County Campus*, ²*University of Southern Mississippi, Gulf Coast Research Laboratory*

Coastal saltmarshes provide protection from erosion and hurricane damage, and offer nursery habitats for ecologically and commercially important marine species. However, the total acreage of saltmarsh is in rapid decline worldwide. This poses many problems, commercially and environmentally. Continued loss of saltmarsh habitats could lead to a dwindling number of important commercial fisheries, as well as many other forms of marine life. The number of saltmarsh restoration projects is on the rise, but the success rate experienced by these projects is only around fifty percent. Therefore, new methods are being developed to increase the health of plants grown in nurseries, such as the root colonization of emergent vegetation by symbiotic mycorrhizal fungi. The colonization of saltmarsh plants by certain species of mycorrhizal fungi could lead to improved nutrient uptake and therefore better health of saltmarsh plants in the nursery. Samples of native marsh sediment and roots from the dominant emergent vegetation species of the Gulf Coast, *Spartina alterniflora* and *Juncus roemerianus*, were collected and investigated for the presence of these fungi. The amount of naturally occurring mycorrhizal fungi found at different coastal saltmarsh sites was then compared.

P1.02

SURVEY AND IDENTIFICATION OF TREES ON CAMPUS OF MISSISSIPPI VALLEY STATE UNIVERSITY

Katrena Wells, Joseph Wahome, Manju Pande
Mississippi Valley State University

A number of tall trees create a beautiful landscape here at Mississippi Valley State University. To help our science students get familiar with plant nomenclature and the field of Taxonomy, we undertook the present project to identify and label most of the trees on our campus. A tree usually consists of leaves, bark, branches and twigs, fruits and flowers. Each of these is unique to certain species and helps with the visualization

towards the identification of a tree. We picked up our notebook, camera, ziplock bags, campus map, reference book on Mississippi Trees, and spent the day observing the trees. Mr Braswell and Mr. Hatcher from Mississippi State forestry department accompanied us in our tour of the campus and helped us with the identification of all the trees. We mainly focused on the properties of bark, twig and leaves to determine the type and species of the tree. We took pictures, collected leaf samples and information on the location of the trees. Further research on their habits, habitats, flowers and other important characteristics was done later using online resources and reference book. We observed at least 20 different types of trees planted in rows across the campus, the most abundant trees were Shumard Oak, Live Oak, Water Oak, Bradford Pear, River Birch, Red Maple Tree, American Elm, Long Leaf Pine, Loblolly Pine, Magnolia, Bald Cypress, Yellow Poplar. and a huge old Cottonwood tree. We are in the process of putting up custom built signs with their common and scientific names.

P1.03
SCREENING DIPLOID WHEAT (TRITICUM MONOCOCCUM) MUTANT POPULATION FOR ALTERED GRAIN PROTEIN PROFILE

Yinessa Cacapit¹, Anantharama Rishi², Shahryar Kianian²
¹Mississippi Valley State University, ²North Dakota State University

By analyzing the glutenin composition it may be possible to alter the flour and seed qualities of wheat for specific needs, thereby increasing the product value and crop improvement. In this project the purpose was to identify mutants in Triticum monococcum that are deficient in high and low molecular weight glutenin subunits and determine the mutation frequency within this population. By utilizing the SDS-PAGE electrophoresis we hypothesized that deletions/mutations in the M₃ generation of Triticum monococcum can be found. The lab at NDSU had generated mutant populations of T. monococcum using two chemicals Diepoxybutane and Trimethyl psoralen/UV that are believed to produce deletion/mutation in the plant genome. With alcohol-based chemicals the protein was isolated and analyzed. After a flow of positive electric currents through the negatively charged proteins occurs, the distinct bands of High molecular weight and Low molecular weight protein subunits appear on SDS PAGE gel. After screening roughly 500 T. monococcum seeds we did not find any complete absence of protein subunits, but there were a number of lines carrying significantly reduced amount of a given subunit. Two theories for not finding any mutations are that the screening population was small and as T. monococcum is a diploid these protein subunits may be crucial to survival of the plants. Since we did not find any complete deletions before this particular project came to a close, future work would include planting the embryos of the seeds that poses the faint bands for characterization of potential mutations.

P1.04
METHODS TO DETERMINE CHILLING SUSCEPTIBILITY OF SWEETPOTATOES (IPOMOEA BATATAS)

Norman Arroyo, Taejo Kim, Ramon Aranciba, Juan Silva
Mississippi State University

Chilling temperatures (0°C to 13°C) during growth and in post-harvest storage are an important cause of sweetpotato losses. The effect of chilling temperatures on storage roots include an increase in decay, changes in flavor, internal discoloration, and the development of hardcore (tissue that remain hard after cooking), all of which reduce consumer acceptance. Understanding the mechanisms of chilling injury development will help develop strategies to increase tolerance, reduce losses and extend the growing season for sweet potato in the U.S.A. The objective of this study was to understand the mechanism of chilling injury development in sweetpotato. Sweet potatoes (*Ipomoea batatas*) cv. 'Beauregard' (chilling tolerant) and 'Centennial' (chilling susceptible) were placed at 20C (control) and 4C (chill) for over two months. Hardcore development, texture, pectin methyl esterase (PME) and changes in pectin characteristics were investigated. Hardcore development of chilled sweet potatoes was noted, regardless of cultivar, possibly due to the length under chilling storage. Titration of generated carboxyl groups was used to determine PME activity. The PME activity of chilled roots was about 4X higher than that of control roots. This suggests a breakdown in pectin components upon chilling. This was confirmed by a high degree of tissue softening in the chilled sweetpotatoes. It is apparent that PME activity can be used as a method to detect chilling susceptibility and to study methods to enhance their chilling tolerance.

P1.05
INCIDENCE AND IDENTIFICATION OF MAJOR SPOILAGE AND PATHOGENIC MICROORGANISMS IN FRESH AND PROCESSED CHANNEL CATFISH

Juan Silva¹, Taejo Kim¹, Parvanejh Khosravi¹, Bang-Yuan Chen¹, Jaheon Koo²

¹Mississippi State University, ²Univeristy of Arkansas- Pine Bluff

Channel catfish (*Ictalurus punctatus*) is a safe product with a 10-14 day shelf-life. Its major sources of contamination are water, surfaces/equipment, and fish itself. The raw product can be precooked as a smoked or fried product. These products are subject to post-process contamination or survival of toxin-producing pathogens. The objective of this study is to survey the major spoilage and pathogenic organisms in raw and processed channel catfish. Channel catfish samples, water samples, and other samples were taken at various catfish processing plants or under simulated conditions. In some instances, simulated processing conditions were conducted to study survival of pathogens and spoilage bacteria. It was found that the major spoilage organisms were Gram negative (>60%), psychrotrophic

aerobes such as *Pseudomonas* spp., *Moraxella* spp., *Acinetobacter* sp., *Aeromonas* sp., *Bacillus*, *Citrobacter freundii*, *E. coli*, *Plesiomonas shigelloides*, *Proteus* sp., *Serratia* sp., *Shewanella putrefaciens*. The ratio of Gram positive to Gram negative isolates can change with treatment. For example, salt and salt-containing treatments shift the microflora to mainly Gram positives. Reduced oxygen packaging also shifts the microflora to Gram positives. The major pathogens isolated from catfish were *Aeromonas hydrophila* (ubiquitous to the ponds), *Klebsiella pneumoniae*, *Listeria monocytogenes* (5-90% incidence), *Edwardsiella ictaluri* (10%), *Salmonella* spp. (~2%), *Shigella* (2%), and *Streptococcus* sp. Some pathogens such as *Vibrio* sp. and *E. coli* O157:H7 have not been reported in catfish products. When catfish products are precooked, *Staphylococcus aureus* survival and *Listeria monocytogenes* contamination are possible. Some intervention methods could inhibit these pathogens from surviving or growing.

**CELLULAR, MOLECULAR AND
DEVELOPMENTAL BIOLOGY**

Chair: Lauren Brandon, Mississippi University for Women
Vice-chair: Meshack Afilthele, Mississippi University for Women

THURSDAY MORNING

OAK ROOM

9:00 Opening Remarks

O2.01

**9:10 THE EFFECT OF MATERNAL
GLUCOCORTICOIDS ON TWO DAY OLD JAPANESE
QUAIL EMBRYOS.**

Ursula Johns¹, Wendy L. Reed¹, Matt Doucette¹
¹Mississippi Valley State University, ²North Dakota State University

Female birds transfer hormones into their eggs and the levels of hormones in eggs are sensitive to the female's environment. For example, when females are stressed they transfer more corticosterone, the main avian stress hormone, to their eggs than when they are not stressed. In this study the effects corticosterone exposure during development were measured in two-day old Japanese quail embryos. Corticosterone was added to eggs in three doses (9ng, 4.5ng, and 12ng per 10 ul sterile sesame oil) in addition to a vehicle control (sesame oil only). After injection eggs were set to incubate for 48 hours. At the end of two days the eggs were opened and embryos were transferred to a salt solution (Tyrode solution) that allowed for measurements of heart rate, embryo length and stage of development. The results showed that the embryos treated with the control and 9ng corticosterone had faster heart rates.

Also the 9ng concentration showed the highest stages of development. This can be because the normal level of corticosterone in the yolk of an egg is approximately 9ng. Meaning that this is the level of corticosterone an embryo needs to thrive.

O2.02

**9:30 SHEAR STRESS INDUCED PLATELET
ACTIVATION**

Erica Randolph¹, Brittney Robinson¹, John Kermod¹
¹Tougaloo College, ²University of Mississippi Medical Center

According to the American Heart Association, Cardiovascular Disease is the leading cause of death in the United States. Normally with this disease, other risk factors coexist. A major contributor to CVD is a thrombus. When a thrombus forms inside of an artery, this leads to a high shear stress in the artery. High shear stress exposure triggers platelets activation, red blood cells lyses, and blood flow restriction. This causes more damage to the artery and forms a more severe thrombus leading to a more aggravated form of CVD. In the experiments, blood was separated into platelets, red blood cells, and platelet poor plasma. Then platelets were loaded with [¹⁴C] Serotonin, and the blood was reconstituted to yield a normalized amount of platelets and red blood cells. The blood was then exposed to a 90%, 4 cm stenosis at two different flow rates 2ml/min and 12 ml/min. After exposure to high shear stress, the blood was measured for red blood cell lysis and [¹⁴C] serotonin release from platelets signifying platelet activation. Blood was taken from the same donors in two week intervals to determine the consistency of their platelet activation results. This will be combined with other lab studies to determine the donor's risk factor for developing a thrombus and CVD. Also, this will help develop better therapeutics for lowering the chances of developing thrombi and CVD.

O2.03

**9:50 EFFECT OF VOLUNTARY EXERCISE
NEUROTROPHIC FACTOR EXPRESSION AND
INNERVATIONS IN THE RAT CARDIAC MUSCLE**

Marquita Watkins¹, John Spitsbergen¹
¹Tougaloo College, ²Western Michigan University

Glial cell line-derived neurotrophic factor (GDNF) and Nerve Growth Factor (NGF) are effective neurotrophic factors that are vital to the survival and function of sympathetic, parasympathetic and sensory neurons. Our aim was to test the hypothesis that an increase in voluntary exercise will increase NGF and GDNF protein levels, as well as parasympathetic and sympathetic innervations of the atria. Eight three week old Sprague-Dawley rats were sacrificed at three weeks. Six three week old rats were given access to running wheels. Computer software was used to monitor running speeds and distances. Six age matched sedentary control rats were maintained in cages without running wheels. Exercised and sedentary animals were

sacrificed after four weeks. Hearts were removed, rinsed to remove blood and separated into left and right atria and left and right ventricle. Septum was removed from between the ventricles. The majority of the tissue samples were pulverized homogenized and the supernatant was analyzed using Enzyme linked immunosorbant assay (ELISA) for GDNF and NGF protein. The minority was stained for sympathetic innervation in the right atria. Current staining is taking place on the left atria with the sympathetic system, as well as parasympathetic in both of the atria obtained. Results showed no change in GDNF protein content of right atria or ventricles with exercise. However GDNF protein content of left atria increased with exercise. Voluntary exercise seems to increase sympathetic innervations in the right atrium.

O2.04

10:10 INTEGRIN SIGNALING AND THE MIGRATION OF HUMAN COLON CANCER CELL HCT-15

Noah Abbas, Ujjwal Rout

University of Mississippi Medical Center

Colorectal cancer (CRC) is the second leading cause of death in North America. Metastasis of colon cancer cells (their migration and colonization of distant organs) may continue even after the surgical removal of the cancerous tissue and is the primary cause of death due to CRC. Cell surface integrin receptors play important role in the migration of cells. Not much is known about the involvements of integrin receptors and specifically the integrin mediated signaling mechanism in the migration of colon cancer cells. In this study, involvements of integrins, different integrin subunits (alpha 5, alpha v, beta 1 and beta 3) and molecules that mediate integrin signaling were studied in the migration of a human colon cancer cell line (HCT-15). Results show that migration of HCT-15 cells is regulated by integrin receptors consisting of beta 1 subunit. Furthermore, migration of HCT-15 cells required activation of Focal adhesion kinase, Src kinase and release of intracellular calcium from calcium stores mediated by IP3 receptor. Surprisingly perturbation of PLC-gamma1 and MAP kinases, that are known to be involved in the integrin-mediated migration of cells, did not significantly inhibit the migration of HCT-15 cells. Results show that HCT-15 cells require integrin receptors consisting of beta 1 subunit in the migration but inherent differences in the involvements of molecules that are known to regulate integrin mediated signaling and migration of cells.

10:30 POSTER SESSION GRAND BALLROOM

P2.01

ISLET-1 EXPRESSION IN THE ADULT MOUSE HEART

Antoneicka Harris¹, Brian Snarr², Aimee Phelps², Andy Wessles²
¹Jackson State University, ²Medical University of South Carolina

Cardiovascular disease is the leading cause of death in

the United States. More than a million Americans have a heart attack each year which could ultimately lead to death or permanent damage to the heart muscle. As adult cardiomyocytes are believed to have a limited capacity to renew themselves, great attention has been focused upon developing future potential use of cardiac progenitor cells (CPCs) to treat damaged myocardium. Previous studies have suggested that there are undifferentiated cardiac cells in the adult heart. Islet-1 (Isl1) is a transcription factor that has been shown to be expressed in embryonic and neonatal cardiac progenitor cells (CPCs) as well as in the embryonic and neonatal sinoatrial node (SAN). The expression pattern of Isl1 in the adult heart is, however, unknown. In order to determine whether and where Isl1 is expressed in the adult mouse heart we used immunohistochemistry (IHC). Using a monoclonal antibody that recognizes Isl1, we found Isl1 expression in the adult mouse heart to be limited to the SAN. Our data suggests that, although Isl1 expressing CPCs are widely distributed in the embryonic and neonatal heart, its expression pattern in the adult mouse heart is restricted to the SAN. This would suggest that there is an inadequate number of CPCs in the adult mouse heart.

P2.02

MAPPING OF VISUAL ATTENTION

Gerald Stinson, Fabrice Arcizet, James Bisley
University of MS

Visual attention is necessary for visual perception, memory, and learning. This project aims to study how the brain allocates visual attention. We trained the monkeys to perform an attentional task, so that in the future we can record neuronal activity in posterior parietal cortex and visual area V4 to find correlations between the locus of attention and the activity. To start a trial for the task, the monkey had to fixate a central spot on a computer screen. Then, an array of 1, 2, 4, or 8 bars was flashed in the periphery of the monkey's visual field. After a short delay (0-200 ms), the bars reappeared and one of them may have rotated. The monkey had to make an eye movement to the location of the rotating bar to be rewarded. If no bar rotated, the monkey was rewarded for continuing fixation. We used three different conditions: spread attention (where the number of possible rotating bars varies), biased attention (where one location has a larger reward than the others), and focused attention (where a cue indicates the bar that may rotate). The behavioral performance was recorded by calculating the percentage of correct responses. We found that performance decreases according to the increased number of distractors, indicating that attention was spread, and that amount of attention to a particular location decreases as number of bars increases. We also found that performance increases in biased and focused condition, suggesting that the cue gave priority to that specific area.

P2.03**PURIFICATION AND RECONSTITUTION OF BACTERIALLY EXPRESSED AROMATASE**

Kristopher L. Harvey¹, Ashley N. Trussell¹, Stanley V. Smith², Susan E. Wellman²

¹*Murrah High School*, ²*The University of Mississippi Medical Center*

Aromatase is a breast cancer molecular target and a member of the cytochrome P450 superfamily of heme protein enzymes. It converts androgens to estrogens via a three-step mechanism. Several breast cancer drugs target aromatase and block this conversion thus eliminating one of the major signals for breast cancer cell proliferation. The goal of our research was to express, purify, and reconstitute human aromatase for subsequent functional characterization, activity measurements and biophysical studies. We began this process by subcloning the synthetic aromatase gene into the pET vector system for expression. We then plated bacteria on selective media and identified potential aromatase containing colonies. Small cultures of these colonies were induced to express proteins, lysed and subjected to polyacrylamide gel electrophoresis and subsequent western blotting with an aromatase specific antibody. We chose a clone that appeared to successfully express aromatase for further study. To try to improve the yield of aromatase, we induced cultures from this clone at different temperatures (37°C and 28°C). The results indicate that we successfully expressed human aromatase and that we achieved a higher yield of protein at 28°C. We are currently trying to improve expression yields and purify sufficient quantities of aromatase. (Supported in part by the Howard Hughes Medical Institute).

P2.04**THE EFFECT OF CEFTRIAZONE AND INTERLEUKIN-10 PRE-NATAL ADMINISTRATION ON SPRAGUE DAWLEY RATS**

Adrienne Wells¹, Kendra Wallace¹, Bennett Williams¹

¹*Tougaloo College*, ²*University of Mississippi Medical Center*

Maternal intrauterine infection has been a suggested cause of periventricular leukomalacia, (PVL), which is white matter damage in parts of the brain that delivers information between neurons and the spinal cord. PVL can affect motor skills, and has been suggested as being a possible cause of Cerebral Palsy. Intrauterine infection has also been implicated in neurobehavioral disorders in the resulting children. It has been theorized that when a pregnant woman contracts an infection her body counteracts with an inflammatory response, thus causing a neonatal inflammatory response in the fetus. The inflammatory response can increase inflammatory cytokines levels in the fetus, leading to PVL. Previous animal studies have shown that the combination of antibiotic, Ceftriaxone and anti-inflammatory cytokine Interleukin-10 (IL-10) prevents PVL type lesions and PVL related neurobehavioral alterations due to intrauterine infection. The object of this study was to determine the affect

that Ceftriaxone, IL-10, and the combination of both has on neurobehavior in the absence of intrauterine infection. Overall, the study shows that Ceftriaxone or the combination of Ceftriaxone/IL-10 increase the response to neurobehavioral testing in the absence of intrauterine infection. This suggests that Ceftriaxone itself may be improving the motor circuits potentially damaged in PVL when given prenatally.

P2.05**ELUCIDATION OF RANAVIRUS GENE EXPRESSION USING ANTISENSE MORPHOLINO OLIGONUCLEOTIDES**

Marketta Blue¹, Dexter Whitley¹, Gregory Chinchar¹

¹*Tougaloo College*, ²*University of Mississippi Medical Center*

Frog virus 3 (FV3), family Iridoviridae; genus Ranavirus, is the best characterized ranavirus and its study has elucidated the basic features of iridovirus replication. Sequence analysis indicates that ranaviruses contain ~100 open reading frames of which only 25% have known function. To elucidate FV3 gene function, antisense morpholino oligonucleotides (asMOs) were used to knock-down gene expression. In initial experiments, the following genes were targeted: the major capsid protein (MCP), an 18 kDa immediate-early protein (18K), and a viral homolog of the largest subunit of RNA polymerase II (vPol-II α). Fathead minnow (FHM) cells were treated with gene specific asMOs, infected with FV3, labeled with [35S]-methionine, and analyzed by SDS-PAGE. Viral replication was measured by plaque assay and virion assembly and examined by transmission electron microscopy (TEM). Inhibition of gene expression by asMOs resulted in a marked reduction in the synthesis of the targeted protein. The accumulation of atypical elements within viral assembly sites was observed in cells treated with asMOs targeting the MCP. Inhibition of 18K protein synthesis resulted in no detectable phenotypic changes in vitro. Also, the asMO targeted against the MCP and vPol-II α products resulted in a drop in viral titers, whereas knockdown of the 18 kDa protein did not. Together, these results show the significance of using asMOs for the elucidation of Ranavirus gene expression.

P2.06**SEROTONIN MEDIATED CA²⁺ SIGNALING DYNAMICS IN PULMONARY ARTERIAL MYOCYTES AND THE COMBINED INFLUENCE OF MATURATION AND HIGH-ALTITUDE EXPOSURE**

Antoinette Dawson¹, Zia Shariat¹, Sean Wilson¹

¹*Tougaloo College*, ²*University of Mississippi School of Pharmacy*

The pulmonary vasculature regulates the flow of blood through the lung in response to blood oxygenation. Under normal oxygenated conditions, a dynamic equilibrium is established between the pulmonary vasculature and the lungs, which maintains the ratio of ventilation to perfusion. However, long-

term exposure to chronic hypoxia leads to changes in the pulmonary vasculature, which aids in the development of pulmonary hypertension. Studies also show that long-term maternal hypoxia compromises lung development in the fetus and may be a risk factor for the development of Persistent Pulmonary Hypertension in Newborns (PPHN). Unlike systemic hypertension, pulmonary hypertension is difficult to treat. Serotonin is an inflammatory mediator that may play an important role in the development of PPHN and pulmonary hypertension. Pulmonary arterial smooth muscle cells (PASMCs) contract in response to the release of serotonin. This study tested the hypothesis that hypoxia leads to alterations in the calcium signaling dynamics in the sheep PASMCs in response to serotonin exposure. This was examined by using confocal fluorescence microscopy of PASMCs in-situ from fetal and adult sheep that were loaded with the calcium indicator Fluro-4. The results show that serotonin increases calcium signaling responses in both normoxic and hypoxic fetal and adult sheep PASMCs. These findings provide the first evidence that maturation and long term hypoxia alter calcium signaling.

P2.07

THE REGULATION OF TRANSLATION OF THROMBOSPONDIN-1 BY GLUCOSE IN MICROVASCULAR ENDOTHELIAL CELLS

Jo'Nee Collins³, Olga Stenina¹, Sanghamitra Bhattacharyya¹
¹Cleveland Clinic, Molecular Cardiology, J.J. Jacobs Center for Thrombosis and Vascular Biology, ²The University of Akron, Ronald E. McNair Post Baccalaureate Achievement Program, ³Mississippi Valley State University, Department of Natural Sciences

Accelerated development of atherosclerotic lesions remains the most frequent and dangerous complication of diabetes, accounting for 80% of deaths among diabetics. Although there are alternatives to regulate hyperglycemia with the use of insulin and different diets, this still remains a problematic issue. We also want to emphasize the protein Thrombospondin -1 (TSP-1). We previously reported the increase in expression of TSP-1 in the large arteries of diabetic animals. This caused the mRNA and protein levels to be up-regulated in response to high glucose. In this project will help find a way to regulate the TSP-1 protein when it comes in contact with hyperglycemia. We are using different methods such as transient transfections, luciferase Assay, SDS-Page with a Western Blot in order for us to get an idea of how much this affects this TSP-1 protein. We also previously found some inhibitor in micro RNA sequences that 3' UTR of TSP-1 untranslated region of mRNA that will help us find out what exactly is causing this block in protein translation. We will also be using the sequences found 5'UTR, 3'UTR, 3'5'UTR, and PGL3 (as a control) of TSP-1 mRNA in all of our transfections as a decoys for our RF/6A cells. This study will help determine the molecular mechanisms of the post-transcriptional cell type and cell origin-specific down-regulation of TSP-1 expression by high glucose in

microvascular endothelial cells. As a result we may discover new therapeutic targets for treatment of vascular complication of diabetes.

P2.08

EFFECT OF COMBINING HDACI TSA WITH HERCEPTIN® (TRASTUZUMAB) ON CELL PROLIFERATION, SURVIVAL, & PROGRAMMED CELL DEATH IN SKBR3 BREAST CANCER CELL LINE

Luella Jones, Susanne Radke, Kimberly Lezon-Geyda, Lyndsay Harris

Yale School of Medicine; Department of Medical Oncology

HER2- positive breast cancer is a breast cancer that tests positive for a protein called human epidermal growth factor receptor-2 (HER2), which promotes the growth of cancer cells. Trastuzumab (Herceptin®), a monoclonal antibody was designed to target the HER2 protein and kill the cancer cells and decrease the risk of recurrence. Previous research in our lab has showed patients' bodies to build up a type of resistant to the drug and causing it to reach the stage of ineffectiveness. Therefore, a need for a new drug is strongly recommended. HDACi is a new class of anticancer agents that are known to decrease cell proliferation, survival, and increase apoptosis in cancer cells. Trichostatin A (TSA) is an HDACi that we focused on. We hypothesized that TSA, TSA/Herceptin will have a more profound effect on cell proliferation, survival and induce apoptosis than Herceptin monotherapy. In this study SkBr3 breast cancer cell line was either left untreated, treated as a single agent with Herceptin, TSA, or in combination with both Herceptin and TSA at the same concentrations. Cell Viability assay was conducted to determine the growth rate of cells during TSA treatment. In conclusion, TSA inhibits cell proliferation, survival and induce apoptosis in SkBr3 breast cancer cell line.

P2.09

IDENTIFICATION OF THE MICROBIAL COMMUNITY DURING DECAY OF NATURALLY RESISTANT CEDAR AND CHEMICALLY TREATED PINE

Mercedes Willis, Collette Davis, Pierre Wilson, Andrea Brown, M. Lynn Prewitt

Mississippi State University

The microbial decay of wood is a critical process in carbon recycling and is essential for maintaining a healthy forest ecosystem. Yet the microbial community responsible for decay of various woods is not well established. Wood derived from gymnosperm angiosperm trees is composed primarily of cellulose, hemicellulose and lignin. There is a small component called extractives that is responsible for the natural durability in certain woods. Highly decay resistant trees include cedars, osage-orange, red mulberry, and walnut; moderately decay resistant trees include bald cypress, oaks, Douglas-fir, honey locust and certain pines; slightly resistant or nonresistant trees include cottonwood, hackberry, magnolia, and sweetgum. It has

longed been accepted that wood decay is the result of a community of different microorganisms working synergistically to degrade wood into a usable food source. It has further been suggested that the sequence of microbial colonization of wood that leads to wood decay is: bacteria, moulds, stain-fungi or soft rot fungi, and climaxing with the basidiomycetes wood decay fungi. The objective of this research is to identify predominant microorganisms present during microbial colonization of different resistant wood species in a high decay soil environment. The hypothesis for this aim is that a different microbial community profile exists when highly resistant woods compared to low resistant woods undergo degradation in soil in a forest ecosystem. Wood and soil samples were extracted for DNA, amplified with bacterial and fungal specific primers, cloned, sequenced and queried against GenBank for identification.

P2.10

COMPARISON OF MODULUS OF ELASTICITY, DECAY AND MICROORGANISMS DURING DECAY OF NATURALLY RESISTANT AND TREATED WOOD.

Pierre Wilson, Andrea Brown, Colette Davis, Mercedes Willis, M. Lynn Prewitt

Mississippi State University

Wood decay is a complex phenomena caused by insects and microorganism. The strength of wood is dependent on its components: cellulose, hemicellulose and lignin. It has long been established that wood decay is caused by a community of microorganisms including bacteria, molds, and fungi. The major decomposers are the basidiomycetes which include white rot and brown rot fungi. White rot fungi degrade all major components of wood while brown degrade only cellulose and hemicellulose. The objective of this study is to determine the loss in strength, decay and microorganisms present during decay of naturally resistant and chemical treated in a soil environment. The loss in strength will be determined by the loss of modulus of elasticity (MOE). Preliminary results indicate that strength loss occurred faster in the control pine treatments than the naturally resistant cedar or ACQ-treated pine. Moisture content data indicates a possible inverse correlation with MOE loss. Bacteria, actinomycetes and fungi were determined in soil and wood at 2, 4, 6, 8 and 10 month sampling times.

P2.11

CLONING THE PEX1 AND SOX2 GENES OF CHICKEN

Whitney Logan¹, Dan Peterson²

¹*Tougaloo College*, ²*Mississippi State University*

In the current research, the chicken genome was studied because of its relative similarity to the human genome. The objective of the study was to clone part of the peroxisome biogenesis factor one (PEX1) and sex determining region Y-box two (SOX2) chicken genes to use for further research purposes. DNA was extracted from chicken blood. Primers were designed

for each gene by using the Primer3 program. The DNA was cloned by the polymerase chain reaction (PCR) technique. Gel electrophoresis was performed to identify which of the primers worked. All of the primers worked and the best primers for gel extraction were noted. PCR was repeated with the primers in order to perform gel extraction. After gel extraction was performed to extract and purify the DNA, the DNA was cloned by the addition of 3'A overhangs, ligation, and transformation. The blue white screen technique was used to assure that ligation was successful. Extraction of the plasmid DNA consisted of inoculation of colonies from the blue white screen, mini-prep for plasmids and digestion using Eco RI. Gel electrophoresis was performed to observe any inserts that were present. In conclusion, PEX1 and SOX2 were successfully cloned.

P2.12

QUANTITATIVE GENE EXPRESSIONS OF PROTAMINE TRANSCRIPTS IN SPERMATOZOA: IMPLICATIONS OF PRM 1 ON MAMMALIAN MALE FERTILITY

Shernica Ferguson¹, Attalya Kaya², Jean Feugang¹, Erdogan Memilli¹

¹*Mississippi State University*, ²*Alta Genetics, Inc.*

The protamine gene cluster is home to at least three genes, *prm1*, *prm2*, and transition protein 2 (*TNP2*). These genes are essential for the correct re-packaging of the haploid genome during late spermatogenesis where there is a morphological transition from round spermatids to mature spermatozoan. Their expression can be used as biomarkers for fertility because the expressions of these genes seem to be driven by a testis-specific mRNA transcript. The objectives of this research were to: 1) Identify the degree of change in expression of PRM 1 transcripts according to the fertility rates of the bull sample size (N =19) and 2) Identify the functional domains of the PRM-1 gene and gene products across different species. The bioinformatics analysis of *prm1* showed that cattle has a 52% homology with humans and 64% homology with mice. A dotplot analysis of sequence similarities and a multiple sequence alignment of the *prm1* gene were constructed to identify the functional domains of the gene from various species. Our findings show that the conservation of the *prm1* sequences across species indicates its importance in fertility. Furthermore, there is evidence to suggest that altered levels of protamines, specifically *prm 1*, may result in an increased susceptibility to damage of spermatozoan DNA causing infertility or deficient results in reproduction. Future studies will focus on the precise roles of *prm1* and *prm2* transcripts in the bovine, which will increase the understanding of the roles of mRNAs in bull spermatozoa to contribute to the efficiency of fertilization.

P2.13
FUNCTIONAL RELATEDNESS OF VIBRIO GENOMES

Fanen Kwembe, Shyretha Brown, Wellington Ayensu, Hari Cohly, Raphael Isokpehi

Jackson State University

Vibrio is a family of gram-negative bacteria that can cause a variety of illnesses in humans. Vibrio infections occur by ingestion or direct contact with the bloodstream generally with an open wound. There are at least 10 human pathogens associated with the genus Vibrio. There has been an increasing number of sequenced genomes of Vibrio species. The ability of Vibrio species to cause disease is dependent on the gene complement of the species genome. The Genome Browser Tool on the Integrated Microbial Genome (IMG) database was used to obtain the genome statistics of both finished and draft genomes of Vibrio species. There were 7 finished genomes and 22 draft genomes of Vibrio. Genome Clustering Tool on the Integrated Microbial Genome (IMG) database was used to cluster Vibrio genomes according to a functional profile called Clusters of Orthologous Groups (COG) of proteins. Two clustering profiles: Hierarchical and Correlation Matrix were generated for the genomes. *V. harveyi* ATCC BAA-116 had the largest gene count of the finished genomes which is 6263. *V. fischeri* ES114 had the smallest gene count of the finished genomes which is 3980. The minimal relatedness observed was a correlation coefficient of 0.56. *Vibrio harveyi* is a pathogen of fish and invertebrates while *V. parahaemolyticus* is the leading cause of seafood-associated gastroenteritis in the United States. *V. vulnificus* and *V. cholerae* are clustered together and they are the most virulent of the genus Vibrio. *Vibrio cholerae* serotype O1 El Tor N16961 strain that causes the pandemic disease cholera.

P2.14
ADENOCARCINOMA COLORECTAL CANCER (HT-29) CELLS IN RESPONSE TO ARSENIC TRIOXIDE

Reginald Kimble, Jacqueline Stevens, Alice Walker, Paul Tchounwou

Jackson State University

Arsenic is a heavy metal that exhibits a high degree of toxicity. This compound is known to cause skin and lung cancer. Arsenic trioxide (As_2O_3) has been shown to induce apoptosis through oxidative stress in colon cancer cell lines. However, the molecular mechanisms of arsenic trioxide toxicity remain to be elucidated. Hence, the aim of the present study was to investigate the cytotoxic and genotoxic effects of As_2O_3 on adenocarcinoma colorectal cancer (HT-29) cells and to explore the molecular mechanisms of its action. To achieve this goal, HT-29 cells were cultured according to the standard protocols following by exposure to various doses (0, 2, 4, 6, 8, 10, 12, 14 $\mu g/ml$) of arsenic trioxide for 48 h in complete growth medium. The cytotoxic effect of As_2O_3 in human colon cancer cells was assessed by the trypan blue exclusion assay. The genotoxic effect of arsenic-induced DNA damage HT-29 cells was determined by the alkaline single cell gel electrophoresis

(Comet) assay. The Comet assay was carried out to determine DNA damage as represented by comet tail-length. The number of dead cells increased as the concentration of As_2O_3 increased. The study confirms that arsenic trioxide causes DNA damage at the doses used as revealed by the comet assay. In conclusion, the results show that arsenic trioxide exhibits cytotoxic and genotoxic effects to human colon cancer cells mediated through oxidative stress.

P2.15
ALPHA 2-HS GLYCOPROTEIN (FETUIN-A) ENHANCES MURINE MAMMARY TUMOR GROWTH

Yakisha Partee, Bobby Guillory, J. Ocheing

Meharry Medical College

The long term goal is to delineate the role of Alpha 2-HS Glycoprotein (Fetuin-A), a systemic ectopic calcium inhibitor, in mammary tumor progression. To accomplish this goal, we had: 1) to generate a phenotypic colony, that all the progeny express the oncoprotein polyoma middle T antigen (PyMT), known to produce spontaneous murine mammary tumors in approximately 95 days and one third of these progeny express fetuin-A; wild type (wt), heterozygous and null respectively; 2) to determine the affect of fetuin-A expression on tumor progression hyperplasia, mammary intraepithelial neoplasia, early and late adenocarcinoma. To understand the morphologic role of fetuin-A on premalignant and malignant lesions, we examined early and late mammary tumor growth. Furthermore, the rationale for using this model is that it closely mimics the four stages associated with tumor progression observed in human mammary adenocarcinoma; hyperplasia, mammary intraepithelial neoplasia, early carcinoma and late carcinoma. We genotyped the mice, tested DNA for PYMT and fetuin, let the mice live until endpoint, and processed any tumor tissue. Histological analysis characterized (physical measurement of tumor, necrotic tissue and host immune response) and immunological analysis characterized by (proliferation, apoptosis, matrix degrading enzyme and hypoxia index) in early and late tumor growth. Results showed that mice with higher levels of fetuin-A advanced faster through tumor progression. Assessing the expression levels of fetuin-A provided critical information to the role fetuin-A plays in the multistep framework of tumor growth and more importantly fetuin-A could be targeted as a predictor of tumor behavior.

P2.16
AN ANALYSIS OF THE PROMOTER REGION OF ADP-RIBO AND RUBISCO WITHIN *KARENIA BREVIS* USING RAPID AMPLICATION OF GENOMIC ENDS

Angela Meadows¹, Timothy McLean¹

¹*Belhaven College*, ²*University of Southern Mississippi*

Karenia brevis is a dinoflagellate responsible for some harmful algal blooms (HABs) also known as 'red tides'. As a dinoflagellate, *K. brevis* possesses several times the amount of genomic DNA as humans. *K. brevis* also lacks TATA boxes,

genetic elements found in gene promoters and used for initiating mRNA transcription. Research to date suggests that control of gene expression in dinoflagellates occurs translationally rather than transcriptionally. It is the mechanism by which *K. brevis* regulates translational control that is of interest. Preliminary data have found *K. brevis* RNAs whose sequences are the reverse complement to specific mRNAs. We hypothesize a mechanism of translational control whereby these unusual RNAs, when present, bind mRNAs and block ribosomes from translating mRNAs. Rapid Amplification of Genomic Ends assays have yielded 700-1000 base pair regions of DNA upstream from the ADP-ribosylation and rubisco genes as well as the upstream regions of their respective reverse complement coding regions. These DNA sequences were cloned and amplified by polymerase chain reaction. The genes are awaiting sequencing to determine if any new information for the gene and/or promoter sequence has been collected. The isolation of additional upstream sequence will continue until the promoter regions of the genes are fully captured. The promoter regions of these and other genes in *K. brevis* will then be compared to find sequence elements in common among the promoters or unique elements present in only the coding or the reverse complement promoters.

P2.17

INFLUENCE OF ELEVATED PLASMA THYROXINE ON OLFACTORY BULB RETINOID RECEPTORS AND NEUROTROPHINS

Lauren Roach¹, Andrea Allen², Eric Walters²
¹Alcorn State University, ²Howard University

Recent findings in our laboratory observed that in adult mice that were given 0.003% tetraiodothyronine (thyroxine, T4) in their drinking water for fourteen days, there was a significant increase in the number of neuronal precursors in the olfactory bulb (OB) and a decrease in glial fibrillary acidic protein (GFAP), a neurotrophin. Several studies indicate that retinoic acid is a key regulator in postnatal adult neurogenesis in the OB. Retinoic acid (RA) is a lipophilic molecule synthesized from Vitamin A that functions to control gene expression, is particularly active in transcription, and plays an important role in the development and maintenance of the nervous system. The presence of retinoid binding proteins and RA receptors (RARs) is of great interest because the heterodimeric partnering between RARs and thyroid hormone receptors (TRs) suggests that a change in circulating thyroid hormone (TH) concentration could potentially impact neurogenesis. In this study, we extended our observations to investigate effect of the short term elevation of T4 levels on RARs and neurotrophins in the OB of these mice. Western Blot analysis of the OB tissue revealed that there was a statistically significant, 44% decrease in RAR β expression in the treated animals. We further mapped the immunophenotypes of various retinoid receptors, doublecortin, GFAP, tyrosine hydroxylase, and other OB cellular markers in response to the elevated T4 status. Our results indicate that altered thyroid

hormone levels may have a profound impact upon retinoid and neurotrophin signaling in adult neuronal tissue.

P2.18

OVERPRODUCTION OF POLY- β -HYDROXYBUTYRATE IN THE *AZOTOBACTER VINELANDII* MUTANT THAT DOES NOT EXPRESS SMALL RNA ARR F

Rajkumar Pyla¹, Tae-Jo Kim², Juan L. Silva², Yean-Sung Jung¹
¹Department of Biochemistry and Molecular Biology, Mississippi State University, ²Department of Food Science, Nutrition and Health Promotion, Mississippi State University

Azotobacter vinelandii contains an iron-regulatory small RNA ArrF that may regulate the expression of the proteins involved in central carbon metabolism and aerobic respiration. The metabolic activity of these pathways affect the yield of poly- β -hydroxybutyrate (PHB), a polymer of industrial importance. The objective of this study was to determine whether ArrF has a strongly impact on PHB production in *A. vinelandii*. A *vinelandii* mutant having a deletion of the entire *arrF* gene was created and its PHB content was determined with HPLC after converting PHB to crotonic acid by treatment with a hot concentrated sulfuric acid. The mRNA levels of PHB operon genes were determined by real-time RT-PCR. The deletion of this *arrF* gene resulted in a 300-fold increase in the PHB production. Iron limitation and decreased aeration elevated the production. SDS-PAGE revealed that the mutant overexpressed the proteins of ~39 and 27 kDa, suggesting that they might be PhbA and PhbB in the PHB operon. Real-time RT-PCR revealed that *phbB*, *phbA* and *phbC* were indeed upregulated ~61, 18 and 8 fold, respectively, in the mutant, as compared to the wild type. The transcript of the operon activator PhbR was also ~11 times more abundant in the mutant. The analysis of *phbR* transcript predicted a region of complementarity that could potentially basepair with ArrF. These results suggest that ArrF represses the expression of PhbR in an antisense manner and derepression of this activator in the mutant elevates the expression of *phbB*, *phbA* and *phbC*, resulting in PHB overproduction.

P2.19

DO EMBRYONIC STEM CELLS UNDERGO SENEESCENCE FOLLOWING OXIDATIVE STRESS?

Andrew Dunn, Yan-Lin Guo, Samjwal Chakraborty
 University of Southern Mississippi

Embryonic stem cells (ESCs) are characterized by their capacity to differentiate into different cell types and by their self-renewal through multiple replication passages. While it has been observed that ESCs undergo apoptosis following various physiological stresses, it is unknown if ESCs enter a state of senescence prior to entering apoptosis. Senescence, a state of replicative arrest, is used as a defense against carcinogenesis and possibly responsible for organism aging. Mouse embryonic

fibroblasts (MEFs) have been studied as a senescence models. They express markers of senescence, such as, p16, p19, and p53 and markers Gstm2 and Sod2 following oxidative stress. Two experiments were conducted in which ESCs and MEFs were given 24h treatment of 50 μ M H₂O₂ while another line of ESCs and MEFs grew for five days, received a 2h shock treatment of 150 μ M H₂O₂ and grew for another five days. Following growth, RT-PCR was conducted to measure the relative expression level of senescence and redox markers. Results indicated that 24h cultured ESCs showed minimal difference in expression of p16, p19, and Sod-2. 2h treated ESCs showed increases in all markers, particularly p16 and Gstm2. The MEFs had expression level increases indicative of senescence, but 24h treated ESCs showed little variation in expression levels. This is understandable since studies with MEFs exhibit senescence after 48 hours exposure to oxidative stress. H₂O₂ treatment of ESCs showed gene expression that related to senescence, but other criteria will need to be examined to verify ESC senescence.

P2.20

QUANTITATIVE PCR VALIDATION OF NOVEL RNAs IN STREPTOCOCCUS PNEUMONIAE

Ann Marie Langford¹, Ranjit Kumar², Pratik Shah³, L. Allen Shack², Shane C. Burgess²

¹Mississippi University for Women, United States, ²Mississippi State University, United States, ³University of Mississippi Medical Center, United States

Streptococcus pneumoniae is a gram-positive, alpha-hemolytic diplococcus bacterium. It is a human pathogen that can cause infections such as pneumonia, meningitis, acute sinusitis, brain abscess, and septic arthritis. Our objective was to validate predicted novel RNAs encoded in the *S. pneumoniae* genome using reverse transcription real-time PCR. Eight novel predicted small RNAs, along with one novel predicted gene (mRNA), were on RNA extracted from *S. pneumoniae* cells. The expression of a particular DNA strand in a particular ORF was calculated by subtracting the average Ct value of the strand specific RT reactions from the average Ct value of the no-primer (control) PCRs. We identified all of the predicted small RNAs and the novel predicted gene and, in addition, differential expression between strand specific primers.

THURSDAY AFTERNOON OAK ROOM

02.05

1:30 IDENTIFICATION OF TARGET PROTEINS OF A COTTON FIBER RING-TYPE UBIQUITIN LIGASE

Meng-Hsuan Ho, Din-Pow Ma

Mississippi State University

The ubiquitin-proteasome proteolysis pathway is responsible for the degradation of abnormal and short-lived proteins to regulate many important biochemical activities in eukaryotes. The ubiquitination of target proteins for degradation is a sequential action requiring 3 enzymes, an ubiquitin-

activating enzyme (E1), an ubiquitin conjugating enzyme (E2), and an ubiquitin ligase (E3). Using a cotton E2 (GhUBC1) as bait in a bacterial two-hybrid system, we had previously cloned two unique cotton fiber cDNAs, GhRIN1 and GhRIN2, encoding RING type ubiquitin ligases. GhRIN1 and GhRIN2 are expressed in cotton fiber in a developmentally regulated manner, suggesting that the ubiquitin-proteasome pathway may regulate fiber growth and development. The GhRIN1 protein derived from the full-length GhRIN1 cDNA consists of 338 aa and has the highest homologies with two plant E3 homologs, AAN18152 from *Arabidopsis thaliana* (encoded by At3g19950) and BAD67937 from *Oryza sativa*, by BLAST searches. GhRIN1 and GhRIN2 contain eight His and Cys residues (C3H2C3) in the RING domain and are classified as the RING-H2 proteins. To understand the function of the GhRIN1 protein, GhRIN1 was tagged with GST (glutathione-S-transferase) and over-expressed in *E. coli*. The over-expressed GhRIN1 protein had the E3 ligase activity and was capable of catalyzing the formation of polyubiquitin chains via *in vitro* auto-ubiquitination. A fiber-specific lipid transfer protein (LTP) was identified as one of the target substrates of GhRIN1 using the bacterial two-hybrid system. An *in vitro* pull down assay confirmed that LTP was indeed bound to GhRIN1.

02.06

1:50 EXPRESSION OF CHAPERONE PROTEINS INFLUENCES SPONTANEOUS FORMATION OF THE [URE3] PRION IN SACCHAROMYCES CEREVISIAE

Stefanie Zegowitz, Mary Oyeleye, Katie Brinkman, Ross E. Whitwam

Mississippi University for Women

The [URE3] prion of *Saccharomyces cerevisiae* is the infectious form of the yeast Ure2 protein. Like other prions, it can be propagated by transferring the protein in its infectious form from one cell to another. However, the prion form of the Ure2 protein can also spontaneously arise in prion-free yeast cells at a very low rate. The rates of spontaneous [URE3] formation in yeast growing in culture vary dramatically over time. These variations in spontaneous formation rates may not be due entirely to the stochastic nature of the initial misfolding of functional Ure2 protein to its prion conformation. We used real-time PCR to follow the relative expression levels of the Ure2 protein and yeast chaperone proteins Hsp104, Ydj1, Ssa1, and Ssa2 while the cells were growing in culture. The levels of these proteins fluctuated in patterns that suggest their levels all have an effect on spontaneous [URE3] formation.

**O2.07****2:10 DELETION OF CHAPERONE PROTEIN GENES EFFECTS RATES OF SPONTANEOUS FORMATION OF THE [URE3] PRION IN SACCHAROMYCES CEREVISIAE**

Khristina Booth, Stefanie Zegowitz, Katie Brinkman, Ross E. Whitwam

Mississippi University for Women

The chaperone proteins Hsp104, Ydj1, Ssa1, and Ssa2 are believed to play a role in the propagation of yeast prions. In order to determine whether these proteins also play a role in the establishment of prion states in yeast, we created deletion strains of *Saccharomyces cerevisiae* lacking the genes for each of these proteins. The genes in question were knocked out of the host strain by recombining the NAT gene, conferring resistance to the antibiotic nourseothicin, into each gene's locus. We then followed the rates at which the [URE3] prion spontaneously formed at various time points in liquid cultures of each of the deletion strains and compared the rates to those found in the host strain with each of the genes intact. All of the deletion strains were able to spontaneously form the [URE3] prion, indicating that none of the genes by itself was essential for prion formation. The deletion strains did however show altered rates of spontaneous [URE3] formation, suggesting that each contributes to the establishment of the prion state.

O2.08**2:30 USING TORSINA KNOWCKDOWN CELL LINES AND FUNCTIONAL ASSAYS TO UNDERSTAD THE CELLULAR FUNCTION OF THE AAA+ ATPASE, TORSINA.**

Joshlean Fair, Phyllis Hanson, Abby Buchwalter, Gena Stephens
Washington University in St. Louis Medical Center

TorsinA is an ATPase chaperone protein in which deletion of a single glutamic acid residue causes early-onset torsion dystonia (EOTD). TorsinA is found within the lumen of the endoplasmic reticulum (ER)/nuclear envelope (NE) network but its normal function is not known. This project seeks to understand the cellular function of TorsinA by characterizing the phenotype of cells expressing reduced levels of TorsinA. A general assay of cellular viability was used to screen for changes in sensitivity to various stresses following torsinA depletion. The effects of a six hour H₂O₂-induced oxidative stress on cell viability were not different between the wild type and knockdown cells. Similarly, the effects of tunicamycin and thapsigargin-induced ER stress on cell viability reveal little difference in protective reactions between the cell lines. To look for possible morphological differences in the NE and its constituent proteins, we carried out immunofluorescent staining for a number of NE components. Subtle mislocalization of nuclear pores, Sun2, and Emerin proteins in the knockdown cell lines was noted. More dramatically, we found that the number of abnormally shaped nuclei is significantly increased in the knockdown cell line. This suggests that TorsinA has a structural role in maintaining the normal organization of the NE. Finally,

western blots were used to determine if expression of suspected torsinA interactors is affected by reduction of torsinA. Expression of LULL, a known ER-binding partner to TorsinA, is reduced in the TorsinA knockdown cell line.

O2.09**2:50 THERMALLY TARGETED DELIVERY OF AN AKT INHIBITORY PEPTIDE FUSED TO THERMALLY RESPONSIVE TAT-ELP1 POLYPEPTIDE**

Channing Sly¹, Iqbal Massodi², Drazen Raucher²
¹*Tougaloo College*, ²*University of Mississippi Medical Center*

Current issues faced with chemotherapy treatment of solid tumors are systemic toxicity due to a lack of specific delivery of the drugs to the tumors. In an attempt to minimize systemic toxicity, we designed a thermally responsive polypeptide inhibitor which can be targeted to the tumor site on application of hyperthermia. We hypothesized that there would be targeted delivery of an Akt derived peptide. The design of this polypeptide was based on ELP, a biopolymer composed of the pentapeptide repeat. ELP is a thermally responsive macromolecule that reversibly aggregates in response to heat, and has a phase transition temperature near 41°C. The polypeptide Tat-ELP1-Akt was expressed and purified from *E. coli*. The pancreatic carcinoma cell line Mia-Paca-2 cells were treated with the Tat-ELP1-Akt polypeptide for 1h at 37°C or 42°C. It was found that cells treated with thermally responsive Tat-ELP1-Akt had a survival rate of 10-20% at 42 °C as compared at 37 °C. There was no effect of heat on cells as untreated cells had a survival rate of 99% at 37°C and 98% at 42°C. The large reduction in cell proliferation in cells treated with Tat-ELP1-Akt at 42°C was due to the ELP-based phase transition of Tat-ELP1-Akt polypeptide, therefore showing that Tat-ELP1-Akt inhibits Mia-Paca-2 cell proliferation in combination with hyperthermia.

O2.10**3:10 INDUCTION OF APOPTOSIS BY SOLENOPSIN B: EVALUATION BY DNA MICROARRAY AND RT² PROFILERTM PCR ARRAY ANALYSIS.**

Robert Sample¹, Donna Sullivan¹, Kashonda Kelley¹, Robin Rockhold¹, H.M.T. Bandara Herath², N.P.D. Dhammika Anayakkara²

¹*University of Mississippi Medical Center*, ²*University of Mississippi*

The effect of synthetic fire ant venom alkaloid Solenopsin B (Sol B) on the human monocytic cell line U937 was examined to determine its ability to induce apoptosis and efficacy as a therapeutic agent. Sol B treated cells displayed a >50% reduction in viability along with DNA laddering, a hallmark of apoptosis. The apoptosis mechanism was further examined using DNA microarrays and quantitative RT-PCR (qRT-PCR). U937 cells were incubated in the presence of Sol B and total cellular RNA isolated. cDNA was synthesized, labeled

with cy3/cy5 and hybridized to microarrays or used in qRT-PCR RT² Profiler™ PCR array analysis. Microarray analysis revealed that 661 genes and 620 ESTs were up regulated >1.5 fold, including several apoptosis and cell cycle genes. PCR arrays representing functional gene groupings of 90 apoptosis and 92 cell cycle genes showed up regulation of >90% and >70% respectively. Genes examined using both microarray and qRT-PCR showed correlations of ~93% for apoptosis and ~79% for cell cycle genes. Further, transmission electron microscopy revealed Sol B treatment resulted in loss of cell membrane integrity further verifying the ability of Sol B to induce apoptosis. Collectively these findings indicate that Sol B induced programmed cell death in human cells by triggering the apoptotic pathway.

FRIDAY MORNING OAK ROOM

9:00 Opening Remarks

O2.11

9:10 EXPRESSION OF YIN, A PUTATIVE OLIGOPEPTIDE TRANSPORTER, IN THE REPRODUCTIVE TRACT OF DROSOPHILIA

Kathy Butler¹, Yael Heifetz², Paul Mack¹

¹Mississippi University for Women, ²Hebrew University of Jerusalem, Israel

It has been well documented that male *Drosophila melanogaster* sperm and associated proteins effect, sometimes negatively, the reproductive system of females. This may have arisen due to sexual conflict and sperm competition. Not much is understood how females respond to these effects. We hypothesize that mated females will have a higher expression than unmated females of the yin gene, which putatively codes for a protein involved in oligopeptide transport and whose expression is known to be mating-responsive. Using the cDNA from the uterus, rectum, seminal receptacle, and spermathecae of mated vs. unmated females, we performed real-time PCR on the cDNA samples with yin and rp49 primers to determine the relative expression of the yin gene in the different samples.

O2.12

9:30 CHARACTERIZATION OF THREE NEW ESCHERICHIA COLI SPOR DOMAIN PROTEINS INVOLVED IN CELL DIVISION

Renada Scott, S.J. Ryan Arends, David S. Weiss Weiss
University of Iowa

There are three newly discovered *Escherichia coli* SPOR domain proteins, DamX, DedD, and RlpA. These proteins localize to the septal ring of *E. coli*. Single mutant and double mutants were tested for the effects on cell length and sensitivity to deoxycholate. The combination of a loss of DamX and DedD results in a greater degree of filamentation while either mutation has a large degree of sensitivity to deoxycholate growth. Also

localization studies of SPOR domains of genes from *Aquifex aeolicus* and *Cytophaga hutchinsonii* bacteria suggest that the SPOR domain itself recognizes a previously unknown feature of septal peptidoglycan.

O2.13

9:50 ANTISENSE TECHNIQUES AS AN APPROACH TO ELUCIDATING RANAVIRUS GENE FUNCTION.

Robert Sample, Dexter Whitley, Jeffrey Henegar, Gregory Chinchar

University of Mississippi Medical Center

Viruses of the genus *Ranavirus*, family *Iridoviridae*, are a group of large, icosahedral dsDNA viruses which have emerged as new pathogens of poikilothermic vertebrates. To confront their spread, it is vital to understand the mechanisms which control virus replication, host-range, and pathogenesis. Therefore, Frog virus 3 (FV3), the ranavirus type species, was chosen as the model system. The FV3 genome has been completely sequenced and ~25% of the genes have recognized functions whereas the remaining ~75% have no known function. An antisense approach using RNA interference (RNAi) and antisense morpholinos (asMOs) was chosen to identify gene function and determine the requirements for replication in vitro and pathogenesis. The major capsid protein (MCP), the viral homologue of RNA Polymerase II (vPol-II α), myristolated membrane protein (MMP), ICP-46 (46K), and the cytosine DNA-methyltransferase (DMT) were targeted using gene specific siRNAs or asMOs. Reductions of >80% in gene expression and >90% in viral titers were observed along with reductions in cytopathic effect. Transmission electron microscopy revealed reductions in virion assembly and production of atypical elements. These results support antisense techniques as a way of identifying and elucidating the function of genes involved in viral replication and pathogenesis.

O2.14

10:10 MUTATION OF OPIOID-RECEPTOR-LIKE 1 RECEPTOR AT TWO POTENTIAL PHOSPHORYLATION SITES, S351 AND S363, TO ALANINE

Ngoc Dang¹, Hibah O. Awwad², Kelly M. Standifer²

¹Mississippi University for Women, ²University of Oklahoma Health Sciences Center

The opioid receptor-like 1 receptor (ORL1) is an opioid receptor that belongs to a G-protein coupled receptor family found in the central nervous system. After receptor activation with its agonist, Orphanin FQ, certain amino acids in the ORL1 receptor become phosphorylated by kinases. This mechanism mediates the receptor desensitization that leads to drug tolerance, wherein higher drug doses are required to achieve similar responses. Our objective was to mutate two amino acids on the ORL1 receptor, serines 351 and 363 to alanines and determine the effect of these mutations on receptor function and regulation. The mutants ORL1, S351A and S363A, will help delineate the role of these potential phosphorylation sites in receptor



desensitization since those two alanine residues cannot be phosphorylated. The mutation process was done using site-directed mutagenesis. The plasmid of the human ORL1 receptor was our template and the primers were designed with alanine codons replacing the serines. Receptor plasmids were then purified, sequenced, and DNA software was used to confirm the presence of the mutation. DNA sequencing results confirmed the presence of the S351A mutation on the ORL1 receptor, whereas the S363A mutation was absent. The S351A ORL1 receptor was successfully constructed while the receptor S363A ORL1 receptor was not.

O2.15

10:30 OBSERVATIONAL STUDY OF SILDENAFIL MONOTHERAPY IN PATIENTS WITH IDIOPATHIC AND SCLERODERMA-RELATED IDIOPATHIC PULMONARY ARTERIAL HYPERTENSION

Hilliary Bland¹, Adel Boueiz², Lynette Todd-Brown², Paul Hassoun²

¹Mississippi Valley State University, ²Johns Hopkins University

Pulmonary arterial hypertension (PAH) is defined as having a mean pulmonary artery pressure (mPAP) greater than 25 mm Hg at rest. The aim of our study was to assess the response to sildenafil monotherapy in patients with scleroderma-related PAH (PAH-SSD) as compared to Idiopathic PAH. At baseline, IPAH patients were more likely to have a lower CI and a higher PVR. However, after initiation of sildenafil, IPAH patients had significant improvement in NYHA class and 6MWD compared to PAH-SSD patients. Our findings suggest that IPAH patients are more responsive to sildenafil monotherapy than PAH-SSD patients.

11:30 Closing Remarks/Divisional Business Meeting/Awards for Platform and Poster Presentations

CHEMISTRY AND CHEMICAL ENGINEERING

Chair: Ken Lee, Jackson State University

Vice-chair: Karl Wallace, University of Southern Mississippi

THURSDAY MORNING

8:30 POSTER SESSION

P3.01

EXPLORING THE FUNCTIONAL DECAPPING ABILITY OF THE DOGFISH SHARK NUDT 16 HOMOLOG

Brittney Davis¹, Melissa Taylor², Brenda Peculis²

¹Jackson State University, ²University of Missouri at Columbia

A nuclear decapping and binding protein, X29/Nudt16, was originally characterized in *Xenopus*, and has also been

characterized in humans. It has been suggested that not only the protein's sequence, but also its functions have been preserved through evolution. The purpose of this study is to characterize a homologue of Nudt16 in the Dogfish shark, which on an evolutionary scale is quite diverged from frogs and mammals. Here the open reading frame encoding the dogfish shark protein was amplified via PCR and cloned into an expression vector. When placed into bacteria under the proper growth conditions, a Histidine-tagged dogfish shark protein is synthesized. The protein can be purified from bacteria. The purified dogfish shark protein will be tested to determine if it has the same biochemical properties as the mammalian and frog proteins: can the protein decap RNA in vitro and can it bind RNA directly. Does this protein have catalytic activity that is essential for a healthy life?

P3.02

ANTIOXIDANT EFFECT OF VERNONIA AMYGDALINA ON ACRYLONITRILE-INDUCED OXIDATIVE DNA DAMAGE IN RAT ASTROCYTES

Teresa Demerite¹, Xinzhu Pu², Ken Lee¹, Ernest Izevbogie¹, James Klunig²

¹Jackson State University, ²Indiana University

Vernonia amygdalina (VA) is a Nigerian plant whose leaves have been proven to have medicinal benefits. VA has been used by natives as a remedy against constipation, fever, high blood pressure and many bacterial infections, due to its proven antimicrobial activity. Recently, VA has been used as a non-pharmaceutical solution to persistent fever, headache, and joint pain associated with AIDS. Previous studies of the aqueous leaf extracts have reported to retard the growth of human breast tumor cell line (MCF-7) in vitro and have demonstrated its antioxidant activity. The biologically-active components of VA extract have yet to be well characterized. We have examined the aqueous extraction of VA leaves for its ability to protect against hydroperoxidation and its antioxidant effect against acrylonitrile-induced oxidative stress in rat astrocytes. The Trolox Equivalent Antioxidant Capacity Assay showed a significant increase in TEAC value with increasing concentration. DI TNC1 cells treated with 1000µg/mL of VA for 24 hrs was shown to have a viability of ~114% and cells treated with 5000µg/mL of VA for 30 minutes, removed and replaced with media and 20µL of t-BOOH for 24 hrs showed a ~110% viability using the MTT Assay. VA's ability to protect against DNA damage and reduce oxidative DNA damage, generated by acrylonitrile-induced oxidative stress, was demonstrated and measured by Alkaline and Fpg modified Comet assay. This study suggests that VA possesses antioxidant properties and is capable of protecting cells from t-BOOH-induced hydroperoxidation. Furthermore, VA seems to prevent/reduce acrylonitrile-induced oxidative DNA damage in rat astrocytes.

P3.03
STUDY OF CHEMICAL COMPOSITIONS OF A NIGERIAN EDIBLE PLANT *VENONIA AMYGDALINA* (VA)

Xuan Luo, Danielle Payton, Samantha Ford, Ernest Izevbigie, Ken Lee

Jackson State University

WHO has reported that the breast cancer is the most commonly diagnosed cancer in women. An aqueous extract of an African edible plant, *Vernonia amygdalina* (VA) leaf, has been reported to be potent to breast tumor cell line MCF-7. We used 85% EtOH to extract active organic components from VA leaves. And then, the condensate was separated by the liquid-liquid method (Method A). Three fractions, A1, A2, and A3 were obtained from Method A, and the fraction A2 shows better activity than A and aqueous extract in the bioassay. Column Chromatography was used to separate A2 into five parts, A2A, A2B, A2C, A2D, and A2E, in methanol-chloroform solvent system with various ratios between two solvents. The cell proliferation assay data revealed that active compounds were kept in A2B. The yield of A2B from raw VA powder was about 5%. Column Chromatography was used again to separate A2B in methanol-chloroform solvents system. In this separation, same volume solutions, washed out from the column, were collected and condensed. The condensates were kept in the vials numbered in sequence. After that, TLC was used to analyze the condensates. It gave five fractions, A2B5, A2B15, A2B25, A2B35 and A2B45, and the fractions of A2B15 and A2B25 showed the most prominent activity towards the cancer cell in the bioassay. A2B25 was analyzed by the MS and it showed that there are carboxylic groups in the molecule with Mw 552. The research has been supported by NIH (RCMI: NIH-NCRR G12RR13459 and NCMHD: P20MD000534-01).

P3.04
ASSOCIATION OF LIFESTYLE FACTORS WITH SUBCUTANEOUS AND VISCERAL ADIPOSITY: THE FRAMINGHAM HEART STUDY

Steven Shadwick¹, Esther Molenaas¹, Caroline Cox¹

¹*Tougaloo College*, ²*Utrecht University Medical Center, Netherlands*

Excess adiposity, in particular abdominal adiposity, is associated with metabolic and cardiovascular disease (CVD) risk. Lifestyle factors substantially affect abdominal adipose tissue. The relationship between lifestyle factors and subcutaneous abdominal adipose tissue (SAT) and visceral abdominal adipose tissue (VAT) has not been well studied in a community-based setting. Cross-sectional associations between lifestyle factors and SAT and VAT volumes, as measured by multidetector computerized tomography, were examined in the 1926 Framingham Heart Study. Current and former smokers had significantly higher mean SAT and VAT as compared to never smokers. In former smokers, an increase in log pack years of smoking was associated with an increase in SAT and VAT.

Women who consumed more than seven drinks of alcohol per week had lower mean SAT (2869:1:106) than those who consumed seven drinks/week or less. In men, an alcohol intake of more than 14 drinks/week was associated with higher mean VAT compared to consumption of 14 drinks/week or less. In both sexes, alcohol showed a U-shaped relation with SAT and VAT when divided in more categories of alcohol consumption. Adherence to the 2005 DGA, physical activity, abstinence from smoking and moderate alcohol consumption are associated with lower volumes of SAT and VAT and may be important factors in the prevention of abdominal obesity.

P3.05
MODELING OF A FULLY FLEXIBLE POLARIZABLE WATER FOR THE SIMULATION OF BIOCHEMICAL REACTIONS OF PROTEINS, DNA, AND DRUGS

Michael Peavy, P. K. Biswas

Tougaloo College

The reaction mechanisms of proteins and DNA, the main functionaries of biochemical reactions, are mostly dictated by water - an essential ingredient of life. Water influences both the formation of various three dimensional active conformations of proteins and DNA and also their reactivity. How does water do all that? Water, being a tiny molecule, can invade well inside any core region, and, having a widely varying permanent dipole (1.85D in gas phase to 2.95D in bulk water and 3.09D in ice), can influence the reactivity through hydrogen bonding and polarization of electrons. During hydrogen bonding, the polarization of electrons makes the donor hydrogen more electropositive and the molecular oxygen more electronegative thus increasing the dipole moment of the water molecule. Biswas and Brooks recently proposed a fully flexible four-site (2-hydrogen, 1-oxygen, 1-dynamic lone-pair charge) polarizable water model where, the fourth site, a Gaussian extended negative charge is harmonically attached to the oxygen and the two hydrogen atoms are allowed to adjust its position self consistently with the help of a full relaxation in the bond lengths and angle. We shall present a study of the model concerning the hydrogen bonding with dimer to hexamer formations and corresponding changes in bond lengths, angles, hydrogen bond lengths, average dipole moments etc and compare the results with the existing ones.

P3.06
THE OSMOLYTIC EFFECTS ON TOPOISOMERASE-I ENZYMIC ACTIVITY

Randy Wadkins, Matthew Dukas

University of Mississippi

While the presence of water within biological systems is acknowledged to be of utmost importance, its specific role at the molecular level within these systems has only recently been studied carefully. Of particular interest are the effects of water on the interactions that occur between topoisomerase-I and DNA. Topoisomerase-I relaxes supercoiled DNA, a process critical for

cellular processes such as transcription and replication. Relaxation occurs when the enzyme breaks one strand of the double-stranded DNA, rotates a broken end around the intact strand, and rejoins the two broken ends, consequently changing the linking number of the supercoiled DNA by an increment of one. While it is well known that water acts during the catalytic mechanism of the enzyme to hydrolyze the phosphate backbone, other effects of water have not been explored. Through the osmotic stress method, the role and amount of water involved in the interaction between topoisomerase-I and DNA with regard to enzymatic activity has been investigated. Four osmolytes were introduced into the reaction at varying concentrations (molality), which is related to the osmotic pressure. Results of the osmolytes on the catalytic activity of the enzyme were visualized and analyzed through the quantification of topoisomer band intensity, providing the percentage of DNA under these conditions that is converted to the relaxed form. Our preliminary data suggests that the presence of osmolytes attenuates the catalytic activity of topoisomerase-I. Thus, it appears that water may play an important role in stabilizing the enzyme-substrate complex, enabling normal catalytic activity of topoisomerase-I.

P3.07

THE EFFECTS OF DNA TOPOLOGY ON THE ABILITY OF CAMPTOTHECIN ANALOGS TO INHIBIT TOPOISOMERASE I

Randy Wadkins, Megan Glorioso
University of Mississippi

In the clinic, camptothecin analogs are used to treat colorectal and ovarian cancer. Upon entering a tumor cell, camptothecin's ability to decrease the rate of cancer growth lies in its ability to stabilize the topoisomerase I-DNA complex, consequently preventing religation. Topoisomerase I is an integral component in replication and transcription where it nicks a single strand of DNA, which then allows the supercoiled strands to unwind into a relaxed state. The topoisomerase must later religate the broken strand in order for the DNA to return to its supercoiled form. While the effects of camptothecin on topoisomerase I are relatively well known, the effects of the camptothecin analog 7-ethyl-10,11-methylenedioxy camptothecin have not been studied as closely. Using gel electrophoresis, the effects of camptothecin and 7-ethyl-10,11-methylenedioxy camptothecin in solution were compared using both negatively and positively coiled PBR322 plasmid. Our preliminary data suggests that 7-ethyl-10,11-methylenedioxy camptothecin serves as a more potent topoisomerase inhibitor than camptothecin for negatively supercoiled DNA. We report here our results comparing the effects of camptothecin and its 7-ethyl analog on both positively and negatively supercoiled DNA.

P3.08

MODIFIED TOPOISOMERASE I GENES IN INTACT CELL LINES USING "KNOCK-OUT" AND "KNOCK-IN" TECHNOLOGY.

Randy Wadkins, James Delancey, Jr.
University of Mississippi

Topoisomerase I (TOP1), a nuclear enzyme that facilitates in relieving torsional strain in DNA during transcription or replication, is the target enzyme for camptothecin antitumor drugs. Current methods of studying TOP1 activity require cell fixation effectively arresting cellular metabolism at an instance in time. In efforts where TOP1 studies occur as a function of time, their cell fixation must occur at finite intervals so that researchers may take data points. To study TOP1 activity continuously in cells, we are implementing recent "knock-out/knock-in" technology to make specific changes in the TOP1 gene in an intact melanoblastoma cell line. Portions of the TOP1 gene have been cloned in bacterial vectors. Vector sequences have been aligned with sequences from Genbank assuring integrity. Currently, "knock-in" gene constructions are being made as templates for future "knock-in" and "knock-out" events in cell line to allow quick insertion of the modifications of interest.

P3.09

MOBILITY OF A LOOP OF A B. SUBTILIS CARBOXYLESTERASE AND ITS EFFECT ON SUBSTRATE CONVERSION

Xiaozhen Yu, Monika Wierdl, Philip Potter, Randy Wadkins
University of Mississippi

Carboxylesterases (CEs) are ubiquitous enzymes responsible for the detoxification of xenobiotics. CEs can metabolize and hydrolyze a variety of esterified drugs, including the anticancer agent CPT-11. The specificity of CEs for a particular substrate or inhibitor depends on the enzyme's molecular structure and the dynamics of conformational substructures when a substrate is bound. We have used a series of biophysical techniques to understand differences in substrate selectivity of CEs. First, we used molecular dynamics simulations (MD) and normal mode analysis (NMA) to identify the loop region of high fluctuation in a CE from *B. subtilis*. Second, we calculated the root-mean-square deviation (RMSD) from both MD and NMA trajectory data. Then we used these RMSD data along with its secondary structure to make correlations with enzyme activity. Meanwhile, we generated a series of mutations at specific amino acid residues that are located near this flexible loop region in order to restrict its mobility. Then we measured enzyme activity of these mutant CEs and compared them with the wild type. Our hypothesis is that the molecular dynamics of this enzyme is correlated with substrate conversion efficiency for selected CEs. These experiments provide the first data toward testing this hypothesis.

These studies were supported by NSF grant EPS-0556308 and ALSAC.

P3.10
EXPERIMENTAL DETERMINATION OF CARBON ATOM HYBRIDIZATION USING NMR SPECTROSCOPY

Sarah Jones, Joseph Bentley, Alline Somlai
Delta State University

Since the birth of quantum mechanics, scientists have sought a theory of the chemical bond which is universal in describing all kinds of molecules. One theory is Valence Bond Theory (VBT) which describes bonding as the overlap of atomic orbitals (AOs). This method can be extended by hybridizing atomic orbitals on a central atom. Hybrid orbitals are linear combinations of AOs. Using hybridization gives a more accurate prediction of the geometry of the molecule. Common hybridizations of carbon in molecules are: sp, sp² and sp³. Students are taught that the number and type of bonds to carbon in a molecule allow one by a "rule of thumb" to predict one of the common hybridizations. Proton-coupled carbon-13 nuclear magnetic resonance (C13-NMR) spectra can be used to experimentally determine the hybridization of the bonding atoms as well as the bond angles. In this work, the spectra of a series of four cyclic halogenated alkanes (cyclopropyl bromide, cyclopentyl bromide, cyclohexyl bromide and cycloheptyl bromide) were collected on a 300 MHz ECX-JEOL spectrometer. Hybridization of carbon in these molecules is shown to be more complex than the undergraduate textbook picture.

P3.11
ASSESSING THE CHALLENGES AND BUILDING AN EFFECTIVE CHEMICAL LABORATORY PROGRAM: ENTHUSIASM WORTHY OF JUSTUS VON LIEBIG¹ AND OTHER CHEMISTRY LUMINARIES²

Dorothy M. Wood¹, K. Troy Milliken¹
¹*Jackson State University*, ²*Jackson State University*

Conducting informal assessments of laboratory to advance our requisite service to our chemistry students is our central activity. We engage in the coupling of experiments delivered by professional faculty, to an increasingly discriminating clientele, our students, who seek exciting and best career pathways; while in this effort, even as we purport to be the single urban university in Mississippi, we realize the competition from institutions in our state as well in neighboring states are factors in our students' decision-making. Hence, we seriously consider our role and seek improvements in all its aspects: we strive to improve delivery of our laboratory course content to an extent that even a beginning student will realize its value-added nature, that furthermore, we are resolute about "challenging minds and changing lives."

The core of our basic laboratory exercises is outstanding: students encounter the major classical experiments. Yet, as change is consistent within academic programs, there are weaknesses we know we must surmount. Commencing with an educated approach, i. e., with what we think has been an appropriate first approximation, we have ameliorated some of the basic ones, space, finance, personnel, simply by orchestrating

elements already present. Thus, several aspects beyond the core of the course content alone and affecting our ability to serve, have been targeted for major or minor corrections. Beyond those issues, we also seek valid methods of a more formal assessment for these challenges to elucidate our search for excellence and increased enthusiasm, and to work for and validate our progress.

1. <http://www.woodrow.org/teachers/ci/1992/Liebig.html> 2. Sachtleben, Rudolf, "Nobel Prize Winners Descended from Liebig", J. Chem. Ed., 1958, 35, 2, pp.73-75.

P3.12
PROBABILITY BASED MATCHING OF DATA USING SPREADSHEET

Chiquita Lee, William Mahone
Mississippi Valley State University

A probability based matching algorithm is a common component of most GC/MS systems. This allows the computer to match library mass spectra to spectra acquired as a part of routine analysis. While RGAs (residual gas analyzers) rarely have matching software on their computers many of them have limited databases. The focus of the current research effort we are developing a probability methods for extracting matching mass spectra from a limited data base. To do this we have created a math function which will allow us to generate a probability score for all spectra in the data base with the same base peak. Our function will generate a score based on the size of all significant peaks relative to the base peak. This technique should allow one to quickly match a data spectrum to a library spectrum without requiring major computer power or any analytical software beyond spread sheet..

**THURSDAY MORNING
 MAHOGANY ROOM**
O3.01
9:40 USING MALONATES IN THE PREPARATION OF VARIOUS AMINO ACIDS

Douglas Masterson, Dale Rosado, Walker Wiggins, Souvik Banerjee

University of Southern Mississippi

We have developed a divergent method capable of preparing a variety of unnatural amino acids from a common synthetic intermediate. The common intermediate is a chiral half-ester prepared by enzymatic hydrolysis of a prochiral malonate. The methodology uses straightforward chemistries and we are able to obtain analogues of cysteine, serine, lysine, arginine, ornithine, and tyrosine in good yields and optical purity. We have demonstrated that the method can prepare both the d- and l-forms of a^{2,2}- b^{2,2}-, and b^{3,3}- analogues of serine and cysteine from their respective half-ester intermediates. We have also developed an MS based enantioselectivity assay which allows us to rapidly optimize the reaction conditions for the enzymatic hydrolysis. We will report on the synthesis, selectivities, the enantioselectivity assay, and future uses of the methodology.

**O3.02****10:00 SYNTHESIS AND FREE RADICAL KINETIC STUDIES OF CARCINOGENIC COMPOUNDS CONTAINING A NITROGEN-NITROGEN SINGLE BOND**Phoebe Penamon*Tougaloo College*

The goal of the research was to find an innovative method for the synthesis of carcinogenic compounds containing nitrogen-nitrogen single bonds called hydrazines. Hydrazines are harmful, but carcinogenicity has yet to be determined in humans. Hydrazines can be formed from the metabolism of certain drugs such as isoniazid and hydralazine used for the treatment of tuberculosis, and hypertension, respectively. They are also found in waste water and near military bases. The different methods of reactivity approached include SN₂ reactions dipropylamine with H₂NSO₄H in various solvents such as methanol, methanol-d, dimethylsulfoxide, dimethylsulfoxide-d, deuterated oxide, and H₂O. Reduction reactions were also undertaken to produce hydrazine from various substituted nitrosamines. Most products were extracted with ether and analyzed via Nuclear Magnetic Resonance. The products of many of the reactions were difficult to discern from the starting compounds. Future research could include more sensitive techniques of analyzing. However, the reductions in the presence of zinc and hydrochloric acid proved to be a successful method for the production of nitrosamines.

O3.03**10:20 LEWIS ACID PROMOTED 1,3-DIPOLAR CYCLOADDITION REACTIONS IN WATER**Lenore Holmes, Ashton Hamme*Jackson State University*

The current paradigm in organic chemistry is that organic reactions are performed in organic solvents. This premise is based upon the "like dissolves like" concept. In other words, in order for a reaction to occur, all of the reactants must react in a homogeneous solution. Though this rationale has been successful for many years, most organic solvents are hazardous, toxic and environmentally harmful. Water is the most environmentally benign solvent that can be used as a reaction medium. However, since solubility issues often arise between organic compounds, chemical reagents and water, water is an unattractive solvent for organic reactions. We investigated the incorporation of water soluble Lewis acids that promote a 1,3-dipolar cycloaddition reaction between organic molecules in water. Specifically, we have examined the use of metal-containing Lewis acid promoters to bring about the formation of nitrile oxides from the analogous alpha-chlorobenzaldoximes. These nitrile oxides were then reacted with alkenes or alkynes to afford the corresponding isoxazoline or isoxazole compounds in good isolated yields. We will discuss how the Lewis acid affects the reaction rates and yields for the 1,3-dipolar cycloaddition reaction of our substrates in the universal solvent, water. Acknowledgments: This research was financially supported by:

NSF-RISE HRD-0734645, NIH-SCORE Grant Award Number S06GM008047-34S1, and the NIH-RCMI supported NMR Core Laboratory.

O3.04**10:40 SYNTHESIS OF SPIRO-ISOXAZOLINES VIA INTRAMOLECULAR CYCLIZATION**Ashton Hamme, Ann Omollo, Eric McClendon, Lungile Sitole
Jackson State University

Psammalyins A-E are a family of natural products that were isolated from marine sponges of the order Verongida. Many of these natural products display antiviral and antineoplastic activities. The most interesting structural motifs of the psammalyins are the oxipin and isoxazoline ring systems which are connected in a spirocyclic array. The synthesis of this type of ring system was accomplished in two steps. These synthetic processes involve a 1,3-dipolar cycloaddition and an intramolecular ring closure of a pendant alkoxide or carboxylate ion onto an activated isoxazole. The 1,3-dipolar cycloaddition of an alkyne with a nitrile oxide from the analogous alpha-chlorobenzaldoxime afforded the desired isoxazole. Intramolecular cyclization was achieved through the reaction of the isoxazole ring with pyridinium tribromide. The proposed mechanism of intramolecular cyclization involves the activation of the isoxazoline ring with bromine to form a bromonium ion. Neighboring group participation of the oxygen can cause an opening of the bromonium ion intermediate thereby giving rise to an oxonium ion. Intramolecular attack of the alkoxide or carboxylate ion onto the oxonium ring system then affords the spiro-isoxoline. The synthesis, mechanistic details, and isolated yields for the synthesis of our spiro-isoxoline compounds will be discussed. Acknowledgments: This research was financially supported by: NSF-RISE HRD-0734645, NIH-SCORE Grant Award Number S06GM008047-34S1, and the NIH-RCMI supported NMR Core Laboratory.

O3.05**11:00 TESTING A MODEL: CA²⁺ INDUCED EXPOSURE OF TRYPTOPHAN**Chinelo Udemgba, Nagamani Vunnam, Yogini Bhavsar, Susan Pedigo*University of Mississippi*

Cadherins are transmembrane cell adhesion proteins that are critical for tissue formation and maintenance. Cell adhesion by cadherin requires binding of 3 calcium ions at the interfaces between the ectodomain modules. Recent data suggest a model in which calcium induces a relatively large conformational change in the first ectodomain module, domain 1, by causing the detachment of the f'A-strand from the core of domain 1 and the exposure of a tryptophan in the second position, W2. The exposure of W2 is crucial for formation of a strand-cross-over structure that is believed to be the adhesive dimer interface. In order to establish direct experimental evidence for this model, a

construct of Neural-cadherin comprised of the first two ectodomain modules, NCAD12, and its single tryptophan mutants, W2A and W113A, were examined. While the W113A mutation did not affect the stability of the protein, the W2A mutation dramatically increased the stability. The calcium-dependent characteristics of proteins were analyzed separately with fluorescence spectroscopy and size exclusion chromatography. Regardless of the calcium level in solution, W2A was monomeric. W113A behaved like the wild type protein in that calcium allowed exchange between the monomer and dimer. We envisioned that a red shift in the fluorescence signal would confirm exposure of W2. In contrast to the model above, there was no observable shift in the fluorescence signal. It is possible that the "open" conformation in which W2 is exposed is transient and difficult to monitor. We are currently exploring the kinetics of the fluorescence signal change.

O3.06

11:20 SYNTHESIS OF NEW INHIBITORS FOR HISTONE DEACETYLASES8(HDAC8)

Edna Lampkin¹, Sanku Mallik², Michael Scott²

¹Mississippi Valley State University, ²North Dakota State University

Histone Deacetylases (HDACs) are attractive enzyme targets for treatment for diseases such as cancer. FDA has recently approved a HDAC inhibitor as an oral formulation for the treatment of cutaneous T-cell lymphoma. Many more inhibitors are in various stages of clinical trials for various types of cancers. This class of enzymes remove the acetyl groups from an ϵ -N-acetyl lysine on a histone. The HDAC8 is a Zn²⁺ containing metalloenzyme.

The goal of our research is to design inhibitors for selective HDAC8. We have used the 1,2-diaminobenzene as the Zn²⁺ binding moiety. Various amino acids were linked to this group to generate the inhibitors. We anticipate that the structural variations of the amino acids will allow us to fine-tune the affinity and selectivity of the synthesized inhibitors for the HDACs. Studies are currently underway to determine the inhibitory potency of the synthesized inhibitors for recombinant human HDAC8. [This study was supported, in part, by a grant from NIH INBRE to NDSU,].

O3.07

11:40 ELECTROCHEMICAL AND ELECTROGENERATED CHEMILUMINESCENT STUDIES OF SQUARAINES AND THEIR APPLICATIONS IN METAL ION SENSING

Shijun Wang, Karl Wallace, Wujian Miao

University of Southern Mississippi

The electrochemical and electrogenerated chemiluminescent (ECL) behavior of squaraine-derived compounds was investigated in mixed MeCN-CH₂Cl₂ (~1:1 v/v) solvent containing 0.10 M tetra-n-butylammonium perchlorate. Two reversible redox pairs located at ~0.55/0.36 V and ~1.1/0.91 V vs Ag/Ag⁺, and one irreversible reduction peak at ~1.3 V vs

Ag/Ag⁺ were observed, respectively. ECL of these squaraine compounds was studied in the above organic solutions using tri-n-propylamine and 2-dibutylaminoethanol (DBAE) as ECL coreactants. Upon the anodic potential scanning, strong ECL emissions were observed at Pt electrode within the potential range of ~0.6 to 2.1 V vs Ag/Ag⁺ when DBAE was used as the coreactant. The ECL emission spectra measured with the squaraine/DBAE/Pt electrode system as well as their metal ion sensing behavior will be presented. Financial support from NSF-MRSEC grant (NSF-DMR 0213883) via the University of Southern Mississippi is gratefully acknowledged.

THURSDAY AFTERNOON

GRAND BALLROOM

1:00 POSTER SESSION

P3.13

STRUCTURES OF THIO(SEMI)CARBAZONES OF ACETILPYRAZINE, 2-ACETYLTHIOZOLE AND ACETOPHENONE

Haamid Ameer¹, Brown Jarre¹, Ramaiyer Venkatraman¹, Edward Valente¹

¹Jackson State University, ²Mississippi College

The crystal structures of eight related thio(semi)carbazones are described. These are syn,1E-2-acetylpyrazine-3-thiosemicarbazone (1), syn,1E,4Z-2-acetylpyrazine-4-ethyl-3-thiosemicarbazone (2) and syn,1Z-2-acetylpyrazine-4,4-dimethyl-3-thiosemicarbazone (3), syn,1E,4Z-2-acetylthiazole-4-phenyl-3-thiosemicarbazone (4), syn,1Z-phenyl-4,4-dimethyl-3-thiosemicarbazone (5), syn,1E,4Z-phenyl-4-methyl-3-thiosemicarbazone (6), syn,1E,4Z-phenyl-4-ethyl-3-thiosemicarbazone (7), syn,1E,4Z-2-acetophenone-5-(N-aminothionyl)-3-thiocarbazone (8). Structures 1, 2, 4, 5, 7, and 8 form intramolecular N4-H...N1 hydrogen-bonds. Structures 3 and 5 exist in the tautomeric form in which N1 is protonated.

P3.14

SYNTHESIS, CHARACTERIZATION AND BINDING STUDIES OF MACROCYCLIC POLYAMINES FOR CATIONS AND ANIONS

M. A. Saeed, Jameskia Thompson, Md. Alamgir Hossain

Jackson State University

Design and synthesis of selective receptors for ionic species are important from the view of both of environment and biological aspects [1]. Polyamine based macrocycles are attractive receptors for binding of cations as well as anions. Uncharged polyamines are capable of encapsulating metal ions in their cavity through the traditional coordination bonds, whereas the protonated polyamines bind anions through hydrogen bonding interactions of protons on nitrogen atoms. Monocyclic and bicyclic amines with variable spacers have been synthesized from Schiff base condensation of primary amines and corresponding aldehydes followed by the diborane reduction. Details of the synthesis, solution binding studies, and crystal



structures will be presented in the poster. [1]. Hossain, M. A., *Current Organic Chemistry*, 2008, 12(14), 1231-1256.

**P3.15
PRETREATMENT OF USED VEGETABLE OILS FOR BIODIESEL**

Ashley White, Joya Anthony, Jasmine LuAllen, Bruce Wenzel, Ken Lee

Jackson State University

The used cooking oils contain other materials other than vegetable oil, which is originally started with for frying. In the course of frying foods, carbohydrates from flour and batter, water from the raw foods, proteins and collagen from chicken and fish, and free fatty acid resulting from oxidizing the unsaturated vegetable oils. All these end up in the used cooking oil, so we have to remove these prior to making biodiesel because they would interfere with the chemistry for making biodiesel from vegetable oils. We have investigated pretreatment of the used oils to handle free fatty acids, which inhibit the transesterification reaction. In order to remove fatty acids, basic resins have been used and their effectiveness has been evaluated with the acidity of used vegetable oil before and after the treatment. Ways to measure the carbohydrates found in batter used in the frying process and protein residue found from frying chicken and fish will also be determined. Another pretreatment approach is to use column chromatography. It was reasoned that gravity column chromatography with a basic, polar stationary phase and a non-polar mobile phase would accomplish a number of things. We have investigated pretreatment with alumina, resins, and calcium carbonate. Characterization and quantification of the triglycerides and the methyl esters were achieved by ^1H NMR, IR, and GC/MS. The research is supported by the grant from NIH, HBCU-UP - HRD-0411559.

**P3.16
PREPARATION OF PLATINUM COMPLEX WITH AROMATASE INHIBITOR DERIVATIVES, 4-(2-IMIDAZOLYLMETHYL)BENZOATE**

Don Gibson, Ken Lee

Jackson State University

Breast cancer has the highest incidence rate among cancers in women. Our interest is in developing novel and effective breast cancer chemotherapeutics by delivering platinum complex moiety to the cancer cell. The platinum complexes including cisplatin and carboplatin are currently used for the treatment of several cancers, and its use in breast cancer is being tested in several clinical trials. Many aromatase inhibitors (AIs) are synthesized and currently used for the treatment of estrogen receptor positive breast cancer. Recent studies have revealed that the active site in the enzyme, aromatase, can be blocked by the specific organic ligand having imidazole group. Our study combines these two active moieties, AIs and platinum complex, for a novel and effective cancer regimen through the

coordination bond. The AI and metal complex will follow the ante drug concept to facilitate its drug delivery to the tumor tissue. Therefore, we synthesized AIs that will form complexes with metal derivatives. 4-(2-Imidazolylmethyl) benzonitrile and methyl 4-(2-imidazolylmethyl) benzoate have been prepared by the coupling reaction between imidazole and 4-(bromomethyl) benzonitrile or methyl 4-(bromomethyl) benzoate. The nitrile and ester groups were hydrolyzed into carboxylic group, which is used for the binding site of platinum metal. We have synthesized the platinum complex with AI to yield the combined target complex. Spectroscopic analysis including ^1H , ^{13}C NMR and IR confirm the formation of the compounds. This research is supported by a grant from the NIH (NICHD-EARDA: 1 G11HD046519) and RCMI (NIH-NCRR G12RR13459) at JSU.

**P3.17
LEWIS ACID PROMOTED 1,3-DIPOLAR CYCLOADDITION REACTIONS IN WATER**

Odus Webb, Lenore Holmes, Ashton Hamme

Jackson State University

The current paradigm in organic chemistry is that organic reactions are performed in organic solvents. This premise is based upon the "like dissolves like" concept. In other words, in order for a reaction to occur, all of the reactants must react in a homogeneous solution. Though this rationale has been successful for many years, most organic solvents are hazardous, toxic and environmentally harmful. Water is the most environmentally benign solvent that can be used as a reaction medium. However, since solubility issues often arise between organic compounds, chemical reagents and water, water is an unattractive solvent for organic reactions. We investigated the incorporation of water soluble Lewis acids that promote a 1,3-dipolar cycloaddition reaction between organic molecules in water. Specifically, we have examined the use of metal-containing Lewis acid promoters to bring about the formation of nitrile oxides from the analogous alpha chlorobenzaldoximes. These nitrile oxides were then reacted with 1,1-disubstituted bromoalkenes or alkynes to afford the corresponding isoxazole compound in good isolated yields. We will discuss how the Lewis acid affects the reaction rates and yields for the 1,3-dipolar cycloaddition reaction of our substrates in the universal solvent, water.

This research was financially supported by: NSF-RISE HRD-0734645, NIH-SCORE Grant Award Number S06GM008047-34S1, and the NIH-RCMI supported NMR Core Laboratory.

**P3.18
SIMULTANEOUS DETERMINATION OF HEAVY METALS BY HYDRIDE GENERATION ICP-AES**

Domingos Afonso and Zikri Arslan

Jackson State University

Heavy metals, such as arsenic, cadmium, lead, selenium and tin, are detrimental to ecosystem and human health at

extremely small levels. Accurate determination necessitates the use of highly sensitive instrumentation and analytical chemistry methodologies. Inductively coupled emission atomic emission spectroscopy is a robust, multielement capable technique that takes the advantage of hot argon plasma to produce excited species. However, the sensitivity of ICP-AES for these elements is not adequate to detect these elements in environmental samples at low microgram per gram levels due to the inherent shortcoming of complexity of emission spectrum and inefficiency of solution nebulization. Hydride generation is popular technique commonly used for flame atomic absorption spectroscopy for measurement of hydride forming elements. In this study, we examined the performance characteristics of hydride generation with ICP-AES for simultaneous measurement of several hydride forming elements (As, Bi, Cd, Pb, Sb, Se, Sn). Hydrides of the elements were generated in hydrochloric acid (HCl) by reacting with sodium borohydride (NaBH_4). To affect the hydride generation, acid concentration of the 50 ppb multielement solutions were varied from 0 to 5% v/v. Solutions were on-line reacted with alkaline NaBH_4 solution. The gaseous hydride was analyzed by ICP-AES. NaBH_4 concentration had substantial effect on the hydride generation efficiency. Levels between 2 and 3% m/v were optimum. Higher levels led to unstable plasma conditions. The effects of several mild oxidants were studied. Among them potassium ferricyanide increased lead signals substantially, while no enhancement was observed for other elements.

P3.19 SYNTHESIS OF WATER-SOLUBLE CADMIUM SULFIDE NANOPARTICLES

Fahmida Zereen and Zikri Arslan
Jackson State University

Colloidal semiconductor nanocrystals of cadmium sulfide (CdS) are bright and photostable emitters. Environmental and toxicological concerns have been raised with technological and medicinal applications of cadmium sulfide and similar nanoparticles. In an effort to investigate the environmental chemistry of these particles, water soluble CdS nanocrystals were synthesized from cadmium chloride and sodium sulfide. Particles were stabilized by using mercaptoacetic acid (MAA). Effects of several parameters, such as concentration of cadmium chloride, sodium sulfide, MAA and pH were investigated on the particle size and stability. Characterization was made by UV-visible spectroscopy and TEM. Smaller particles can be synthesized by increasing the CdCl_2 concentration while increase in Na_2S and MAA concentrations produces particles with larger diameters. UV absorption ranged from 390 to 412 nm with average particle size distribution 3.8 to 8 nm. Studies on the isolation of the MAA capped particles from solution is been sought different solvents such acetone, ethanol and chloroform.

P3.20 A QCM SENSOR FOR THE DETECTION OF CHEMICAL WARFARE STIMULANTS

Thomas Grant White, Karl J. Wallace
University of Southern Mississippi

Quartz crystal microbalance (QCM) is a sensing tool that can be utilized for the detection of toxic chemicals. The change in frequency of the quartz crystal is attributed to the change in mass of the quartz crystal (QC). It is well known that sulfur containing functional groups can act as "anchors" to gold surfaces to form self-assembled-monoayers. The work presented here describes the synthesis of a family of dithiol monomers that contain a reactive functional group, which will bind directly to the stimulant. These monomers then form SAMs onto a gold surface, on a QC platform. The same family of monomers have also been tethered to gold to form nanospheres. The synthesis and characterization of both the monomers, SAMs and the gold nanoparticles, and our initial results using QCM as a sensor towards chemical nerve agent stimulants, will be presented.

P3.21 THE USE OF SQUARINE DYES AS MOLECULAR SENSORS

Jonathan McEwen, William S. Jones, Karl J. Wallace
University of Southern Mississippi

The coordination chemistry of heavy metals, for example, Fe^{3+} , Pb^{2+} , Cd^{2+} , Hg^{2+} , and Zn^{2+} , is of interest, in part because of their hazards and toxicity in biological, industrial, and agricultural applications. Additionally, there is much interest in the detection and quantification of trace metals in the products of chemical synthesis, in particular sensors for detecting Pd^{2+} . There has been plethora of new molecular sensors for the detection of heavy metals that utilize colorimetric or fluorescence mechanisms. One such dye that has started to appear in the literature are the squaraine class of molecules. These dyes have some unique physical properties. For example, their absorbance typically full in the visible to NIR region of the spectrum and they also have high extinction coefficients. This absorption property is a very attractive one in sensor design, and is desirable for integration with optical instrumentation. However, squaraine dyes are only just starting to be utilized as molecular sensors in the field host-guest recognition; an area of supramolecular chemistry, in particular heavy metal detection. The work that will be presented here, will discuss the synthesis of squaraine dyes as sensors, geared towards Zn^{2+} and Fe^{3+} detection.

P3.22 SYNTHESIS, CHARACTERIZATION AND BINDING STUDIES OF MACROCYCLIC POLYAMINES FOR CATIONS AND ANIONS

M.A. Saeed, Jameskia Thompson, Alagmir Hossain
Jackson State University

Design and synthesis of selective receptors for ionic species are important from the view of both of environment and

biological aspects [1]. Polyamine based macrocycles are attractive receptors for binding of cations as well as anions. Uncharged polyamines are capable of encapsulating metal ions in their cavity through the traditional coordination bonds, whereas the protonated polyamines bind anions through hydrogen bonding interactions of protons on nitrogen atoms. Monocyclic and bicyclic amines with variable spacers have been synthesized from Schiff base condensation of primary amines and corresponding aldehydes followed by the diborane reduction. Details of the synthesis, solution binding studies, and crystal structures will be presented in this poster. [1]. Hossain, M. A., *Current Organic Chemistry*, 2008, 12(14), 131-125

P3.23

LIGHT SCATTERING AND PHASE BEHAVIOR OF BLENDS BASED ON PHENYLENE COPOLYMERS WITH POLYPHENYLSULFONES

Paul Jones, Rhonda Robertson, Crystal Smith, Sarah Morgan
University of Southern Mississippi

Light scattering, thermal, and microscopy techniques were used to investigate the dilute solution properties and phase behavior of two phenylene copolymers (SRPs) with polyphenylsulfones (PPSU). The z-average radius of gyration (R_{gz}), the second virial coefficient (A_2), and the weight average molecular weight (M_w) were determined from Zimm plots generated from static light scattering (SLS) data, and the hydrodynamic radius (R_h) was measured using dynamic light scattering (DLS). The ratio of R_{gz} to R_h provided a measure of the conformation of the polymers in solution, and it was found that each polymer adopted a rod-like conformation in solution. The SRPs were blended with PPSU by solution casting from NMP. The glass transition behavior of the blended films was studied by differential scanning calorimetry (DSC). The morphology of the blended films was studied by atomic force microscopy (AFM) and related to the observed phase behavior from the thermal characterization. The homogeneity of the blends was found to be dependent upon the copolymer composition and conformation of the polymers in solution.

P3.24

POLYELECTROLYTE COACERVATES FROM CATIONIC AND ANIONIC POLYMERS

Nicole McWright, Glenn Dale, Robert Lochhead
University of Southern Mississippi

In this research two oppositely charged polyelectrolytes were selected to study polyelectrolyte coacervates. Poly (ethylene isophthlate) sulfonate which is an anionic polymer and guar hydroxypropyl trimonium chloride which is a cationic polymer. Poly ethylene isophthlate) sulfonate is a an amorphous linear polyester. This polymer disperses in water without the assistance of organic solvents, surfactants, or amines, which makes it an environmentally friendly polymer. Other desirable attributes include; its ability to form films at room temperature, its low viscosity, and its ability to aid the dispersion of

hydrophobic materials in water. Guar hydroxypropyl trimonium chloride is the cationic polymer chosen for this investigation. It is a polysaccharide guar gum derivative extracted from the seeds of *Cyamopsis tetragonoloba taub*, which is a native plant in Southern Asia. The goal of this study was to investigate the interaction of poly (ethylene-isophthlate) sulfonate with the cationic polymer guar hydroxypropyl trimonium chloride. A phase diagram was constructed for the system in the range 0 to 1 weight % of each polymer in aqueous solution, at neutral pH, and at room temperature. Phase separated coacervates were found over the entire compositional range with most coacervate being formed at higher concentrations of the compositions under investigation.

THURSDAY AFTERNOON MAHOGANY ROOM

Chemistry Lecture Series: Nano-Chemistry and Nano-Technology

O3.08

2:00 NANOMATERIAL BASED NSET RULER FOR ENVIRONMENTAL PROTECTION

Paresh Ray, Jelani Jrifin, Anant Singh, Kanieshia Mitchell
Jackson State University

Contamination of the environment with pathogens and heavy metal ions can have adverse effect on human health and environment. Since world population is expected to be 8 billion by 2025, it is impossible to improve living standards without affecting the environment. Due to contaminations by pathogen and toxic metals, about half a billion people around the world face shortages of drinking water of good quality. To detect low concentration of such contamination, scientists need to develop sensors for real-time detection of toxic metals and pathogen in water supplies for ensuring the safety of municipal and recreational water supplies. Nanomaterial based method can have advantages compared to conventional methods in terms of the time of analysis, selectivity and sensitivity. Here we discuss our recent effort on the development of a compact nanomaterials surface energy transfer (NSET) probe with excellent selectivity and sensitivity for screening pathogens DNA and heavy metal ions

O3.09

2:40 PERFORATED ORGANOMETALLIC NANOTUBES: TOWARD THE DEVELOPMENT OF NANO-ENHANCED SENSORS

T. Keith Hollis, Igor Ostrovskii, Andriy Nadtochiy
The University of Mississippi

A recently developed template methodology for the synthesis of organometallic nanotubes will be presented. The materials were found to contain nanopores similar to biological pores found in cells. The synthesis and characterization (electron

microscopy) as related to the structure of these materials will be described. Further work developing a cantilever technology to incorporate the nanotubes for sensor application will be described.

O3.10

3:20 NANOSTRUCTURED POLYMERIC SURFACES

Sarah Morgan, Rahul Misra, Bobby Cook

University of Southern Mississippi

Polyhedral oligomeric silsesquioxane (POSS) nanostructured chemicals provide a unique approach for the development of nanostructured polymeric materials. Recent studies in our laboratories demonstrate surface modification property enhancements in POSS/thermoplastic blends. High performance hybrid polymer nanocomposites (HPNC's) with improved surface properties, specifically improved tribological performance such as reduced friction and wear, have significant potential applications ranging from microelectronic devices and aeronautic applications to low friction fibers for bandages and other prosthetic applications. Nanocomposites of thermoplastics (polypropylene and nylon) with POSS of different chemical structures were prepared via melt mixing and analyzed via atomic force microscopy, lateral force microscopy, nanoindentation, contact angle studies and ATR-FTIR. Significant increases in surface hardness and hydrophobicity were observed, along with reductions in surface friction.

O3.11

4:00 NANOPARTICLES: DO WE OPEN NEW PANDORA BOX?

Jerzy Leszczynski

Jackson State University

Background and Objective: Although the nanomaterial concept is not new, the ability to control and make nanoparticles of various sizes and shapes for various industrial, medical, agricultural, and other relevant applications, is innovative. However this novel materials bring its own challenges for the near future and one of the issues that have to be addressed before massive fabrication of nanomaterials, is their toxicity to humans and the environment.

Methods: Non empirical ab initio calculations have been carried out to characterize different species that are products of interactions between gold clusters, fullerenes, and Nucleic Acid Bases and Base pairs.

Results and Conclusions: The obtained results allow evaluation of the effect of interactions of DNA fragments with nanoparticles. We conclude that neutral gold nanoparticles will oxidize guanine and GC base pair and such oxidation will be more pronounced for the GC base pair than for the isolated guanine. Therefore, the DNA interactions with nanoparticles may have some alarming consequences. On the other hand since electron attachment takes place at the metal cluster site, therefore, in the medium of excess free electron the metal nanoparticle could protect DNA. However, more extensive

studies are needed to explore the role of nanoparticles in protecting DNA against free electron.

Acknowledgment: This research was supported by the High Performance Computational Design of Novel Materials (HPCDNM) - Contract #W912HZ-06-C-0057 and the NSF Nanotoxicity CREST Center

4:40 Divisional Business Meeting

FRIDAY MORNING MAHOGANY ROOM

O3.12

8:40 DOES QUEUOSINE NUCLEOTIDE EXIST IN ZWITTERIONIC FORM?

Dmytro Kosenkov, Yana Kholod, Leonid Gorb, Jerzy Leszczynski

Jackson State University

Queuosine is a complex modification of guanine. This nucleotide substitutes guanine in the anticodon stem-loop region of the tRNA and is found in almost all living forms. Queuosine participate in numerous biochemical pathways. Molecular structure and relative free energies of the different protonation states of the nucleotide were studied at BVP86/TZVP level of theory. Hydrogen bonds were analyzed using Bader's AIM theory. Acidity constants of the nucleotide were estimated using COSMO-RS approach. Results of the calculations suggest that queuosine undergoes conformational transitions under changes of the environmental pH. It was revealed that zwitterionic form of queuosine is the most stable under physiological conditions. These features of the queuosine structure could be responsible for the specific nucleotide interactions.

O3.13

9:00 QUANTUM CHEMISTRY APPLICATIONS FOR ENVIRONMENTAL REMEDIATION OF NITRO COMPOUNDS

Yana Kholod¹, Leonid Gorb², Jerzy Leszczynski¹

¹*Jackson State University*, ²*US Army ERDC*

High-energetic nitro compounds are widely used for a range of military and industrial purposes. Nitroaromatics and nitramines, as well as products of their chemical transformations, are toxic contaminants to various terrestrial and aquatic receptors. An understanding of complex chemical processes and estimation of the influence of different factors on the properties and reactivity of those compounds is essential for design of efficient, environmentally nontoxic applications for their synthesis, storage, utilization and remediation from the environment. In the current work we demonstrate how quantum chemical methods can serve for these goals at three stages: a) improvement of synthesis, storage and utilization of potential; b) prediction of distribution of a substance of interest into environment; c) design of degradation pathways and identification of products of decomposition of contaminants. We

employed DFT computational techniques for investigation of conformational transitions and vibrational spectra of a nitramine CL-20. The mechanism of conformational transitions was studied. The method of determination of presence of each polymorphic phase in their mixture was proposed. The physico-chemical properties, which determine distribution of a substance in the environment, such as vapor pressure, Henry's law constants, water solubility, octanol-water partition coefficients, heats of formation and ionization potentials, were studied using combination of DFT methods and COSMO-RS technique. Several most important methods of decomposition of CL-20: unimolecular decomposition, alkaline hydrolysis and photodecomposition were studied. We proposed possible mechanisms of decomposition and used DFT calculations in combined experimental/theoretical studies for product identification.

O3.14

9:20 DETECTION OF PEROXIDE-BASED EXPLOSIVE TRIACETONETRIPEROXIDE (TATP) USING ELECTROGENERATED CHEMILUMINESCENCE

Suman Parajuli, Wujian Miao

Department of Chemistry and Biochemistry, The University of Southern Mississippi

Triacetone triperoxide (TATP) is one of the common peroxide-based explosives. It is very sensitive to the friction, heat and impact. TATP is very popular among terrorists because it can be synthesized easily from the readily available chemicals from the market. It has become a great concern for the department of homeland security, especially in the transportation security.

TATP was synthesized and characterized as it is not commercially available. The electrochemical studies were carried out using cyclic voltammetry (CV) with different working electrodes such as gold, platinum and glassy carbon in acetonitrile containing 0.10 M tetra-n-butylammonium perchlorate. The CV showed a small and broad reduction peak at ~ -1.5 V vs Ag/Ag⁺, suggesting that the reduction of TATP is either very difficult or kinetically slow. During the cathodic potential scanning, highly reactive hydroxyl radicals are expected to form from TATP, which could oxidize tris(2,2'-bipyridyl)ruthenium (I) (Ru(bpy)₃⁺) electrochemically reduced from Ru(bpy)₃²⁺ to generate the excited species Ru(bpy)₃^{2+*} that emits light. The light intensity should be proportional to the concentration of TATP in the solution.

Methods for catalyzing the reduction of TATP so as to enhance its electrogenerated chemiluminescence will be presented.

O3.15

9:40 EFFECT OF DIRECT OXIDATION OF METHANOL AND MIXED ALCOHOL FEEDS ON PROTON EXCHANGE MEMBRANE (PEM) FUEL CELL PERFORMANCE

Bethany Rankin¹, George Armstrong¹, Hazem Tawfik¹, Devinder Mahajan¹

¹Tougaloo College, ²Farmingdale State College, ³Brookhaven National Laboratory

The low-temperature, environmentally-safe, fuel cell's eclectic application uniquely defines it as an attractive alternative to the internal combustion engine for providing portable energy. The significant power density and convenient storage of alcohol feeds as they compare to hydrogen make them an intriguing source of energy [1]. There is an increase in the production of glycerol as a byproduct of bio-diesel production. Research is underway to demonstrate that glycerol can be reformed to produce hydrogen and mixed alcohols.[2]. In this experiment the performance of the fuel cell employing 3%, 5%, 7%; methanol, ethanol, and propanol; respectively, and mixed alcohol feeds of (1: 1: 1 ratio of methanol, ethanol, and propanol) was at 200 °C and 400 °C, and pressure of 15 psi on a Membrane Electrode Assembly (MEA) containing a Nafion 117 membrane with a active area of 2.54cm x 2.54 cm and graphite bipolar plates. The results showed that 5 %and 3% methanol feeds at 400°C provide the highest power densities (6.12 mW cm⁻² and 5.08 mW cm⁻² respectively). In most cases but there was a significant increase in the capacity of the current load (10 mA cm⁻²). The 3% and 5% methanol feeds yielded the optimum power densities at 200°C (5.43 mW cm⁻² and 4.71 mW cm⁻² respectively).

O3.16

10:00 PREVALENCE OF BPA EXPOSURE FROM FOOD CONTAINERS

Chiquita McDaniel, William Mahone

Mississippi Valley State University

Bis Phenol A (BPA), is a chemical commonly used in the manufacture of epoxy resins and polycarbonates. It is also used routinely as a fungicide. However the prevalence of polycarbonates in food containment systems has led to wide spread concern about human exposure. There is a great deal of debate about the safe exposure levels as well as prevalence of exposure for this chemical. In the current research effort we develop methods for extracting BPA from food containers and testing the extracts for the presence of the chemical using GC/MS technology. Based on our data we have concluded that BPA can be shown to exist in a wide variety of food containers.

O3.17
10:20 BIOACCUMULATION PROFILE OF QUANTUM DOTS OF CADMIUM SELENIDE ON RATS

 Zikri Arslan¹, Sabri Agachan¹, Erin Russell², Ibrahim Farah¹, Weiyong Yu³, Anthony Bednar⁴
¹Jackson State University, ²Mississippi College, ³Worcester Polytechnic Institute, ⁴Army Engineer Research and Development Center, Waterways Experiment Station

Quantum dots (QDs) exhibit bright and long-lasting fluorescence upon excitation by a light source. The color of emission (fluorescence) can simply be tuned by changing the size of the particles. With these interesting features, QDs appear to be potential materials in optical probing in the near future for medicinal diagnostics, imaging, and technology. While most applications today concentrate on device fabrication with high-quality QDs to respond to the medical and technological demand, little is known about their effects on biological systems and environment. In this study, we have examined the stability and safety of CdSe QDs of 3.8 nm in size. Water-soluble forms CdSe QDs were exposed to UV light (365 nm) for 5 h. Another solution of CdSe QDs was subjected to ultrasounds using titanium ultrasonic probe for 10 min. The bioaccumulation pattern was studied on animal models by injecting the QDs solutions to rats intraperitoneally. No significant degradation was observed from sonication, while UV light led to decomposition of the particles to some extent. Analysis of animal organs, including, the brain, lungs, heart, kidney and liver, showed that injected dots primarily accumulated in the liver and kidney. Levels of cadmium in the organs were always greater than that of selenium, which suggests that QDs underwent metabolic degradation to ionic Cd²⁺ and Se²⁻. Pathological examinations revealed that exposure induced lesions in the liver and kidney.

O3.18
10:40 GOLD NANOPARTICLE BASED NSET ASSAY FOR MONITORING RNA FOLDING KINETICS

Jelani Griffin, Uma Rai, Paresh Ray

Jackson State University

RNAs play critical functional roles in metabolism, replication, regulation, and development of cells. This increasing appreciation of RNA as a crucial biopolymer demands more than ever a clear picture of how RNA molecules fold into their native structures. Steady-state FRET measurements in solution allow one to measure the kinetics and requirements of docking of its two independently folding domains; time-resolved FRET reveals the relative thermodynamic stability of the undocked and docked ribozyme conformations. However, the length scale for detection using FRET-based methods is limited by the nature of the dipole-dipole mechanism, which effectively constrains the length scales to distances on the order of <100 Å. Recently we have demonstrated that nanomaterial based surface energy transfer (NSET) is a technique capable of measuring distances nearly twice as far as FRET in which energy transfer from a donor molecule to a nanoparticle surface follows a predictable distance

dependence; decrease in donor fluorescence intensity is translated into a measurable distance decrease between donor and acceptor. Here we want to demonstrate that gold NSET can be used to track the folding of RNA. As a model system, the conformational changes two-helix junction RNA molecules induced Mg²⁺ ions is studied by measuring time dependent fluorescence signal. The transition from an open to a folded configuration changed the distance between gold nanoparticles and the dye molecule attached to the ends of two helices in the RNA junction. So the folding process has been monitored from the change of fluorescence intensity.

O3.19
11:00 ELECTROGENERATED CHEMILUMINESCENCE OF SEMICONDUCTOR NANOPARTICLES

 Emma Harris¹, Shijun Wang², Wujian Miao²
¹Mississippi University for Women, ²University of Southern Mississippi

A system for the detection of the C-reactive protein was attempted. We utilized the principles of UV-visible, fluorescence, electrogenerated chemiluminescence, and inversion microscopy. UV-visible was used in order to find the lambda max of quantum dot 625, which was in the region of 400nm. Fluorescence was used to determine the best excitation for quantum dot 625. This excitation was 300nm. Electrogenerated chemiluminescence was used to determine that the best coreactant for quantum dot 625 was 2-n-dibutoaminoethanol (DBAE). Electrogenerated chemiluminescence was also used to determine the best concentration of DBAE to be used in conjunction with quantum dot 625, and which electrode would produce the best ECL intensity. Our work established that a system could be devised in an aqueous solution that would allow quantum dot 625 to fluoresce under ECL conditions.

O3.20
11:20 TiO₂, NANO-SIZED Ag/TiO₂ AIDED PHOTOCATALYTIC DEGRADATION OF SELECTED NITRO-POLYCYCLIC AROMATIC HYDROCARBONS (NPAHs)

Samuel Dasary, Dulal Senapati, Ashley Chornes, Keonia Smith, Paresh Ray, Hongtao Yu

Jackson State University

Photochemical degradation of NPAHs is very complex. Earlier we observed very slow photodegradation of 1-nitropyrene, 3-nitrofluoranthene, 2-nitrofluorene and 2,7-dinitrofluorene in moderately polar solvents like acetonitrile. It is a well established fact that TiO₂ aids in efficient photodegradation and this property can be further enhanced by metal/semiconductor catalysts. Degradation of 4 NPAHs is studied using a 365±20 nm UVA lamp with anatase-TiO₂ (P-25) and nano-sized Ag/TiO₂ as catalysts. From the preliminary tests (irradiation for 60 min), we have observed that degradation rates are much faster in the presence of the catalyst. While 2,7-dinitrofluorene and 2-nitrofluorene were completely degraded



with Ag/TiO₂, anatase-TiO₂ was found to be better in the case of 1-nitropyrene (75% degradation). Characterization of the nano-sized Ag/TiO₂ showed an average particle size of 50-75nm. Degradation follows mostly first order kinetics indicating that the rate determining step involves one NPAH molecule.

O3.21

11:40 SIZE AND DISTANCE DEPENDENCE NSET RULER FOR SELECTIVE SENSING OF HEPATITIS C VIRUS RNA

Dulal Senapati, Jelani Griffin, Anant Kumar Singh, Paresh Chandra Ray

Jackson State University

We have reported size and distance dependent NSET properties of gold nanoparticles for recognizing hepatitis-C virus HCV RNA sequence sensitively and selectively (single-base mutations) in a homogeneous format. Quenching efficiency increases by three orders of magnitude, as the particle size increases from 5 nm to 70 nm has been demonstrated. Due to this extraordinarily high K_{SV}, NSET detection limit can be as low as 300 fM concentration of RNA depending on the size of gold nanoparticle. We have shown that the distance dependent quenching efficiency is highly depend on the particle size and the distance at which the energy transfer efficiency is 50%, ranges all the way from 8 nm, which is very closer to the accessible distance of conventional FRET, to about 40 nm by choosing Gold Nano-Particles of different diameters. Our result points out that the DMPET and NSET model provides a better description of the distance dependence of the quenching efficiencies for 8 nm gold nanoparticle, but agrees poorly for 40 and 70 nm gold nanoparticles, where the measured values were always larger than the predicted one.

ECOLOGY AND EVOLUTIONARY BIOLOGY

Chair: Clifford A. Ochs, University of Mississippi

Vice-chair: Mac H. Alford, University of Southern Mississippi

FRIDAY MORNING

DOGWOOD ROOM

8:45 Roundtable Discussion: THE 200TH ANNIVERSARY OF DARWIN'S BIRTH: WHY IS EVOLUTION STILL SO FREQUENTLY DENIED OR MISUNDERSTOOD? APPROACHES TO TEACHING EVOLUTION.

Moderated by Clifford Ochs and Mac Alford.

O4.01

9:45 RAPID BIOASSESSMENTS ON STREAMS ALONG THE NATCHEZ TRACE PARKWAY

Bonnie Earleywine, Eric Dibble

Mississippi State University

Stream quality is commonly assessed using the Environmental Protection Agency's rapid bioassessment protocol of water chemistry, habitat assessments, and fish and benthic macroinvertebrates. These assessments are useful and informative to evaluate impacts that land use has on streams. We conducted bioassessments in forty-five streams, identified land practices, and compared water quality parameters within six watersheds along the Natchez Trace Parkway. We measured for potential land use effects by sampling water quality metrics (April 2008-January 2009), and benthic macroinvertebrates and habitat assessments (June 2008). Our data demonstrated differences in these water quality metrics across watersheds. Jackson Falls of the Tennessee River watershed exhibited the highest pH readings seasonally, while the lowest readings were recorded in the Pearl River watershed. Conductivity (μS/cm) was lowest in the Tombigbee and Tennessee rivers watersheds and highest in Mississippi and Tombigbee rivers watersheds. *Escherichia coli* was estimated as >200.5 colonies/100ml in all but three streams for the sampling period. Fecal *E.coli* was highest in Mississippi, Tombigbee, and Big Black rivers watersheds. *E.coli* contamination did not seem to be correlated with rainfall. Lowest suspended solids were in Tennessee and Cumberland rivers watersheds while the highest were in Tombigbee and Mississippi rivers watersheds. In addition, land use types and bioassessment data were compared to evaluate relationships between land use stream parameters.

O4.02

10:00 THE EFFECTS OF LATE 20TH CENTURY LAND USE ON BIRD POPULATIONS AT PLYMOUTH BLUFF ENVIRONMENTAL CENTER IN NORTHEASTERN MISSISSIPPI.

Lauren Thead, Paul Mack

Mississippi University for Women

Plymouth Bluff, located just southwest of Columbus, MS, is an area of land near the Tennessee-Tombigbee Waterway. Plymouth Bluff is managed by the Mississippi University for Women (MUW) through an agreement with the U.S. Army Corps of Engineers. Although local bird populations were assessed in the 1930s in an area that is now primarily encompassed by the Plymouth Bluff Center, land use in the area has changed substantially over the last seventy years. To assess the effects of recent land use patterns on local bird populations, we have used circular plots to estimate population densities for a number of resident bird species in lowland hardwood forest, upland pine, and cypress swamp habitats at Plymouth Bluff. Preliminary analyses of data collected on bird populations will be presented along with general comparisons of current estimates with those based on specimen collection records from the 1930s.

O4.03**10:15 SPATIAL AND TEMPORAL VARIATION IN PHYTOPLANKTON PROPERTIES IN THE LOWER MISSISSIPPI RIVER AND CONNECTED FLOODPLAIN LAKES**

Orathai Pongruktham, Clifford Ochs

University of Mississippi

Large river-floodplain ecosystems are important as habitats, food sources and transportation routes for many different kinds of organisms, including a large number of threatened and endangered species. These systems are spatially heterogeneous with respect to physical (e.g. water depth, light) and chemical (e.g. nutrients) conditions. Hydrological connectivity between different habitat patches in these ecosystems is assumed to be a major factor controlling their biological characteristics. We are investigating the relationship of connectivity among the main channel of the Lower Mississippi River and several oxbow lakes on algal community properties. Between March and October 2008, water samples were collected from the LMR and three oxbow lakes that have different degrees of hydrological connection to the main channel. In the laboratory, the samples were analyzed for algal biomass, algal productivity, total suspended solids, and particulate and dissolved nutrient concentrations. In situ limnological parameters such as temperature, dissolved oxygen and light attenuation were also measured. Results indicate that spatial and temporal patterns in algal community properties are strongly linked to the degree of connection with the main channel.

O4.04**10:30 TEMPORAL PATTERNS IN CONCENTRATIONS AND DISCHARGE OF DISSOLVED AND PARTICULATE MATERIALS IN THE LOWER MISSISSIPPI RIVER**

Clifford Ochs, Heath Capello, Orathai Pongruktham

University of Mississippi

The Mississippi River has the largest discharge of any river in N. America, with important consequences for the chemistry and biotic integrity of the Gulf of Mexico. From 2006-08 we examined temporal patterns in concentrations of algal biomass, nutrients (N and P), organic carbon and suspended sediments in the Lower Mississippi River. Concentrations of dissolved and particulate materials were related to discharge but in different ways. Algal biomass was inversely related to discharge rate. Nitrate concentration had a hyperbolic relationship with discharge, while dissolved P concentration changed little with discharge. We suggest the shapes of the relationships of discharge and chemical concentration are indicative of the mobility of different substances in the river watershed. From measurements of concentration and river discharge, we quantified fluxes of these materials in the Lower River. Such discharge-flux models can be used to examine the relationship of precipitation in the watershed to flux rates of materials in the river.

10:45 Break**O4.05****11:00 TOWARD A WELL-RESOLVED AND ROBUST PHYLOGENY OF THE TROPICAL PLANT FAMILY SAMYDACEAE**

Mac Alford, Tharangamala Samarakoon, Angela Dement

University of Southern Mississippi

The flowering plant family Samydaceae was recently circumscribed to include 14 genera and about 240 species of tropical trees and shrubs. Preliminary analyses of relationships in the family, however, indicated that the largest genus, *Casearia*, is not monophyletic and that several smaller groups are probably misplaced. In order to affirm or refute those hypotheses, additional morphological and DNA sequence data were gathered for phylogenetic analysis. In particular, rapidly evolving plastid and nuclear DNA regions were sampled for characters. The results resolve the placement of *Osmelia*, a genus not previously sampled, and continue to indicate that *Casearia* is not monophyletic. The results suggest that one previously recognized genus, *Piparea*, should be reinstated and that a new genus should be created for one section of *Laetia*. Unfortunately, in order to maintain the name *Casearia* for most of the species, a conversation proposal must be introduced.

O4.06**11:15 EXPLORING COMPETITION BETWEEN TWO SPECIES OF MYCORRHIZAL FUNGI**

Chigozie Udemgba, Jason Dale Hoeksema

University of Mississippi

Previous work in our laboratory partially tested whether two species of ectomycorrhizal fungi competed (Hoeksema, unpublished data). Hoeksema grew sugar pines (*Pinus lambertiana*) testing colonization of roots by *Rhizopogon truncatus* and *R. occidentalis*. He found that *R. occidentalis* colonized numerous roots when it was inoculated alone, but colonized very few roots of the plants on which *R. truncatus* was already present. We tested for competition between the ectomycorrhizal fungi *Rhizopogon truncatus* and *Rhizopogon occidentalis* on the roots of Monterey pine (*Pinus radiata*) seedlings. We employed 6 different types of treatments. The first treatment was to have the pine seedling grow with no mycorrhizal fungi. The next was to have pine seedlings grow with *R. truncatus*. The third treatment was to have pine seedlings grow with *R. occidentalis*. The fourth treatment is to have the pine seedlings to grow in soil first inoculated with *R. truncatus*, and later with *R. occidentalis*. The fifth treatment is to have the pine seedlings to grow in soil first inoculated with *R. occidentalis*, and later with *R. truncatus*. Finally, have pine seedlings grow in soil with *R. truncatus* and *R. occidentalis* simultaneously. Based on previous results, we expect *R. truncatus* to outcompete *R. occidentalis* when *R. truncatus* is inoculated first. There are two possible scenarios that we may observe in the remaining treatments. One scenario is that *R. truncatus* is always a better competitor. A second possibility is that priority effects will play an important role in competition.

O4.07**11:30 PRELIMINARY REPORT ON THE STATUS OF GREEN SALAMANDER POPULATIONS IN MISSISSIPPI**

Thomas Rauch¹, Jim Lee², Amanda Lawler¹, J. William Cliburn¹
¹William Carey University, ²The Nature Conservancy

The green salamander (*Aneides aeneus*) is patchily distributed and uncommon throughout the majority of its range in the eastern USA and is found within rock outcroppings in northeast Mississippi. Surveys were conducted in 1967-68 and 1990 upon the only known Mississippi populations, located within and adjacent to the Tishomingo State Park. We began resurveying these sites in 2008 to determine the current condition of green salamander populations in Mississippi. Green salamanders were found in all three locations at which they have historically been found within the state park. Green salamanders were abundant in one location (behind family cabins 1, 2, and 3) in 1967 to 68 but were less abundant in 1990 and 2008. Population numbers at Springhill Cliffs did not change between 1990 and our surveys in 2008. We will continue these surveys until the summer of 2009.

O4.18**11:45 WHAT IS THE SISTER GROUP TO THE WILLOWS AND COTTONWOODS (SALICACEAE)?**

Mac Alford, Rebecca Brantley, C. Liliana Hernández
 University of Southern Mississippi

The closest relatives of the flowering plant family Salicaceae, which includes *Salix* (willows) and *Populus* (cottonwoods, poplars, aspen), has long been a mystery. Its unisexual, sometimes wind-pollinated flowers that lack sepals and petals convinced some botanists that the family was primitive among flowering plants. Recent studies, though, have affirmed that the family is not primitive but is related to members of the Malpighiales, an order which includes violets and passion flowers. In fact, several studies have now demonstrated that the family is closely related to a tropical family formerly known as Flacourtiaceae. However, in all of these studies, the closest relatives of *Salix* and *Populus* were not resolved. In order to solve this mystery, morphological data and plastid and nuclear DNA data were gathered for phylogenetic analysis. The results indicate that two Central American and five Asian genera are the closest relatives. The inter-relationships of these relatives clarifies the evolution of sepal and petal loss, the transition to unisexual flowers, and the homology of the nectary glands in *Salix*.

12:00 Divisional Business Meeting**FRIDAY AFTERNOON****GRAND BALLROOM****1:00 POSTER SESSION****P4.01****HEMATOLOGICAL PARAMETERS IN THE FRESHWATER TURTLE, *TRACHEMYS SCRIPTA*.**

Carol Britson

University of Mississippi

Methemoglobin is a variant of hemoglobin in which the ferrous ion has been oxidized to the ferric state, which is incapable of transporting oxygen in the blood. The percent of hemoglobin thusly affected has been suggested as a biomarker for exposure to nitrate and nitrite in aquatic environments. Nitrate can be converted to nitrite by bacterial flora in the digestive tract, and once absorbed into the bloodstream oxidizes hemoglobin to methemoglobin. Acute or chronic elevated methemoglobin can be lethal (i.e., methemoglobinemia) and is a risk whenever nitrate levels exceed 10 mg/L. The goal of the present research was to obtain baseline methemoglobin data for the freshwater turtle, *Trachemys scripta*, to develop a protocol for assessing exposure in these organisms and to assay other blood parameters for this species. Blood (200 ml) was obtained from the femoral vein of the turtles and analyzed for methemoglobin content. In addition to methemoglobin analysis other assays including oxyhemoglobin saturation, red and white blood cell counts, hematocrit and protein serum levels were conducted in order to compare the blood of *Trachemys scripta* with hematological data from other turtles. While methemoglobin results were inconsistent, the additional assayed blood parameters were comparable to published values for other species of turtle.

P4.02**FOOD INTAKE RATES AND RATE OF ASSIMILATION BY JUVENILE SIREN INTERMEDIA**

Patrick Spencer, Eric Blackwell, Nina Riding

Delta State University

Siren intermedia, the lesser siren, is an aquatic salamander indigenous to the Southeastern ranging from the east coast to Texas and occasionally as far north as Michigan. The body is long and eel like with small front legs, no rear legs, and large frilly external gills. Lesser sirens are seasonal bottom feeders and are considered to be a valuable part of freshwater wetland ecosystems; possibly serving as a keystone predator. Habitat characteristics such effects of runoff, water chemistry, and seasonal temperature variation are evaluated. Our study provides an opportunity to report behaviors and growth rates of *Siren intermedia* which have previously been undocumented. Several populations inhabiting ponds and ditches near Merigold, MS provided the juvenile salamanders for this study. The hatchlings were analyzed in a captive setting with a constant food supply to establish food intake and rate of assimilation as well as to establish an artificial growth rate. The growth rate was determined using the von Bertalanffy growth equation with biweekly measurements being the growth interval.

GEOLOGY AND GEOGRAPH

Chair: Zachary Musselman, Millsaps College
Vice-chair: Johnathan McMillin, MS Dept. of
Environmental Quality

THURSDAY AFTERNOON**WALNUT ROOM****05.01****9:00 UPDATE ON A REVISED GEOLOGIC MAP OF MISSISSIPPI**

David Thompson

Office of Geology, MDEQ

The long-term mapping strategy of the Mississippi Office of Geology is to completely map the geology of the state at a 1:24,000 scale, the scale of 7.5-minute quadrangle maps. As there are over 840 quadrangles in this coverage, mapping priority is typically given to areas where existing geologic maps are deficient, or to address environmental/ground-water-recharge concerns. Since 1990, a total of 92 geologic quadrangles have been completed under STATEMAP funding, and another 52 geologic quadrangles have been mapped supplementally (144 total). A number of mapping units have been completely mapped across their outcrop, and other units are nearing completion. In light of this, preliminary work is underway to incorporate new mapping into a revised statewide geologic map (1:500,000). Revised and/or added mapping units include, in ascending order, Porters Creek, Naheola, Nanafalia, Tuscahoma, Hatchetigbee, Meridian Sand, Tallahatta, Zilpha/Winona, Kosciusko, and Cook Mountain formations. On the 1969 Geologic Map of Mississippi (Bicker), the Naheola Formation appears as an anomalous, discontinuous outcrop. Current mapping portrays an unbroken Naheola belt across Mississippi, from the Alabama to Tennessee state lines. This belt is an important economic horizon containing lignite, clay resources, kaolin, bauxite, and titanium/zircon-rich heavy minerals. The 900-foot thick Wilcox Group was mapped as undifferentiated on the 1969 map. It is now subdivided into its component formations (Nanafalia to Hatchetigbee), which are important lignite-bearing and aquifer recharge horizons. In northern Mississippi, the new mapping restrains the anomalous Claiborne overlaps of the 1969 map, and reflects largely normal thicknesses for formations.

05.02**9:15 THE SECOND OLDEST REPORTED PRIMATE TEILHARDINA MAGNOLIANA, NAMED AFTER THE MAGNOLIA STATE, DESCRIBED FROM EARLY EOCENE FOSSILS FOUND AT MERIDIAN, MISSISSIPPI**

David Dockery

Mississippi Office of Geology

Chris Beard, of the Carnegie Museum of Natural History, named early primate fossils from the T4 sand of the

upper Tuscahoma Formation at the Red Hot Truck Stop locality at Meridian, Mississippi, as the new species *Teilhardina magnoliana* in the March 11, 2008, edition of the Proceedings of the National Academy of Sciences of the United States of America (v. 105, no. 10, p. 3815-3818). Beard noted that undoubted primates "appear almost synchronously in the fossil records of Asia, Europe, and North America," but recognized the Mississippi species as the most basal member of its genus as currently known from either Europe or North America. This status was based on a phylogenetic analysis of dental characteristics, which placed them as the most primitive primate known outside of China. A plate illustrated a composite partial dentition of eight teeth from at least three individuals; twenty teeth have been found to date. The T4 sand was first published as Late Paleocene immediately below the Paleocene-Eocene boundary. The age of the T4 sand was determined from a dinoflora dominated by *Apectodinium hyperacanthum*; *Apectodinium* is an index taxon for the Paleocene-Eocene thermal maximum (PETM). This thermal maximum is now placed as early Eocene in age, thus moving the Paleocene-Eocene boundary downward somewhere within the Tuscahoma Formation. *Teilhardina* specimens from Europe occur within the *Apectodinium acme* zone but within sea-level lowstand deposits rather than below them as at Meridian.

05.03**9:30 EXCAVATION OF A PARTIAL SKELETON OF A JUVENILE ZYGORHIZA KOCHII IN THE LOWER YAZOO CLAY, YAZOO COUNTY, MISSISSIPPI**

James Starnes¹, Tyler Berry²

¹*Mississippi Office of Geology*, ²*Millsaps College*

During September-October 2008, a partial skeleton of a juvenile *Zygorhiza kochii* was excavated from the Yazoo Clay in an unnamed tributary of Piney Creek, near Benton Mississippi (Southeastern ¼ of Section 18, Township 12 North., Range 1 West, Yazoo County). The specimen is fragmentary and largely disarticulated. It is currently represented by: eleven vertebrae including cervical, dorsal, caudal and lumbar elements, along with seven vertebral growth plates with underdeveloped sutures; several rib fragments (mostly posterior). Bone preservation is exquisite, as delicate textured surfaces are preserved where cartilaginous tissues once attached. Vertebrae neural spines and rib fragments show semicircular incisions as evidence of intense scavenging by sharks and other predatory fishes. The fossil bones rested on a well-preserved ancient sea floor surface. This sea floor surface is a bedding plane marked by intermittent invertebrate shell hash containing a concentration of associated fossil vertebrates including: small tiger shark, nurse shark, ray, barracuda, and other fish vertebrae and teeth. This associated fauna is attributed here to a "whale fall" assemblage, such as is found around modern whale remains resting on the sea floor. Whale falls host a complex ecosystem around the whale carcass before burial on an otherwise featureless and barren ocean bottom.

**O5.04****9:45 THE BLUE SPRINGS FOSSIL DECAPOD HORIZON IN THE COON CREEK TONGUE OF THE RIPLEY FORMATION IN UNION COUNTY, MISSISSIPPI**

David Dockery, James Starnes

Mississippi Office of Geology

Gale Bishop (1983) published a decapod fauna of ten species based on some 1,300 specimens from the Coon Creek Tongue of the Ripley Formation in a roadcut on Highway 9 just north of Highway 78 at the Blue Springs exit. Other collections were made from this locality until the locality became completely overgrown. A new outcrop in a borrow pit (largely opened in 2008) on the west side of Highway 9 and north of the old locality has re-exposed the fossil decapod zone. Here the zone contains decapods preserved both as phosphatic molds and non-phosphatic shells, fossil mollusks, and phosphatic concretions. It also contains paired valves of the deep-burrowing clam *Panopea* preserved upright in life position. Decapod phosphatic molds consist largely of the carapace and the stumps of the legs. Non-phosphatic crabs preserved in place may contain the extremities of the legs and the arms and claws. Bishop (1991) increased the Blue Springs decapod species count to 13. He believed the phosphatized crab steinkerns to represent a cycle of preservation and exhumation. Unphosphatized crabs with delicate legs represent a biocoenosis, possibly due to seasonal anoxic conditions known today as "dead zones." Such dead zones occur after algal blooms, produced by the nutrient-rich water of the Mississippi River, decay and deplete oxygen across a large area of the north-central Gulf of Mexico sea floor.

O5.05**10:00 LATE QUATERNARY VEGETATION CHANGES IN THE MISSISSIPPI-ALABAMA BLACK PRAIRIE**

George Phillips

Mississippi Museum of Natural Science

The Mississippi-Alabama Black Prairie, or 'Black Belt,' is a distinctive physiographic, phytogeographic, and agroecologic district occupying ~6,200 square miles of the older, inner part of the Central Gulf Coastal Plain. Topographically, the Black Prairie is a shallow, arcuate basin bounded by the Fall Line Hills to the east and north, the Flatwoods to the west (Mississippi), and Chunnenugee Hills to the south (Alabama). The physiography and pedology of the district is determined by Upper Cretaceous calcareous sediments of the Selma Group. Prior to European settlement, the Black Prairie consisted of a mosaic of forest and prairie, largely forest (~90%) but intervened in the upland stream divides by small, insular grassland prairies (~10%), typically $\leq 2,000$ acres. Like much of the Americas during the latest Quaternary, the botanical composition of the Black Prairie has changed through three phases of occupation--Pre-Occupational ($> \sim 12.0$ kBP), Amerind (~ 12.0 to 0.17 kBP), and European (< 0.17 kBP)--as the result of

anthropogenic disturbance, nonnative introductions, and climate change. Geological, paleontological, and historical data accumulated thus far have contributed to an increasingly clearer picture of how vegetation in this district has changed over the last 70,000 years. Most recently, paleofaunistics of Late Pleistocene vertebrates from the Black Prairie, utilizing primarily relative species abundance and stable isotope analysis, has provided clues to understanding the ecology of the district prior to human influence and the post-Wisconsinan global warming trend.

10:15 Break**O5.06****10:30 GEOLOGICAL EXHIBITS AT THE MISSISSIPPI CHILDREN'S MUSEUM**

Michael B. E. Bograd¹, Susan Garrard²

¹*Mississippi Office of Geology*, ²*Mississippi Children's Museum*

Plans for the Mississippi Children's Museum to be built in Jackson include several exhibits on geology. The museum designers and educational consultants have talked with the geological community in Mississippi about features to include and how to exhibit them. A major exhibit in the museum will be a map of Mississippi where visitors can walk around educational features on the surface, and also tour the subsurface. Surface features will include physiography, a hands-on fossil whale dig, and the Mississippi River. The underground access tunnels provide many opportunities for wall displays as visitors go to three underground rooms. The biggest room will be the volcano room under central Mississippi. There will be displays about the Jackson Dome and also a display from the seismograph to be installed outside the building. The room under the Delta will display the stratigraphic column and will have drawers containing rocks and fossils from various horizons. The gopher tortoise room will illustrate soils and archeological artifacts. Planning is still ongoing; other exhibits may include an oil well, a gravel mine, and perhaps mollusks and other fossils. This state of the art museum will be a plus for science education in the state and for geologic literacy in particular.

O5.07**10:45 SLOPE FAILURE AT MILLSAPS COLLEGE, JACKSON, MISSISSIPPI**

Stan Galicki

Millsaps College

A historically altered slope composed of Pre-Loess Terrace deposits was excavated and replaced with a 2 m high retaining wall. Although drought conditions in the spring and summer of 2007 masked the hydrology of the Pre-Loess Terrace during construction, two important indicators of the slope's hydrology were ignored. The base of the slope featured well established hydrophytic vegetation, and the scar from a 1988 slump was still evident on the eastern margin of the proposed

wall's footprint. By late fall, the cumulative annual precipitation had returned to average values and a slight horizontal deflection of the wall was observed. In mid-December 2007 a slump formed that resulted in an initial scarp of approximately 1 m and horizontal wall displacement at the toe of 2 m. Movement over the next two months resulted in 3.4 m horizontal and 0.7 m vertical deflection of the wall at the toe and 2.3 m of vertical displacement at the head. A slope indicator survey indicated a failure surface coincident with the base of the low permeability backfill. Conventional core analysis of the backfill material indicated a dry bulk density of 97.4 lbs/ft³ and wet bulk density of 119.3 lbs/ft³. The unit weight of the pre-cast blocks was 119.07 lbs/ft³. Factors contributing to the failure of the engineered block retaining wall include the use of low permeability Pre-Loess Terrace as backfill material, inadequate drainage design, and failure to observe signs of existing hydrologic conditions.

05.08

11:00 SOURCE TO SINK SEDIMENTOLOGICAL CHARACTERISTICS WITHIN MILL CREEK, RANKIN COUNTY, MISSISSIPPI

Chad Killcreas, Zachary A. Musselman
Millsaps College

The goal of this study is an in-depth analysis of the bed material found in Mill Creek sampled from various points between its headwaters near Brandon, Mississippi, and its mouth in Pelahatchie Bay within the Ross Barnett Reservoir. Textural characteristics will be analyzed to determine grain size, shape, and roundness/angularity. The results will help determine if a significant amount of a certain grain size is being transported by the stream and if any characterization can be applied to the grains that will correlate them with their source. This study also hopes to provide evidence that anthropogenic factors may be, at least in part, responsible for the perceived increase in sediment transported by the stream in recent years. Mill Creek originates in manmade lakes and has experienced drastic changes in land use within its drainage basin over the last few decades. The amount of land in farms within Rankin County has dropped from 63% in 1950 to 26% in 2002. Preliminary results show that the dominant sediment being transported are fine and very fine, angular to sub-angular, clear sands with little to no coatings. Mineralogically the sediment is dominated by quartz with some potassium feldspar, calcite, and possibly gypsum.

THURSDAY AFTERNOON WALNUT ROOM

05.09

1:30 TESTING THE HYPOTHESIS OF CHANNEL ARMORING IN THE PEARL RIVER BELOW THE ROSS BARNETT RESERVOIR, JACKSON, MISSISSIPPI

R. Tyler Berry, Zachary A. Musselman
Millsaps College

The goal of this project was to collect, analyze, and describe the characteristics of the sediment within the upper reaches of the Pearl River channel and those just downstream of the Ross Barnett Reservoir (RBR). The Pearl River Basin has a contributing drainage area of about 20,200 km² spanning portions of central and southern Mississippi. The basin is divided into an upper and lower basin by the 133 km² RBR near Jackson, MS. The RBR is located about 460 river km above the river's mouth near Pearlinton, MS where it flows into the Mississippi Sound. RBR was constructed in 1962 and is managed as a flow through reservoir, with no flood control; its primary uses are water supply for the city of Jackson and recreation. The upper basin (above RBR) has a drainage area of 7,900 km² and flows through Eocene aged units. The upper reaches of the lower basin (below RBR) flow through Oligocene and Miocene aged units. In this study, we tested the hypothesis of channel sediment coarsening downstream of reservoirs based on dams acting as sediment traps and creating hungry water. Hungry water has been shown to selectively entrain smaller particles leaving an armored channel of coarser sediment in the downstream reaches below dams. Results suggest a unimodal distribution of sediment texture above the RBR with most samples concentrated in the fine to very fine sand textural classes.

05.10

1:45 SHALE LAYERS IN THE ALABAMA SMACKOVER FORMATION AND THEIR IMPLICATIONS FOR THE RELATIVE SEA-LEVEL CHANGE AND REGIONAL CORRELATION

Bradley Winton, Lawrence R. Baria, Ezat Heydari
Millsaps College

Several organic-rich, siliciclastic shale layers, ranging in thickness from 0.5 ft to 50 ft were discovered in the Smackover Formation during the recent drilling in Conecuh, Covington, and Escambia counties of Alabama. Shale layers are readily correlative across the eastern arm of the Conecuh Embayment and appear to pinch out along the rims of the basin. In the basin-ward direction, these shales grade into muddy outer ramp carbonates of a normal marine Smackover sequence. Shale beds are black, laminated, slightly limey, and nearly devoid of marine fauna. Most importantly, shales contain abundant terrestrially derived, herbaceous organic matter. Powdered x-ray diffraction analyses of clay sized fraction reveals an assemblage of chlorite, illite, and kaolinite. We suggest the deposition of these shales occurred during sea-level falls when siliciclastics and terrestrial organic matter were delivered into restricted basinal lows of the region via run off. The clay content of the shale approximates the mineralogy seen in low-grade metamorphic slates, phyllites, and graywackes described in drill penetrations along the Pensacola Arch. The occurrences of these shale layers may indicate up to three sea-level falls during the deposition of the Smackover Formation in Alabama. It is also likely that the shale intervals are correlative with exposure

surfaces previously described from the Smackover Formation in the up-dip areas of the Eastern Gulf Coast region. Therefore, it can be inferred that the observed Alabama Smackover depositional events closely correspond to the deposition of the Smackover "C", "B", and "A" cycles in Mississippi, Arkansas, and Louisiana.

05.11

2:00 NUTRIENT CHEMISTRY OF STORMWATER RUNOFF, LEFLUER'S BLUFF STATE PARK, JACKSON, MS

Maria Greene, Stan Galicki

Millsaps College

The 305 acre Lefluer's Bluff State Park in Jackson, Mississippi contains a 100 acre golf course constructed in upland forested habitat. The adjacent low lying areas are dominated by wetlands in the floodplain of the Pearl River. Overland flow and runoff from the golf course source Eubanks Creek and the Pearl River. A previous investigation suggested a link between elevated nutrient levels in wetland sediment and runoff from the golf course. This investigation monitored both NO_3^- - N and PO_4 concentrations as well as total suspended and dissolved sediment in stormwater runoff during the spring and summer of 2008.

Water samples were taken during seven storm events using an automatic stormwater sampler. The maximum levels of NO_3^- - N and PO_4 recorded were 1.50 and 5.18 mg/L respectively. The average NO_3^- - N level was 0.30 ± 0.59 mg/L and the average PO_4 level was 2.31 ± 2.18 mg/L. Total suspended sediment averaged 513 ppm and total dissolved sediment averaged 199 ppm. Field observations made during two storm events late in the study suggest that overflow from a municipal sewer may be a source of considerable contamination. While source effluent concentrations of NO_3^- - N only averaged 0.06 mg/L, PO_4 averaged 5.82 mg/L. Although there is nutrient input in runoff from the golf course, overall levels appear to be relatively low.

The highest concentrations of PO_4 appear to be the result of sewer overflow directly into the stream.

2:15 Break

05.12

2:30 GROWTH RESPONSE OF DOUGLAS FIR TO THE RED CANYON FAULT, SOUTHWESTERN MONTANA, USA

Rachel Keng, and Stan Galicki

Millsaps College

Dendroseismic research on the Cabin Creek fault created during the 1959 Hebgen Lake earthquake in southwest Montana indicated a growth suppression in Douglas-fir (*Pseudotsuga menziesii*) in growth years following the quake. The objective of this research was to investigate the growth response of Douglas-fir at greater distances from a fault scarp. Two increment cores, one parallel to the slope and the other on the down slope side, were taken from thirty-three Douglas-fir in the Gallatin National Forest. Sampling was divided into three

groups of at least ten trees on the downthrown block of the Red Canyon Fault. One group was located at the fault scarp, another at 75 m, and the last at 150 m from the fault. The average diameter at breast height was 44.9 ± 11.4 cm. Crossdated increment cores will be examined for suppression following the 7.5 magnitude 1959 earthquake. Variations in growth response around the bole within each tree, among trees in each group, and between sample groups will be examined.

05.13

2:45 SEISMIC TOMOGRAPHY APPLIED TO ARCHAEOLOGICAL EXCAVATION: FIELD TESTS AT THE KIUIC SITE, YUCATAN, MEXICO

William Fontaine, James Harris, George Bey

Millsaps College

In June 2008, a seismic survey was conducted at the Kiuc archaeological site in the Central Hills District of southwest Yucatan, Mexico. The main target of the survey was a Maya temple pyramid (approximately 18 m x 16 m) consisting of three stepped platforms. A seismic tomography data set, yielding a total of 1320 raypaths through the structure, was acquired using a 12-channel engineering seismograph and a 1.8-kg sledgehammer source. The velocity structure of the pyramid was imaged through straight-ray tomographic analysis of compressional-wave first arrivals. Velocities range from ~400 m/s near the top of the pyramid to ~2000 m/s at bedrock. The bedrock velocity was confirmed by refraction analysis from a walk-away spread shot in an adjacent plaza. The final velocity model shows small high velocity anomalies at the top level of the pyramid, interpreted to be associated with concrete pads emplaced during stabilization of the upper walls, and a symmetrical low velocity zone (4 m x 6 m) on the back side of the structure near the base that will be tested by excavation in the summer of 2009. The results of this survey suggest that seismic tomography is a feasible noninvasive method for archaeological imaging.

05.14

3:00 SHALLOW SHEAR-WAVE SEISMIC VELOCITY TESTING IN JACKSON, MISSISSIPPI

David Butler, James Harris *Millsaps College*

Earthquake hazards studies of communities in the Mississippi Embayment have shown the importance of measuring properties of the subsurface. One key parameter in determining the dynamic response of a site to earthquake waves is the shear-wave (S-wave) velocity structure of the subsurface. S-wave velocity can be measured directly using surface or downhole seismic methods. We collected downhole seismic data at a site in Jackson, Mississippi, one of the largest metropolitan areas in the Mississippi Embayment. At the site, on the Millsaps College campus, a test hole was drilled by the Mississippi Office of Geology (MOG), cased with 2-1/2" ID PVC casing, and grouted in place. The test hole encountered Pre-Loess Terrace

deposits (Pleistocene) at the top and continued through the Yazoo Clay (U. Eocene), Moody's Branch Formation (U. Eocene), Cockfield (M. Eocene), finally bottoming in the Cook Mountain Formation (M. Eocene). The MOG collected a suite of geophysical logs (including SPR and Gamma) and we have preserved continuous core from the upper 30 m of the hole. Downhole S-wave seismic data were acquired using a three-component borehole geophone system. The sensor was locked to the borehole wall and moved up the hole at 1-m intervals. S-wave travel times from a source (sledgehammer impacting a steel I-beam) at the surface were recorded and the S-wave velocity structure at the site was determined. The results of this project provide an S-wave velocity data set for future ground motion response modeling in the Jackson area.

3:15 Division Business Meeting and Chair Elections

HEALTH SCIENCES

Co-Chair: Kenneth Butler, University of Mississippi Medical Center

Co-Chair: Stacy Vance, University of Mississippi Medical Center

Co-Vice Chair: Pamala Jones, Mississippi Blood Services

Co-Vice Chair: Felicia Tardy, University of Mississippi Medical Center

THURSDAY MORNING

Amiptheater

O6.01

8:30 PHYSIOLOGICAL RESPONSES ASSOCIATED WITH SSRI IN THE ADRENAL GLAND USING ADULT RATS AS A MODEL

Roderick McDowell¹, Michelle Tucci¹, Hamed Benghuzzi¹
¹Tougaloo College, ²University of Mississippi Medical Center

The goal of this study was to investigate effects of SSRIs on the zona glomerulosa, zona fasciculata, and zona reticularis of the adrenal gland in adult male and female rats. The adrenal cortex is responsible for the production of mineralcorticoids (glomerulosa), glucocorticoids (fasciculata), and sex hormones (reticularis). Recent evidence in the literature suggest SSRIs cause increases in glucocorticoid levels in females and decreases in LH, FSH, and testosterone levels in males. Therefore, our aim was to morphologically compare the three zones of the adrenal cortex in both male and female rats treated long term with SSRIs. Thirty male and thirty female rats were equally divided into the following groups: control, saline, SSRI 5 mg, SSRI 10 mg, and SSRI 20 mg. After six months the adrenal glands were harvested, sectioned, and stained with hematoxylin and eosin. The overall results revealed no changes in the glomerulosa of both male and female rats. However, decreases in the areas of the fasciculata were evident in female rats with no

changes in male rats. The reticularis areas were increased in the male rats, but not in the female rats. Overall, the results show differences in the SSRIs in the male and females. The results indicate possible disturbances in corticosteroid levels in female rats and alterations in LH, FSH, and testosterone in male rats. Acknowledgements: This research is supported in part by NIGMS R25 GM50117

O6.02

8:45 THE FREQUENCY AND PERCENTAGE OF OVERRIDES

Casey Carter¹, Deborah Torres¹, Amanda Vargas¹, Alita Perry³
¹Cooperative Intern Program with the Mississippi Gulf Coast Community College—Jackson County Campus Honors Biology and Honors Organic Chemistry Students and Environmental Chemistry Section, ²The National Aeronautics and Space Administration, ³Singing River Hospital System-Cancer Center, Pharmacy

The purpose of this project was to find the percentage of monthly overrides and determine if there were any patterns in override requirements among the different hospital areas. Override is the name given to medications that are ordered during life-threatening or critical situations. Medications are normally stored in a machine called an omnicell, and they are dispensed at particular times each day; however, medication for life-threatening situations can be dispensed at anytime. All that is required is a valid explanation. The authors reviewed the list of overrides to determine which reasons were valid and which were invalid. The invalid reasons were then added together and placed into charts. These charts were then examined to identify trends that might help the hospital know which medications are most frequently used during emergencies. The hospital also evaluated whether some areas needed help distinguishing between real emergencies and non-emergencies. The results indicate some medications were overridden for convenience rather than need, meaning that when medications were ordered as overrides, they were rush-delivered although they were not urgently needed.

O6.03

9:00 INITIATING A LONGITUDINAL STUDY ON BREAST CANCER RISK INDICATORS AND CANCER RECURRENCE RATES IN WOMEN

Marla Turner¹, Rachel Simmons²

¹Mississippi University for Women, ²Weill Cornell Medical College

Breast cancer is the second most common type of cancer for women in the United States. At Weill Cornell Medical College and New York Presbyterian Hospital, we are analyzing trends in their breast cancer patients' data to address the pending issues of breast cancer morbidity and mortality. We predict that analysis of patient data will improve diagnosis and treatment of breast cancer. In addition, we believe analysis of this data will lead to the development of innovative practices and preventative therapies that will decrease the incidences of breast

cancer. We are obtaining pertinent health information about breast cancer risk factors and breast cancer recurrence rates from the patient files and developing the Weill Cornell Breast Cancer Surgical Database for use in longitudinal studies. Preliminary results indicate that incidences of breast cancer are higher in cases the following characteristics: 1) Post-menopausal women who have used hormone replacement therapy for a period of five or more years. 2) Pre-menopausal women who have used oral contraceptives for a period of five or more years. 3) Patients having BRCA1 mutations. Through further analyses, we hope to find a significant correlation between these breast cancer risk indicators and incidences of the disease.

06.04

9:15 A MYSTERY DIAGNOSIS: IMMUNE DYSREGULATION, POLYENDOCRINOPATHY, ENTEROPATHY, X-LINKED RECESSIVE

Melissa Gischel, Carolyn Beck, Margot Hall

The University of Southern Mississippi

Immune dysregulation, polyendocrinopathy, enteropathy, X-linked syndrome (IPEX), a rare disease, has recently been shown to occur more frequently than previously suspected. The clinical phenotype of IPEX is a direct result of an overactive immune system caused by the proliferation of auto aggressive T cells and auto antibody producing B cells. Without prompt diagnosis and treatment the disease can be fatal within one year of life. Symptoms of this disorder appear in early infancy between birth and approximately 7 months of age. The symptoms include ichthyosiform dermatitis, protracted diarrhea, hemolytic anemia, insulin-dependant diabetes mellitus (IDDM), and thyroiditis. IPEX also manifests as thrombocytopenia, eczema, and hypothyroidism. When IPEX patients are diagnosed they will have some form of gastrointestinal disease, thyroid or pancreatic disease, and some type of dermatitis. These symptoms gave rise to the three components of the syndrome's name; immune dysregulation, polyendocrinopathy, and enteropathy. The diagnosis of IPEX depends heavily on the family history, the elimination of other diagnoses of similar presentation, and the clinical presentation. The most successful treatments are immunosuppression combined with steroids and bone marrow transplant. In addition to these treatments, supportive measures are sometimes necessary. Parenteral nutrition, insulin injections, red blood cell and platelet transfusion, and prophylactic intravenous gamma globulin are needed to aid the treatments. A family with this disease presented with these symptoms and was diagnosed with IPEX.

06.05

9:30 FACTORS RELATED TO MISSISSIPPI HOSPITAL STROKE READINESS

Mary Helen Conner², Elgenaid Hamadain¹, Bo Bowen², Debbie Miller¹, Victor Sutton³

¹*University of Mississippi Medical Center*, ²*Information and Quality Health Care*, ³*Mississippi Department of Health, Office*

of Preventive Health

Hospital Stroke Readiness Survey was conducted by Information & Quality Healthcare in partnership with The Mississippi Department of Health to compare the current status of Mississippi hospitals' readiness to rapidly treat acute stroke patients. The overall outcome goal of the initiative is to develop a statewide system of stroke care for Mississippi to provide optimal care to all Mississippians regardless of where they reside in the state. Surveys were conducted in 2005 and 2008 based on the Brain Attack Coalition criteria for establishing primary stroke centers. The surveys were mailed to all Mississippi acute care and critical access hospitals. The 2005 survey response rate was 100% with the 2008 survey response rate being 77%. While many Mississippi hospitals reported following some of the Brain Attack Coalition criteria for primary stroke centers, very few currently have in place all the important identified components for providing quality acute stroke care. Results of the 2008 survey compared to 2005 survey indicated that there has been very little change and some deterioration in the initiation of the Brain Attack Coalition criteria by Mississippi hospitals. This research created awareness among hospital health care providers of the lack of protocols, stroke team, and other criteria related to acute stroke care.

06.06

9:45 THE EFFECTS OF SELECTIVE SEROTONIN REUPTAKE INHIBITORS ON GLOMERULAR MORPHOLOGY AND AQUAPORIN DISTRIBUTION IN RAT KIDNEYS

Jerry Zifodya¹, Hamed Benghuzzi², Michelle Tucci²

¹*Belhaven College*, ²*University of Mississippi Medical Center*

Serotonin is a neurotransmitter that is essential for thought process, anxiety, and mood. Disturbances in serotonin levels can result in alterations in mood, sleep, sexuality, body temperature, appetite, and depression. Selective serotonin reuptake inhibitors (SSRIs) have been developed to increase serotonin concentration within the synaptic cleft to restore homeostasis. This experiment was part of a number of studies carried out to determine the effects of long term administration of SSRIs. Recent evidence suggests SSRIs may increase ADH secretion from the posterior pituitary. The specific goal of this study was to investigate the effects of SSRI at the kidney level using rats as a model. Thirty male and thirty female rats were equally divided into the following groups: control, saline, SSRI 5 mg, SSRI 10 mg, and SSRI 20 mg. After six months the kidneys were harvested and distribution of aquaporin 2 and glomeruli size were evaluated. The results show a dose dependent increase in aquaporin 2 distribution within the kidneys without alterations in glomerular size. These results suggest that there is an increase in ADH levels which leads to the increase in aquaporin 2. Additional research is needed to determine if there is an increase in ADH secretion or if there is an increase in corticosteroids that ultimately leads to increases in aquaporin 2 distribution in the kidneys.

**10:30 POSTER SESSION 1
GRAND BALLROOM**
P6.01
THE EFFECTS OF THYMOQUINONE CONCENTRATION OF MACROPHAGE CELL VIABILITY AND FUNCTION

Kirk Surber¹, Michelle Tucci², Ham Benghuzzi², Joseph Cameron³

¹Hinds Community College, ²University of Mississippi Medical Center, ³Jackson State University

The objective of the present study was to determine the immunomodulatory role of thymoquinone (TQ) regarding its effect on the production of nitric oxide (NO) by macrophages. Under certain conditions, macrophages and certain other cells can produce high concentrations of NO from its precursor L-arginine via the inducible nitric oxide synthase (iNOS) pathway. TQ has been established as the major component of the oil extracted from *Nigella saliva* plant seeds, which is being used frequently in herbal medicine. Macrophage cells administered 5 mM, 10mM and 50 mM of TQ were evaluated for cell number, cellular glutathione content, cellular membrane damage, and cellular nitric oxide after periods of 24, 48 and 72 hours. Following 24 and 48 hours of TQ administration, there were no significant differences in cell numbers, cellular glutathione content, or cellular membrane damage between the control and treatment groups. By 72 hours there was a dose dependent decrease in cell numbers. As the dose increased there was a significant loss in cell numbers. There was a corresponding increase in NO as the dose of TQ increased. This information is important in understanding the potential therapeutic effects of TQ. (Supported in part by NIGMS-NIH Grant R25 GM50117).

P6.02
THE ROLE OF IgG ON ATTACHMENT AND PHAGOCYTOSIS BY MACROPHAGE CELLS

April Ellis¹, Michelle Tucci², Ham Benghuzzi², Joseph Cameron³

¹Hinds Community College, ²University of Mississippi Medical Center, ³Jackson State University

Immunological phagocytic recognition by monocytes and macrophages can be mediated by cell surface receptors for IgM, IgG, and a modified component of complement (C3). Two stages are involved: the attachment of a sensitized particle to the plasma membrane and its subsequent internalization. The relative roles of the above immune factors in particle attachment and ingestion have not been adequately examined. In this experiment our aim was to show staining procedures that show evaluation of cellular attachment and cellular phagocytosis. Hematoxylin and eosin staining technique was used to study the encounter of mouse peritoneal macrophages with erythrocytes coated with either IgG (anti D) or with IgG antibody alone or lysed red blood cells. It enabled us to estimate the relative importance of receptor mediated phagocytosis. We have obtained evidence that the Ig membrane receptor sites may play different roles in the attachment and ingestion phases of particle uptake. (Supported in part by R25 GM50117).

P6.03
ALTERCATIONS IN MACROPHAGE CELLULAR MORPHOLOGY IN RESPONSE TO VARYING CONCENTRATIONS OF THYMOQUINONE

Joanna Hullitt¹, Michelle Tucci², Ham Benghuzzi², Joseph Cameron³

¹Hinds Community College, ²University of Mississippi Medical Center, ³Jackson State University

Thymoquinone (TQ), derived from the medicinal plant *Nigella sativa*, exhibits antiinflammatory and anticancer activities through mechanism(s) that is not fully understood. Because numerous effects modulated by TQ can be linked to interference with cellular signaling, we investigated in detail the effect of this quinone on macrophage cellular morphology. Cells treated with low levels of TQ (5 uM) showed evidence of cellular clumping after 24 hours and by 48 hours there was increase in hyperchromasia with cells showing a compact dense nuclei. As the concentration increased from 5 uM to 10 uM the cells began to show evidence of cellular swelling. The cells appeared to have an increase in the cytoplasm to nucleus ratio after 24 hours. As the concentration was increased to 50 uM there was evidence of increased cytoplasmic vacuolation as early as 24 hours. By 48 hours the high concentration resulted in an increase in cellular fragmentation. The results suggests the possibility that the lower concentration may contribute to increased cellular apoptosis due to the hyperchromatic and dense nucleus; whereas, when the concentration increases, there appears to be a more cytotoxic effect as evidenced by cellular swelling and cellular vacuolization. More information is needed to identify the concentrations which may be beneficial in interfering with the cellular signaling pathways which lead to anti-inflammatory effect as opposed to a cytotoxic or chemotherapeutic effect. Supported in part by NIGMS-NIH Grant R25 GM50117.

P6.04
V. AMYGDALINA EXTRACTS INHIBIT THE GROWTH OF ESTROGEN RECEPTOR POSITIVE/NEGATIVE HUMAN BREAST CARCINOMA CELLS IN VITRO

Brittany Robinson¹, Lecia Gesham², Earnest Izevbigie²

¹Hinds Community College, ²Jackson State University

Tamoxifen (TAM) is one of the most effective chemotherapies against estrogen receptor- positive (ER+) breast cancer (BC). While Paclitaxel or Taxol (TAX) is effective against estrogen receptor-negative (ER-) BC. Health disparities exist in breast cancer mortality; although the incidence of BC is highest in White Women (WW), African American women (AAW) have higher mortality rate than other racial or ethnic groups in the U.S. Evidence suggests that aqueous extracts of *Vernonia amygdalina* (VA) retard the growth of ER+ human BC cells. The effects of VA have not been well characterized in ER- cells. The objective of this study was to investigate the effects of VA in ER- cells. Although, the MDA MB-231 cell line is commonly used for ER- cells studies, the human ductal carcinoma cells (BT-549) have been reported to express little or no ER-alpha and thus represent a suitable model to study ER-

cell growth. Hence MCF-7 (ER+) and BT-549 cells were selected for this study. Mitosis was determined by DNA synthesis assays and confirmed cell counts using a hemacytometer. The results indicate that increasing concentrations of VA abrogated cell growth in a concentration-dependent (10, 100, and 1000 µg/ml) fashion. Estrogen treatment (20 ng/ml) stimulated DNA synthesis in MCF-7 but not in BT-549 cells. The estrogen-stimulated DNA synthesis observed in MCF-7 cells was reversed by either VA or TAM. These data suggest that both ER+ and ER- breast cancer patients may benefit from VA consumption. Supported in part by NIGMS-NIH Grant R25 GM50117.

P6.05

PULSE PRESSURE IS AN INFERIOR PREDICTOR OF INCIDENT CORONARY HEART DISEASE IN AFRICAN-AMERICANS: THE ARIC STUDY.

Kenneth Butler, Alan Penman, Thomas Mosley, Herman Taylor
University of Mississippi Medical Center

In European-Americans, pulse pressure (PP) is a stronger predictor of coronary heart disease (CHD) risk than either systolic BP (SBP) or diastolic BP (DBP) in people over 50 years of age. In African-Americans, however, there are conflicting reports regarding the usefulness of PP in predicting CHD events. We compared PP, SBP, and DBP individually and in combination as predictors of incident CHD in a population-based cohort of middle-aged and elderly African-Americans. A total of 1,832 men and women aged 46-68 years participating in the ARIC study who were free of CHD and not taking anti-hypertensive therapy were followed over 14 years (1990-2004) for incident CHD. Cox proportional hazard regression was used to assess the relationship between blood pressure components and CHD risk after adjustment for age, sex, race, BMI, smoking, diabetes, and total cholesterol:HDL ratio. Individually, the adjusted hazard ratios (HR) for incident CHD associated with a 1 standard deviation (SD) increment in SBP, DBP, and PP were 1.58 (95% CI, 1.36, 1.84), 1.39 (95% CI, 1.16, 1.66), and 1.51 (95% CI, 1.30, 1.75), respectively. In dual component models, PP was an independent predictor of CHD risk in a model containing DBP but not in a model containing SBP. In dual component models containing grouped SBP categories (<120, 120-139, 140-159 mm Hg), there was no incremental value of either PP or DBP. In this middle aged and elderly African-American cohort, SBP was the strongest predictor of incident CHD; PP had no independent predictive value over and above SBP.

P6.06

ANALYSIS OF THYMOQUINONE RELEASE FROM BETA TRICALCIUM PHOSPHATE DRUG DELIVERY SYSTEM

Kenita Stokes¹, Michelle Tucci², Ham Benghuzzi², Joseph Cameron¹

¹Jackson State University, ²University of Mississippi Medical Center

It is well documented that tricalcium phosphate (TCP) and hydroxyapatite have properties which are similar to skeletal tissues. These materials have been used successfully to fill bone defects as well as to fill dead space created by surgical excision of diseased or traumatized bone. Numerous studies conducted in our laboratory have shown that porous apatite ceramics are biocompatible and can be used to deliver various chemicals and biologicals in a sustained manner for long duration. Hydroxyapatite has also been used in crystalline form as packing material for high performance liquid chromatography for the separation of proteins. Protein separation from apatite materials is usually performed under non-stringent conditions, which are similar to physiological condition. Porous ceramic tricalcium phosphate lysine delivery systems containing thymoquinone at two different concentrations were used to determine release characteristics. TCPL Drug Delivery System will show a direct correlation between the release profiles of capsules loaded with two different dosages of the same drug. The goal of this study is to develop and characterize a delivery system that is capable of releasing a lipid soluble drug over time. To evaluate the release of the drug loaded into the capsules at two different concentrations. (Supported in part by REAP-Academy of Applied Sciences Grant 06-22).

P6.07

A ZEBRAFISH MODEL OF SHORT- AND LONG-TERM ETHANOL EXPOSURE

Jeffrey A. Love¹, Tina G. Smith¹, M. Linley Freeman¹,
Zachary J. Yoder², Christine A. Purser¹, Stephanie M. Burks¹,
D. Bruce Couch¹, Stanley V. Smith¹, Rodney C. Baker¹
¹University of Mississippi Medical Center, ²Murrah High School

Common models of alcoholism are limited by cost and the reluctance of mammals to drink ethanol. We used zebrafish to develop an economical model of short- and long-term ethanol exposure. Fish exposed to 50 mM ethanol exhibited exponential rises ($t_{1/2}=3.3\text{min}$) in body levels that plateaued at 27 mM by 30 min. Thirty min exposures to 10-200 mM ethanol caused a concentration-dependent increase in fish levels to 68% of bath concentration. Elimination involved rapid exponential and slow linear components as fish ethanol levels decreased 98% in 1 hr. Fish treated for 1, 2, 4, 8, or 12 weeks maintained ethanol levels at 77% of aquarium concentration (30-50 mM) without increased mortality. Long-term ethanol treatment significantly reduced male (mean±SD; 479±68 vs. 517±84 mg) but not female (752±225 vs. 782±244 mg) body weights. Control females had significantly higher fasting blood glucose levels than males (132±52 vs. 84±30 mg/dl). Ethanol treatment decreased fasting blood glucose in females (118±55 vs. 132±52 mg/dl), and significantly increased it in males (106±40 vs. 84±30 mg/dl), abolishing the sex difference seen in controls. Thus, zebrafish predictably absorb and tolerate ambient ethanol, respond to it with metabolic changes, and should serve as a useful model in

which to study alcohol-induced organ damage. (Supported in part by the Howard Hughes Medical Institute.)

P6.08

RESPONSE OF ALVEOLAR TYPE II CELLS TO LIPOPOLYSACCHARIDE

Kelley McDonald, Tyrel Harris, Stacy Vance, Michelle Tucci, Ham Benghuzzi

University of Mississippi Medical Center

Lipopolysaccharide (LPS) is the major portion of Gram-negative bacteria. The interaction of the lipid A moiety with receptors results in cellular activation and the release of systemically and locally active proinflammatory molecules. LPS is a major pathogenic factor potentially provoking local acute lung inflammation associated with a high mortality rate. The goal of the study was to determine if a dose dependent relationship between LPS and inflammatory mediators occur and if the response is sustained for long durations. A549 cells were treated with 1, 10 or 100 ng/mL LPS for periods of 24, 48 and 72 hours, and cell numbers, cellular morphology, cell damage, and cellular nitric oxide levels were evaluated. Cell numbers were increased significantly in the 10 and 100 ng/mL treatment as early as 24 and remained elevated after 48-72 hours. Cell numbers were increased in the low dose after 48 hours and remained increased at 72 hours. The data shows an approximate 2 fold increase from the 1 ng/mL treatment to the 10 and 100 ng/mL treatment groups. A similar trend was seen for nitric oxide production. The lack of increase from 10 - 100 ng/mL supports the theory that LPS recognizes and innervates receptors and at 10 ng/mL the receptors are saturated and additional LPS do not increase the response. Cell damage was not apparent in the cells treated with LPS, and recovery was seen by 72 hours. Evaluation of earlier time points (1-12 hours) may show transient increases in inflammatory markers and warrant investigation.

P6.09

EVALUATION OF LEPTIN AND IGF-1 ON INFLAMMATORY MEDIATORS IN RAW MACROPHAGE CELLS

Shanna Usry, Whitney Hall, Stacy Vance, Michelle Tucci, Ham Benghuzzi

University of Mississippi Medical Center

Obesity has rapidly become a worldwide epidemic. Aside from insulin resistance, hypertension, and dyslipidemia there is also an increase in inflammatory markers such as C reactive protein and serum amyloid. Oxidative stress and elevated plasma levels are thought to be associated with inflammatory pathologies associated with obesity. The goal of this study was to challenge RAW macrophages with the hormones leptin and IGF-1 and compare their cellular response to cells treated with a known inflammatory stimulator, LPS. Cell numbers were not affected by the addition of LPS (2 ng/mL), leptin (0.2 ng/mL), or IGF-1 (0.2 ng/mL) after 24 hours of culture. After 48 hours of culture, cell numbers were reduced by 50% in the IGF-1 treatment group compared with control

($p < 0.05$). A 20% decrease in cell number was observed for cells treated with either LPS or leptin. LPS caused an increase in nitric oxide (NO) production at 24 hours and remained elevated after 48 hours. IGF-1 and leptin had similar levels after 24 hours, with a significant increase in NO in leptin treated cells by 48 hours. Cellular glutathione concentrations were unchanged after treatment for the duration of the experiment. Cellular morphological changes were evident in all treatment groups as early as 24 hours. The data suggest leptin can cause increases in nitric oxide production with time in culture. Additional experiments are needed to determine if leptin can also increase pro-inflammatory cytokine levels.

P6.10

DEFINING THE ROLE OF HIF-1 α AND CTGF IN FIBROSIS

Rhea Richardson, Derrick Haung, Tamika Taylor, Michelle Tucci, Ham Benghuzzi

University of Mississippi Medical Center

CTGF plays a major role in pathways that lead to fibrosis, including fibrosis of major organs, fibroproliferative diseases, and scarring. Tissue hypoxia has been reported to induce the expression and secretion of CTGF in various tissues and organs, such as in renal cortical myofibroblasts, in renal interstitial fibroblasts, and in skin. This implicates CTGF as a mechanism of action for tissue damage caused by hypoxia. Studies have shown that cells deficient in hypoxic inducible factor 1 (HIF-1 α) were not able to produce CTGF mRNA, suggesting a strong association between the two proteins. In this study fibroblast were placed under hypoxic conditions for periods of 2, 24, 48, and 72 hours, and the levels of HIF-1 α , and CTGF were determined by immunocytochemical techniques. The results show a strong positive response to HIF-1 α following hypoxia treatment for periods of 24 hours. By 48 and 72 hours HIF-1 α levels are reduced and increases in CTGF cellular staining are noticeable. These results indicate a strong correlation between HIF-1 α expression and CTGF upregulation. Our data also shows that once CTGF is induced, HIF-1 α levels decline even though hypoxic conditions are maintained. Determining the relationship between HIF-1 α and CTGF may provide a deeper understanding of the pathogenesis of fibroproliferative disease.

P6.11

THE EFFECTS OF CONTINUOUS ADMINISTRATION OF DBM ON MG63 CELLS.

Kim Theard, Sumia Abdelrahma, Laura Franklin, Michelle Tucci, Stacy Vance, Ham Benghuzzi

University of Mississippi Medical Center

Deminerlized bone matrix protein (DBM) has been used to reconstruct bone. Previous studies in our lab have shown that acute administration of a single high dose (30 mg/mL) of DBM can stimulate cell proliferation with slight increases in cellular damage and cellular glutathione. However, the cellular effects of lower doses administered continuously have not been

clearly defined. MG-63 osteosarcoma cells were utilized as a model and subsequently plated onto 24 well tissue culture plates at a density of 1×10^5 cells/well. Cells were exposed to low (0.3mg/mL), medium (3 mg/mL), and high (3 mg/mL) concentrations of DBM for periods of 24, 48, and 72 hours and compared to untreated controls. Cell morphology, cell damage, and cell number were determined for each time period and treatment level. Results indicate a significant increase in cell number after 72 hours in cells treated with 3mg/mL (5.66×10^5) and 30 mg/mL (6.3×10^5) DBM as compared to the control (1.4×10^5). The increases in cell number indicate that both concentrations are effective in stimulating cell growth. Cellular damage and cellular glutathione levels were not increased over control levels at 24 or 48 hours, suggesting that continuous administration does not adversely affect the cells. Cells treated continuously with all concentrations of DBM showed increased number of nucleoli for the duration of the experiment. Closer evaluation of the morphology, especially the changes occurring at the nuclear level need to be addressed in future studies.

P6.12
RECOGNITION OF CTGF FROM ACTIVATED MACROPHAGES BY PLATELETS

Alex Whittington, James Woodall, Jr., Michelle Tucci, Ham Benghuzzi

University of Mississippi Medical Center

Introduction: Connective tissue growth factor (CTGF) is a cysteine rich, matrix associated, heparin binding protein that has a role in extra-cellular matrix remodeling and wound healing. It is capable of up-regulating and inhibiting matrix metalloproteinases so it has the ability to cause synthesis and degradation of the extra-cellular matrix. Platelets have been shown to take up these types of particles and by doing so, reduce inflammation. Purpose: The purpose of this experiment was to examine the effects of platelets on macrophage production of CTGF. Methods: RAW macrophage cells were plated and separated in to eight groups. The control group received no treatment, the LPS group was treated only with LPS, the platelet group was treated with only platelets, and the final group received platelets for two hours then LPS. Cells were collected after two and twenty four hours. CTGF levels were analyzed using western blot. Results: CTGF was present in large amounts in the control and LPS groups at two hours. Both the platelet and platelet + LPS groups showed a large decrease in concentration of CTGF. All groups showed a decrease in concentration at 24 hours. Discussion: The two groups receiving platelets showed the largest decrease in CTGF. This may be caused by platelet recognition and neutralization of CTGF. For further strengthening of this paper, the supernatant from each group will be analyzed to examine the amount of CTGF found in each sample.

P6.13
CHARACTERIZATION OF THE RESPONSE OF MACROPHAGE CELLS TO A CHALLENGE WITH GRAM POSITIVE BACTERIA OR LPS

Kim Byrd, Sandra Gordon, Stacy Vance, Michelle Tucci, Ham Benghuzzi

University of Mississippi Medical Center

Pathogens have, within their structure a recognition ligand that binds to receptors expressed on immune cells. Gram-negative bacteria and LPS can interact with CD14 receptors on macrophages and Gram-positive bacteria or fungi activate toll like receptor 2 (TLR2). The goal of this study was to determine if LPS and gram positive bacteria are capable of eliciting a similar nitric oxide burst indicating crosstalk between signaling pathways. Macrophages were evaluated for cellular damage and cellular nitric oxide levels as well as changes in morphology following treatment with LPS or gram positive bacteria for periods of 30 or 60 minutes. Cellular damage was more evident in cells treated with gram positive bacteria. Cellular MDA levels were increased 2 fold within 30 minutes following bacteria administration suggesting an increase in membrane damage. Cellular morphology also shows the presence of bacteria within the macrophages with evidence of cytolysis which was not evident in LPS treated cells. LPS treated cells showed increases in vacuole formation within the cytoplasm. Nitric oxide burst was similar for both gram negative and bacteria added to macrophage cells. The data suggest possible cross

P6.14
BIOCHEMICAL AND MORPHOLOGICAL EVALUATION OF LIPOPOLYSACCHARIDE STIMULATED RAW 264.7 MACROPHAGES

Renee Wilkins, Ham Benghuzzi

University of Mississippi

Inflammation is a direct result from the activation of the immune system. Acute inflammatory processes occur over short periods and can be triggered by pathogenic mechanisms such as the release of the endotoxins like lipopolysaccharide (LPS). Acute responses can have severe outcomes; therefore research into these inflammatory mechanisms needs to be investigated. The goal of this study was to determine the effects of acute LPS stimulation on cell viability and biochemical markers in the RAW 264.7 macrophage cell line. Macrophages were treated with a low dose of 2.5 $\mu\text{g/mL}$ LPS, a medium dose of 5.0 $\mu\text{g/mL}$ LPS, and a high dose of 10 $\mu\text{g/mL}$ LPS then incubated for 24, 48, and 72 hour durations. Cell viability was assessed by morphological evaluation and cellular glutathione levels. Cellular function was determined by nitric oxide and IL-1 β production; and cellular damage was determined by cellular MDA levels. Cell counts were initially elevated with the low dose at 24 hours, but over time these counts significantly decrease from the control values. Nitric oxide levels were significantly increased in all doses during each incubation period

in comparison the control. These results suggest that LPS either saturated the CD14 surface receptors or intracellular enzymes. Further studies are needed to distinguish between extracellular or intracellular mediated events that lead to generation of inflammatory mediator production.

P6.15

CORRELATION BETWEEN CYTOPLASMIC VACUOLES AND ATAXIN-1 NUCLEAR INCLUSIONS IN PURKINJE CELLS IN SCA1

Eshan Safaya¹, Mariper Lopez¹, Ashley McGee², Manju Pande², Parminder Vig¹

¹University of Mississippi Medical Center, ²Mississippi Valley State

Spinocerebellar ataxia 1 (SCA1) is an autosomal dominant neurodegenerative disorder caused by the expansion of a polyglutamine repeat within the disease protein ataxin-1. The over-expression of this mutated protein leads to the development of cytoplasmic vacuoles within Purkinje neurons of the cerebellum in both human patients and transgenic mice with SCA1. It's not known if these vacuoles are beneficial or toxic to Purkinje cells. Earlier, we observed that vacuoles contain glial proteins S100B and vimentin. The aim of this study was to examine the functional relevance of these vacuoles, and if vacuole development has any correlation with the formation of intranuclear inclusions of ataxin-1. Cerebellar tissue sections of 10 wks old SCA1 homozygous transgenic was processed and double immunostained for S100B to visualize vacuoles and for ubiquitin to identify ataxin-1 nuclear inclusions. The total number of Purkinje cells containing vacuoles or nuclear inclusions, or both vacuoles and inclusion were counted. Interestingly, about 90% of the cells with inclusions did not contain vacuoles and same percentage of cells with vacuoles had no inclusions. Further analysis of the pre-symptomatic mice showed that cells with vacuoles exhibited dendritic spine abnormalities as assessed by immunostaining of Purkinje cell marker proteins or by specialized silver staining technique. These data suggest that there exists an inverse correlation between vacuole development and intranuclear inclusion formation in SCA1 Purkinje cells. Since aggregation of ataxin-1 could be a protective mechanism, it's possible that vacuoles are formed in cells that contain more soluble form of ataxin-1. (Supported by the HowardHughesMedicalInstitute)

P6.16

URINE SAMPLES SCREENING AS A NEW TOOL FOR EARLY DETECTION OF PROSTATE CANCER.

Heather Hammons, Heather Perry, Stacy Hull-Vance, Hamed Benghuzzi, Michelle Tucci

University of Mississippi Medical Center

Prostate cancer is the leading cause of cancer in American males. Prostate cancer is a disease that affects the prostate gland in men. It is estimated that every 1 in 6 males will be affected by prostate cancer, and of those 1 in 35 will die.

Contributing factors include, but are not limited to, age, diets high in saturated fat, genetic predisposition, and race. It is suggested that men start getting annual check ups around age 45. Included in these check ups are tests to determine PSA levels that are indicative of possible prostate cancer. PSA is the prostate specific antigen. This protein is found in minimal quantities in the serum of healthy men, and is produced by the cells of the prostate gland. When found in high concentrations this protein can be used as an early indicator of prostate cancer. The current methods of testing for PSA are serum PSA measurements, Digital Rectal Examination (DRE), and biopsy if either of the previous methods provides positive results. This study however will focus on a less invasive technique for detecting PSA levels in its relation to prostate cancer.

P6.17

THE ROLE OF ESTROGEN, TESTOSTERONE, AND PARATHYROID HORMONES IN COMBINATION WITH CONVENTIONAL AND SUSTAINED ANTIOXIDANT TREATMENT ON LNCAP CELLS

LaToya Richards, Michelle Tucci, Hamed Benghuzzi, Felisa Wilson

University of Mississippi Medical Center

As men age, their bodies will undergo many changes that may be life threatening. Unfortunately, these changes can result in prostate cancer, a major public health issue and the leading cause of cancer-related deaths in males (Greenlee et al., 2001). Androgens are testosterone (TST) metabolites that are essential for maintaining the normal morphology and function of the prostate gland. With advancing age, alterations can lead to reduced testosterone levels and alter the ratio between testosterone and estrogen (EST), the chief female hormone (Harman 2005). Testosterone is the major circulating androgen and it plays a major role in the overall health and well-being of both sexes. Similarly, estrogen is equally important and has been shown to be a powerful antioxidant responsible for suppressing free radical-induced peroxidation chain reactions (Sugioka et al., 1987; Green et al., 1997). Parathyroid hormone (PTH) is also a significant hormone responsible for regulating the calcium and phosphate within the body. Research has been ongoing examining these hormones in specific conditions to determine their effects (Bhasin 2003; Tanaka et al 2004; Young et al 2004). In this study, three antioxidants, epigallocatechin -3-gallate (EGCG), thymoquinone (TQ), and tannic acid (TA) were analyzed in combination with the above hormones to compare the effects of conventional and sustained administration of TST, EST, and PTH. Data of the study demonstrated that regardless of the route of administration cell growth and PSA levels were suppressed. Overall results revealed that route of administration played a significant role in disrupting prostate cancer growth.

P6.18**THE ROLE OF THYMOQUINONE AND EPIGALLOCATECHIN-3-GALLATE ON THE VIABILITY OF LDL-CHALLENGED FIBROBLASTS IN CULTURE**

Felicia Tardy, Michelle Tucci, Ham Benghuzzi

University of Mississippi Medical Center

Cardiovascular disease continues to be a significant cause of morbidity and mortality in the despite recent advances in research. An increased level of low-density lipoprotein (LDL) has been identified as a major risk factor for CVD; however, the exact mechanism by which it contributes to CVD has not been fully elucidated. It is believed that the modification of LDL may play an important role. With rising healthcare costs and a lack of ideal intervention for CVD, alternative therapies have received much attention. Previous studies have shown that antioxidants may reduce the damage caused by oxidatively modified LDL. The specific aims of this study are to investigate the role of physiological and supraphysiological doses of LDL on the viability and morphology of fibroblast cells in culture; and to evaluate the effects of potential antioxidants, such as thymoquinone (TQ) and epigallocatechin-3-gallate (EGCG), in the modification of LDL. Results of this study reveal that TQ and EGCG may protect the functional and structural capacity of LDL-challenged fibroblast cells in culture.

P6.19**DOES THE LEVEL OF HORMONE CHANGE FASTER IN SYNOVIAL FLUID VS SERUM LEVELS OVER TIME?**

Calendria Nash, Leslie Johnson, Stacy Hull-Vance, Michelle Tucci, Hamed Benghuzzi

University of Mississippi Medical Center

There are three major hormones that are important to the reproduction process of males and females, which are estrogen, progesterone and testosterone. The ovaries throughout a woman's reproductive years secrete estrogen. Ovulation and fertility can be effected when estrogen is too low. The three most important hormones of this estrogen group are estrone (E1), estradiol (E2), and estriol (E3). Estradiol is almost always produced in the female reproductive body. Estriol is most abundant during pregnancy. Estrone is most abundant in post-menopausal women. Progesterone is the other primary hormone produced by the ovaries. It is produced by the corpus luteum just after ovulation. A decline in progesterone can also cause a decline in corticosteroids. Testosterone is a hormone produced by both men and women. In men testosterone is primarily produced in the testes and to a lesser extent in the adrenal glands. In women testosterone is produced in the ovaries, adrenals and to a lesser extent in the skin, brain and liver. In both men and women, testosterone plays a key role in health and well being as well as in sexual functioning. Hormones have different effects on male and female bodies. The levels of hormones may change faster in synovial fluid vs. serum levels over time when introduced to a different chemical environment. The hormones,

estrogen, progesterone, or testosterone will be introduced to synovial and serum and look at degradation after 1,2,3,7 days. Sample will also be stored in the fridge during the observation period.

P6.20**THE EVALUATION OF CONVENTIONALLY DELIVERED TQ IN CSA CHALLENGED RMKEC**

Stacy Hull-Vance, Michelle Tucci, Hamed Benghuzzi

University of Mississippi Medical Center

At toxic levels, CsA also has the ability to cause renal damage and histological changes that can affect the function of a transplanted kidney (Kahn, 1989, Wang, 1994, Bagnis, 1996, Hansen, 1996). Some of the typical signs of CsA usage include reduced glomerular filtration and changes in intrarenal hemodynamic function, which can start to occur after one week of usage (English, 1987, Tegzess, 1988, Kahan, 1989). Endothelial dysfunction and hypertension are common complications of calcineurin inhibitors, such as cyclosporine and Tacrolimus. Renal tubular toxicity induced by CsA can be acute with the appearance of oligoanuria, presence of atrophic tubules, and edema (Cid, 2003). The purpose of this study was to evaluate delivery of TQ conventionally in CsA challenged RMKEC. Cell Count Results: After 24 hours of incubation the following groups decreased cell proliferation in the following order: CsA [50µM] +TQ [50µM] (63%) > CsA [10µM] +TQ [50µM] (55%) > CsA 50µM (24%) > TQ 50µM (7%). CsA at 10µM was insignificantly different from the control after 24 hours. Glutathione Results: At 24 hours, CsA [50µM] +TQ [50µM] decreased glutathione levels by approximately 63% and CsA [10µM] +TQ [50µM] decreased glutathione levels by approximately 59%. After 48 and 72 hours of incubation, the glutathione levels in the experimental groups were insignificantly different from the control.

P6.21**INDUCTION OF APOPTOSIS BY SOLENOPSIN B: EVALUATION BY MICROARRAY ANALYSIS AND RT² PROFILERTM PCR ARRAYS.**

Robert Sample¹, Donna Sullivan¹, Kashonda Kelley¹, Robin Rockhold¹, H.M.T. Bandara Herath², N.P.D. Nanayakkara²

¹*University Mississippi Medical Center*, ²*University of Mississippi*

Introduction: The effect of the synthetic fire ant venom alkaloid Solenopsin B (Sol B) on the human monocytic cell line U937 has been examined. Sol B (13 mM) reduces cell viability >50%, induces cytotoxicity, and produces DNA laddering associated with apoptosis. Methods: The apoptosis mechanism was examined by microarray analysis and quantitative real time PCR. Sol B, 13 mM, was added to triplicate U937 cell cultures and incubated for 1 or 6 hours. Total cellular RNA was isolated, and used to synthesize cDNA, cDNA was labeled with Cy3/Cy5 and hybridized to glass microarrays. Results: Following

treatment with Sol B, 661 and 620 genes/ESTs were up regulated ~1.5 fold. Several apoptosis and cell cycle genes were up regulated. RT² Profiler™ PCR Arrays representing specific functional gene groups for quantitative-PCR (Q-PCR) of 90 apoptosis genes and 92 cell cycle genes from two biological replicates. Genes examined by both microarray and Q-PCR were in good agreement (28 of 30 [93%] apoptosis genes and 31 of 39 [79%] cell cycle genes). Further, transmission electron microscopy revealed that Sol B treated cells lost membrane integrity when compared to untreated controls. Conclusions: Sol B does induce cell death in human cells by triggering the apoptotic pathway. (Supported in part by an award from Howard Hughes Medical Institute)

P6.22

THE EFFECT OF HEPATITIS C VIRUS (HCV) INFECTION ON HUMAN IMMUNODEFICIENCY VIRUS (HIV) DISEASE PROGRESSION AT PRESENTATION TO AN HIV TREATMENT CLINIC IN MISSISSIPPI

Linda Watkins, Mary Jane Burton, Elgenaid Hamadain
University of Mississippi Medical Center

Hepatitis C virus (HCV) infection occurs more commonly in patients with human immunodeficiency virus (HIV) infection than in the general population. HIV infection accelerates the progression of HCV-related liver disease. We examined the effect of HCV infection on the clinical presentation of HIV patients in Mississippi. We reviewed the medical records of 148 HIV/HCV patients and 98 HIV monoinfected patients for absolute cd4 count (cells per mm³) at presentation and during clinical follow up. Two independent sample t-tests were performed on initial and nadir absolute CD4 count to compare the two groups. Results showed that both initial (mean = 382.7 ± 25.9 SE vs 299.2 ± 23.9, p-value = 0.018) and nadir (252.5 ± 19.3 vs 195.4 ± 17.0; p-value = 0.027) CD4 count were significantly higher in HIV/HCV group than those with HIV alone. We conclude that co-infection with HCV does not appear to negatively impact absolute CD4 count in the study groups.

THURSDAY AFTERNOON GRAND BALLROOM

O6.07

2:30 A QUEST FOR AN OBESITY INDEX AND ITS RELATION TO TYPE 2 DIABETES IN AFRICAN AMERICANS

Daniel Sarpong
Jackson State University

There are 23.6 million (8%) people in the United States with diabetes an important contributor cardiovascular disease, which is number 1 killer in the US. Diabetes prevalence increased by 13.5% from 2005-2007. Currently, 24% of persons with diabetes are undiagnosed, down from 30% in 2005 and 50% ten years ago. In 2007, 1.6 million new cases of diabetes were diagnosed in people aged 20 years or older. Primary objective of this study was to compare the individual and joint effects of two measures of obesity - body mass index (BMI), waist

circumference (WC) a measure of central adiposity (CA), and an index (obesity index), a categorization of the intersection between categories of BMI and the two level of CA (yes/no). Secondary objective was to assess difference in the risk profile of the sub-groupings of the obesity index (OI). Obesity measured by weight indexed by various powers of height were also explored. Logistic regression was performed at alpha = 0.05. Variance of Type 2 diabetes mellitus (T2DM) explained by BMI, WC and the OI were 3.2%, 3.1% and 3.8%, respectively. In each case there was a very highly significant trend (p

O6.08

2:45 NO FRESHMAN FIFTEEN

Margarette Butler
Tougaloo College

The objective of this No Freshmen Fifteen study is to present information on ways to stay healthy while pursuing a higher education versus unhealthy lifestyle choices made during the freshman year that can have devastating effects on one's health and well-being that could possibly last a lifetime or create problems that will be difficult to remedy. First year college life can be stressful. It is important that strategies for healthy living, exercising and connecting with nature be presented early in the first semester so that students can get off to a good start, taking care of themselves. No Freshman Fifteen presents healthy eating habits, ways to incorporate exercise into their daily activities, and ways to manage a stressful environment while away from home. Our goals are to help Generation Y safeguard their new independent life and promote healthy eating, hearty exercise, healthy rest and relaxation and connecting with nature. Once we get into a pattern of not eating right and not keeping fit because of an inconsistent schedule, increased stress load, because of inexperienced in time management, we find ourselves at the end of the freshman year, gaining the freshman fifteen. Obesity is not just a Mississippi problem, it is a worldwide epidemic. Our motivation is to make good health a priority by enriching our students' lives with sound approach to eating and finding pleasurable and creative ways to incorporate exercise in daily activities and make a connection with nature.

O6.09

3:00 COMPARATIVE STUDIES OF GENERIC PARACETAMOL WITH THE BRAND NAME PRODUCT, TYLENOL

Carina Lewis, Jiben Roy
Mississippi University for Women

Generic drugs are usually cheaper than their branded counterparts. According to FDA, a generic drug is identical, or bioequivalent to a brand name drug in dosage form, safety, strength and quality. However, the US- FDA does not evaluate the samples of marketed drugs unless there are reports of problem associated with the drugs. It is thus of interest to do comparative studies including chemical and pharmaceutical evaluation after purchasing of both generic and their branded



counterpart of paracetamol. The presentation will include the results and discussion of the use of GC-MS in quantifying the active ingredient in addition to other pharmaceutical evaluation of different paracetamol products.

O6.10

3:15 EVALUATION OF THE ORAL HEALTH OF MISSISSIPPI'S HEAD START POPULATION

Kristin Nalls¹, Elgenaid Hamadain², Nicholas Mosca¹, Kathy Phipps¹

¹Mississippi State Department of Health, ²University of Mississippi Medical Center

This study was conducted during the 2007-2008 school year at 22 Head Start centers in Mississippi with children ages three to five years. An electronic list of Head Start centers with child enrollment and number of classrooms was obtained from the Mississippi Head Start Association. Of these, 149 classrooms with 2,605 children were systematically selected. Data was collected by seven dental hygienists and one dentist employed by the Mississippi State Department of Health for children with parental permission. A total of 2,128 children were screened with an overall response rate of 81.7%. Since response rates varied by center, the data were adjusted for non-response. The non-response weight was the number of children enrolled divided by the number of children screened (the inverse of the response rate for the selected center). Data was analyzed using SAS. Results showed that 55.9% of Head Start children have caries experience and 40.9% have untreated tooth decay (cavities). Stratified by race, non-black Hispanic children have twice the need for urgent dental care than White or Black children. Mississippi Head Start children have greater decay than children in states using weighted sampling design. Other relevant results will be discussed.

O6.11

3:30 APPROACH TO IMPROVE THE MODEL PERFORMANCE IN A REAL-TIME AIR QUALITY ESTIMATION SYSTEM USING SATELLITE OBSERVATION DATA

Hui Li, Fazlay Faruque, Mohammad Al-Hamdan, Luvall Jeffrey, William Crosson, Douglas Rickman, Ashutosh Limaye
University of Mississippi Medical Center

Aerosol optical depth (AOD), indirect estimates of particle matter using satellite observations, has shown great promise in improving estimates of PM_{2.5} air quality surface. Currently, few studies have been conducted to explore the optimal way to apply AOD data to improve the model accuracy of PM_{2.5} surface estimation in a real-time air quality system. We believe that two major aspects may be worth consideration in applying satellite data to improve the performance of pollution surface models: 1) the approach to integrate satellite measurements with ground measurements in the pollution estimation, and 2) identification of an optimal temporal scale to calculate the correlation of AOD and ground measurements. This paper will focus on the second issue. To identify the

optimal temporal scale for the AOD-PM_{2.5} correlations, five following different temporal scales were chosen to evaluate their impact on the model performance: 1) within the last 3 days, 2) within the last 10 days, 3) within the last 30 days, 4) within the last 90 days, and 5) the time period with the highest correlation in a year. The model performance is evaluated for its accuracy, bias, and errors based on the following selected statistics: the Mean Bias, the Normalized Mean Bias, the Root Mean Square Error, Normalized Mean Error, and the Index of Agreement. This research shows that the model with the temporal scale of within the last 30 days displays the best model performance in this study area using 2004 and 2005 data sets.

O6.12

3:45 TEMPORAL AND SPATIAL VARIATION OF AIRBORNE MOLD SPORES DURING WINTER OF 2007-2008 IN CENTRAL MISSISSIPPI

Martha Brackin¹, Fazlay Faruque², Bruce Brackin², Sheila Belk², John Coleman²

¹Private Consultant, ²University of Mississippi Medical Center

As part of mold spore estimation model development using meteorological data, we installed 6 Burkard 7-day recording volumetric samplers in central Mississippi to collect fungal spores. Samples were stained with Calberla's basic fuchsin to conduct spore counts and genera identification. Genera from randomly selected weeks by site were evaluated by frequency, dominance and concentration (spores/m³ air) using one-sample t test, ANOVA and regression analysis. Clinically important *Cladosporium* at 7,500/m³, *Aspergillus/Penicillium* at 650,000/m³ and *Fusarium* at 3,000/m³ had the greatest presence, whereas *Alternaria* at 300/m³ had a low presence. Temporally significant patterns of *Cladosporium* in December and *Alternaria* with *Aspergillus/Penicillium* in February were identified. As *Cladosporium* decreased, *Aspergillus/Penicillium* increased linearly. Daily variability was demonstrated, as significantly high levels of *Aspergillus/Penicillium* appeared in the early morning, *Fusarium* peaked at noon and *Cladosporium* was present throughout the day/night. Spatial variability was present for *Alternaria* in winter with linearly increasing counts from southern to northern sites. In December, higher counts of *Alternaria* were found in urban Jackson compared to outlying areas. Spatial variability was also evidenced by significantly higher counts of *Fusarium* to the north and south when compared to central Jackson. Clinically relevant mold spores were found with temporal and spatial significance in central Mississippi during the winter.

THURSDAY EVENING GRAND BALLROOM

6:00 **Dodgen Reception and Poster Session**
Please set up between 4:00p and 4:30p

P6.23**PULSE PRESSURE IS AN INFERIOR PREDICTOR OF STROKE IN AFRICAN AMERICANS: THE ARIC STUDY**

Peter Mittwede, Kenneth Butler, Alan Penman, Thomas Mosley, Herman Taylor

University of Mississippi Medical Center

There are conflicting reports regarding the relative importance of pulse pressure (PP) and systolic blood pressure (SBP) as predictors of stroke in African Americans. In this study, SBP, PP, and diastolic blood pressure (DBP), were compared for their usefulness in predicting stroke in African Americans. A total of 1,852 African American men and women between the ages of 46 and 69 years, with no history of incident stroke and not taking hypertension-lowering medications, were included for study. Cox proportional-hazards regression models were used to compare the effect of blood pressure components on stroke risk, with adjustments made for age, sex, BMI, smoking, diabetes, and total cholesterol:HDL ratio. There were 88 incident ischemic strokes in a median follow-up time of 14 years. Individually the adjusted hazard ratios (HR) for incident stroke associated with a 1 standard deviation (SD) increment in SBP, DBP, and PP were 1.57 (95% CI, 1.32, 1.88), 1.54 (95% CI, 1.25, 1.91), and 1.40 (95% CI, 1.17, 1.68), respectively. In dual component models, PP was an independent predictor of stroke risk in a model containing DBP but not in a model containing SBP; DBP was not an independent predictor in a model containing SBP. In dual component models containing grouped SBP categories.

P6.24**THE HIDDEN CURRICULUM OF SURGICAL RESIDENCY: A QUALITATIVE STUDY OF SURGICAL RESIDENTS' PERCEPTIONS OF TEACHING AND CULTURE.**

Arun Aneja, Jennifer Chamberlain, Thomas Thomasson, Jessica Bailey

University of Mississippi Medical Center

The objective of this study was to evaluate surgical residents' views on the treatment they receive during their residency, particularly focusing on teaching, the role of hierarchy, and the rites of passage structure. The design consisted of a qualitative descriptive study utilizing semi-structured interviews with surgical residents enrolled in various residency programs (including Orthopedics, Neurosurgery, Otolaryngology, General Surgery, and Urology) throughout the United States. Thirty six surgical residents enrolled in various surgical programs across all stages of their training participated. The main outcome measure was a description of surgical residents' perceptions of their experiences during surgical training. Residents described various attitudes towards compliance of the ACGME 80 hour work week limit. Incidences of hierarchy, "pimping", and rites of passage were also reported, especially during the early clinical training years. Such instances were justified as educational experiences aimed at improving patient care. The study concluded that the hidden curriculum

needs to expand its boundaries to surgical and perhaps other medical residencies as fundamental cultural practices must be understood in order to promote resident education.

P6.25**A COMPARISON OF TECHNIQUES USED IN BLOOD TYPING BASED ON HOSPITAL SIZE IN MISSISSIPPI**

Reo Slaughter, Jr., Carolyn Beck, James T. Johnson, Margot Hall

University of Southern Mississippi

During recent years new blood typing methods have been implemented in many transfusion services. The purpose of this study was to determine which of three methods (conventional tube, gel tube or solid phase) blood transfusion services in the state of Mississippi are currently utilizing. Data was collected via a researcher developed survey mailed to 107 hospitals with a return rate of 70 (65.4%). Data was organized based upon hospital size with 60% of hospitals in the state having less than 100 beds. In these hospitals 71.4% used the conventional tube agglutination method (CT) and 21.4 % used the newer Gel agglutination test (GT) and none used solid phase testing (SP) for ABO and Rh testing. In larger sized hospitals, from 101-350+ beds, 46.4% used CT, 46.4% GT and 7.1% SP. For the detection of unexpected antibodies in the serum of patients (antibody screening), hospitals under 100 beds in size chose the CT method 57.1% of the time compared to 35.7% which chose the GT method. In larger hospitals 28.5% selected the CT, 60.7 % selected the GT, and 10.7% selected the SP methods for antibody screening. There was a significant difference between methods chosen and used by smaller hospitals and larger hospitals for both ABO& Rh ($p=.039$) and antibody screening tests ($p=.033$). The study found that while the oldest method CT is still performed by the largest number of hospitals in Mississippi, a growing number of facilities have selected newer methodologies with larger hospitals more likely to select the newer technologies.

P6.26**CAN DEMINERALIZED BONE MATRIX PROTEIN HEAL A 3.5 MM DEFECT IN OSTEOPOROTIC RATS? A HISTOLOGICAL AND BIOMECHANICAL EVALUATION.**

Arun Aneja, Michelle Tucci, Hamed Benghuzzi

University of Mississippi Medical Center

To date, fracture healing in osteoporosis has not been evaluated to determine the amounts and types of biological factors normally produced by our bone cells to help improve healing. However, investigators have shown improvement of normal bone healing by administering various bone morphogenetic proteins (BMPs). BMPs are supplemental bone graft material that have osteoconductive properties of serving as a scaffold for bone to grow on and osteoinductive capability of stimulating the patient's own stem cells and growth factors to grow new bone. Osteoblast cells in osteoporotic bone have the ability to produce BMPs and other factors needed for adequate bone formation when activated demonstrating that there are

factors that can serve as stimulus for fracture repair in osteoporosis. The objective of this study was to deliver a cascade of growth factors from demineralized bone (DBM), a rich composite of various BMPs, to the fracture defect site in effort to enhance osteoporotic fracture healing. 72 female ovariectomized (OVX) rats were divided into six treatment groups: control, ovariectomized, intact + fracture, ovariectomized + fracture, intact + fracture + DBM, and ovariectomized + fracture + DBM. Ovariectomy induced osteoporosis. DBM was delivered in a sustained manner via a novel local drug delivery device, tricalcium phosphate combined with lysine (TCPL). At 2 and 4 weeks post implantation, animals in each group were sacrificed, the femurs were retrieved and underwent mechanical strength testing, and histological analysis. Other surrounding and vital organs were also harvested and analyzed to study the systemic effects of DBM.

P6.27

HEALTHY EATING HABITS AND REGULAR EXERCISE AIDS PATIENTS UNDERGOING CHEMOTHERAPY

McKenna Hereford¹, Melissa Manning¹, Marguerite Clarkson³
¹Cooperative Intern Program with the Mississippi Gulf Coast Community College—Jackson County Campus Honors Biology Students, ²The National Aeronautics and Space Administration, ³Singing River Hospital System, The Regional Cancer Center Research Office

The Regional Cancer Center at Singing River Hospital System was developing a clinical research study to assess impact of two different nutritional intervention models on minimizing gastrointestinal-related toxicities, breaks in treatment, and improvement in quality of life for cancer patients receiving chemotherapy. Patients were assigned to standard nutrition intervention (initial consult plus visits as needed) versus study intervention (initial consult plus every routine clinic plus visits as needed). The purpose of this project was to assist in developing the data collection process, forms and schedules to support the nutrition study endpoints. The measures selected included performance status, quality of life surveys, weight/height/BSA, and arm and waist circumference. Data time points included baseline with repeats at eight week intervals throughout chemotherapy treatment. This project will describe the development of the research methodology and data management component for this clinical research trial. The results of this study showed that tools aforementioned work efficiently.

P6.28

DEVELOPMENT OF AN ASSAY FOR PHOSPHATIDYLETHANOL IN BIOLOGICAL SAMPLES

Hayley Barber, M. Ashley Pittman, Naila M. Mamoon, Rodney C. Baker

University of Mississippi Medical Center

The innate immune response depends on macrophages and neutrophils to generate cell signaling compounds such as interleukins and cytokines for a normal response. Elimination of

foreign organism or transformed cells is also dependent on a normal phagocytic process. Both processes may depend on the production of phosphatidic acid, which is produced as a result of the cleaving of phosphatidylcholine by phospholipase D.

Phospholipase D hydrolyzes the phosphodiester bond of the glycerolipid phosphatidylcholine to production of Phosphatidic Acid, a negatively charged phospholipid that it may play an important role in the recruitment of other proteins to cellular membranes. The recruited proteins and or products produced by the proteins have been implicated as second messengers and signal transduction proteins. As a result, the cells are able to mount a normal immune response, which includes; cell proliferation, the production of interleukins and more cytokines. The production of Phosphatidic Acid is a well characterized inflammatory response under normal conditions. In the presence of ethanol however phospholipase D, catalyzes the production of phosphatidylethanol at the expense of phosphatidic acid. The biological effects of Phosphatidylethanol are unknown. Previous studies indicate that replacing phosphatidic acid with phosphatidylethanol will inhibit acute phase cytokines and interfere with normal phagocytosis of transformed cells and bacteria.

The objective of this study was to develop methods to measure phosphatidylethanol in ethanol treated zebrafish.

P6.29

ZEBRAFISH SIZES, ORGAN WEIGHTS, AND FASTING BLOOD GLUCOSE LEVELS

Jeffrey A. Love, Tina G. Smith, M. Linley Freeman, M. Ashley Pittman, Hayley K. Barber, Stephanie Burks, Rodney C. Baker
University of Mississippi Medical Center

Zebrafish (*Danio rerio*) are commonly used to study organ development, but little is known of adult organ function. We measured and compared the sizes, organ weights, and fasting blood glucose levels of adult male and female zebrafish to guide future studies of organ and systems physiology. Zebrafish were anesthetized, measured, weighed, and decapitated. Fasting blood glucose was analyzed using a Bayer glucose meter. Hearts, gills, brains, kidneys, livers, pancreata, guts, and ovaries or testes from groups of five fish were used to determine wet/dry weight ratios. The sex ratio was 66% males (n=100) to 34% females (n=52). Female fish were significantly longer (mean±SD; 43±3 mm; n=51 vs. 38±3; n=98) and heavier (902±208 mg; n=51 vs. 561±113 mg; n=98) than males. Body weights were 74±1% (n=11) water and increased linearly with length in females (69 mg/mm) and males (37 mg/mm). Organ weights ranged from 0.2% (heart) to 12.1% (ovaries) of body weight with wet/dry ratios ranging from 2.7 (pancreas) to 6.3 (brain). Females had significantly higher fasting glucose levels than males (124±52 vs. 97±37mg/dl) that were not related to the weight difference. Adult zebrafish exhibit significant sex differences in incidence, length, weight, and fasting blood glucose that must accounted for and analyzed in future physiological studies.

P6.30
EVALUATING AN IMPLANTED CARDIAC PRESSURE SENSOR

George Humphrey, II, Laura Vick., Drew Hildebrandt
University of Mississippi Medical Center, Surgery

This study was designed to test a newly-developed implantable sensor for safety and accuracy in measuring blood pressure in the left atrium of the heart (LAPS). If effective, this device could be a quick and easy way to detect early signs of heart failure. Sensors were implanted in left atria of 3 dogs (~24 kg); catheters were implanted in the same atria and used to obtain pressures (LAPC) that could be compared with the LAPS. Twice weekly the dogs were lightly sedated and simultaneous LAPS and LAPC readings (5x) made. At 30 days and 90 days, one was anesthetized and acute experiments performed during which either heart rate (i.v. isoproterenol) or afterload (aortic constriction) was increased during simultaneous LAPS and LAPC measurement. One sensor failed early in the experiment; this dog was used only for structural analysis on day 30. Each of the others was euthanized following the acute experiment and also examined for blood clots, tissue damage or remodeling. No negative effects of the implants were detected. Both Bland-Altman analysis and Pearson's correlation coefficient revealed that the LAPS accurately and consistently reflected the LAPC during both chronic measurements and acute manipulations. From a clinical perspective, even with only 1 dog in each time group, these data demonstrate good agreement between the two methods. Although more experiments are needed, these data suggest that this new pressure sensor shows promise for being a useful tool in the management of heart failure. (Supported in part by the Howard Hughes Medical Institute).

P6.31
THE RELATIONSHIP OF SLEEP QUANTITY WITH BMI AND TLAS OF SISTERTALK PARTICIPANTS

Brittany May¹, Patricia Risica², Thomas Lasater²
¹*Tougaloo College*, ²*Brown University*

Sleep hours of Americans are steadily decreasing. The decrease of sleep hours that Americans are getting can lead to sleeping disorders, behavioral problems, and cardiovascular disease. The purpose of this research is to investigate the relationship between sleep quantity, Total Leisure Activity Score (TLAS), and BMI among participants of the SisterTalk study, which is a weight loss program for Black women. Data (n=375) were pulled from questionnaires that SisterTalk participants completed upon entering the program. A series of regression analysis using SAS software were performed to determine significance, if any, of the variables for this study. It was found that TLAS was one of the variables that displayed a significant relationship with sleep quantity.

P6.32
IN VITRO STUDIES OF ARTEMISININ DERIVATIVES AND EBSELEN WITH *TRYPANOSOMA SP.*, *LEISHMANIA SP.*, AND HUMAN MONOCYTES

Hannah Albritton¹, Russell Chisolm², John Meade³
¹*Belhaven College*, ²*Mississippi State University*, ³*University of Mississippi Medical Center*

The purpose of this study was to test the susceptibility of various related parasites to artemisinin, new derivatives of artemisinin, and ebselen. Artemisinin is a naturally occurring compound that is currently being used as a promising treatment for *Plasmodium falciparum*, one of the causative agents of malaria. Ebselen, a synthetic antioxidant, is in clinical trials to treat stroke patients. In this study, four human parasites, *Trypanosoma brucei rhodesiense*, *Trypanosoma cruzi*, *Leishmania braziliense*, and *Leishmania donovani*, were exposed to multiple drug concentrations in well plates. The plates were read at 600nm over 24 hour increments to read the levels of parasites. Human monocytes were exposed to the drugs to test for cell damage. The RNA was isolated from the human monocytes in each study and were read on a mass spectrometer; the RNA were also read by microarray analysis for confirmation. The most promising derivative was artemisone. It inhibited the multiplication of *T. b. rhodesiense* at approximately 90% at concentrations between 8 and 16 micro-molar. Ebselen and artemisone were studied in synergism with 50% inhibition of a concentration of 2 micro-molar for both drugs. These results are preliminary and more testing is needed. The results show that artemisone is a promising current derivative of artemisinin against *T. rhodesiense* in vitro and ebselen is also affective.

P6.33
METAL CONTENT AND DISTRIBUTION IN PROFILING NORMAL TISSUES, THE A549 AND THE HEPG2 CARCINOMA CELL LINES

Selena Jones¹, Michael Johnson¹, Ibrahim Farah², Joseph Cameron², Zikri Arslan²
¹*Hinds Community College*, ²*Jackson State University*

Lung and liver cancer are two of the most prevalent and deadly cancers in United States. Studies have shown that metal homeostasis is very essential to the development of the cancer phenotype in many cancers including lung and liver carcinomas. Low Zn levels were implicated in the development of these as well as other cancers. Most of the studies targeted at determining the levels of trace metals were based on individually selected elements. Wider profiles that relate cancer and normal phenotypes with regards to metal homeostasis were not well elucidated in the literature. We used Inductivity Coupled Plasma (ICP) and ICP-Mass Spectroscopy to analyze lung and liver tissues obtained from Sprague-Dawley rats and cell models of lung and liver carcinomas; the A549 and HepG2 cell lines, to test the metal homeostasis hypothesis. Samples were prepared using standardized digestion procedures and were loaded on both machines to test for a 24 element profile of which 14 trace

metals, namely, Zn, Cu, Fe, Mg, Mn, Ca, Cd, Pb, Al, Co, Ba, Cr, Ni and Se were consistently detected in tissues and cell lines. Analysis of data showed variations in trace metal profiles consistent with the hypothesis. It is concluded that trace metal homeostasis is essential for normal tissue function and that shifts in the metal distribution and content are tissue specific as well as carcinoma specific. These results warrant further studies to confirm and exploit the possibility of manipulating metal distribution as a cancer therapeutic modality. (Supported by NIGMS NIH Grant # GM050117).

P6.34

THE EFFECTS OF IgG ANTI D, IgG ANTI D COATED RED BLOOD CELLS AND LYSSED RED BLOOD CELLS ON MACROPHAGE VIABILITY AND FUNCTION

Tyrah Hickman¹, Michelle Tucci², Ham Benghuzzi², Joseph Cameron³

¹Hinds Community College, ²University of Mississippi Medical Center, ³Jackson State University

IgG deposition at tissue sites leads to macrophage accumulation and organ injury, although the mechanism for injury is not known. The goal of this study was to investigate the interaction of IgG anti D alone, IgG anti D coated red blood cells, or lysed red blood cells with macrophage cells for periods of 24, 48, and 72 hours. Cell viability, cellular glutathione content, cellular membrane damage, and respiratory burst were evaluated. The results indicate that cell numbers were elevated in the lysed red blood cell treatment for the duration of the experiment. Cellular glutathione concentrations were similar to control values for all treated groups compared to the control for the first 48 hours. Cells exposed to IgG anti D coated red blood cells showed the lowest glutathione values after 72 hours. Cellular MDA levels indicating cellular membrane disturbances were evident for the duration of the study for macrophages treated with IgG anti D coated red blood cells and lysed red blood cells when compared to control. Interestingly, nitric oxide was evident in IgG anti D and IgG anti D coated red blood cells for the duration of the study; whereas lysed red blood cells did not increase nitric oxide production over control. The results possibly indicate that nitric oxide is a receptor mediated event and phagocytosis may cause increased MDA levels. Evaluating the interaction of macrophages with IgG may advance our understanding of macrophage involvement in organ injury due to the deposition of IgG. (Supported in part by NIH R25 GM50117).

P6.35

CONNECTIVE TISSUE GROWTH FACTOR EXPRESSION IN THE TENOSYNOVIUM OF PATIENTS WITH CARPAL TUNNEL SYNDROME

Christine Pierce, Michelle Tucci

University of Mississippi Medical Center

Connective Tissue Growth Factor (CTGF) expression has been identified in a wide variety of fibrotic disorders;

however the expression of CTGF in carpal tunnel syndrome (CTS) has not yet been described in the literature. Both inflammatory and fibrotic etiologies have been implicated in the pathogenesis of CTS, with current evidence favoring an emphasis on a fibrotic etiology. Our objective was to identify whether CTGF is expressed in the tenosynovium of patients with CTS. Tenosynovial tissue was isolated from human subjects undergoing surgical decompression of the carpal tunnel for treatment of CTS. Samples tested included patients with "idiopathic" CTS alone or CTS in the presence of associated co-morbidities. Western blot analysis of tenosynovial tissue homogenate was performed using an anti-CTGF antibody. Our findings demonstrate the presence of CTGF in the tenosynovium of patients with CTS. Additionally, tenosynovial samples from patients with certain associated co-morbidities exhibit significant upregulation of CTGF levels relative to the levels observed in patients with "idiopathic" CTS. These findings indicate that there is, in fact, a role for CTGF in the pathogenesis of CTS.

P6.36

DOES GOLDENSEAL INGESTION HAVE AN EFFECT ON THC DRUG TESTING OUTCOMES?

Jennifer Zhou, Cindel Krantz, Stacy Hull-Vance, Michelle Tucci, Hamed Benghuzzi

University of Mississippi Medical Center

In almost every occupation today, employees are required to pass an annual drug test. While the simplest and best way to avoid failing a drug test is not to use drugs, however everyone does not agree with this philosophy. Employees are frightened they may lose their jobs due to drug use and turn to commercially available products that claim to mask the signs of illegal drug use. Goldenseal is a perennial herb, *Hydrastis canadensis*, which many claim can help remove THC from the body or at least mask it from detection in drug tests. THC, or TetraHydroCannabinol, is more commonly known as marijuana. Some claim Goldenseal, when taken daily, can remove the THC from the body in just a few days. Others claim Goldenseal has no effect on THC levels since it is only a diuretic.

In this study, we investigated the possible effects of Goldenseal on THC levels and its effects on drug test manipulation. This study will consist of twelve patient samples separated into five portions. The first portion of each patient sample will be used as a control and thus should be negative. The second portion will be spiked with THC; therefore the result should be positive. The last three portions will be spiked with THC as well as having levels of Goldenseal in low, medium, and high concentrations. By the conclusion of this study we should be able to determine whether or not Goldenseal is able to mask THC levels in a drug test.

P6.37
THE INHIBITORY EFFECTS OF EGCG TO INACTIVATE HSV-1 AND HSV-2 IN CLINICAL ISOLATES.

Heather Dietz, Basil Sullivan, Stacy Hull-Vance, Hamed Benghuzzi, Michelle Tucci

University of Mississippi Medical Center

Herpes Simplex Virus (HSV) types 1 and 2 are pathogens capable of causing a wide range of disease manifestations, including herpes labialis, gingivostomatitis, genital lesions, keratitis, primary cutaneous lesions, encephalitis, tracheobronchitis, pneumonia, esophagitis, and in immunocompromised persons, disseminated disease. Enzyme-linked viral inducible system (ELVIS) is a commercial method that is sensitive and specific for rapid HSV detection. ELVIS uses special cells created to contain the genetic code for an enzyme unrelated to herpes. ELVIS uses genetically engineered baby hamster kidney cells that contain a chimeric gene sequence constructed on *Escherichia coli* lacZ reporter gene that is driven by the promoter from the HSV-1 UL39 gene. When these cells are infected with HSV-1 or HSV-2, transactivating viral proteins cause the expression of lacZ and the subsequent accumulation of β -galactosidase within the cell. An immunohistochemical stain then allows detection of HSV-infected cells, which appear blue. The kit also includes monoclonal antibody typing reagents to allow for detection and simultaneous typing of HSV. Epigallocatechin gallate (EGCG) is a polyphenol that is suggested to inhibit growth of cancer cells, decrease the production of inflammatory prostaglandin E2 in arthritis, control blood sugar in type 1 diabetes, and have anti-viral effects on HIV, influenza, and HSV types 1 and 2. EGCG is the primary catechin in green tea and has greater anti-HSV activity than other green tea extracts.

P6.38
THE USE OF GOLDENSEAL EXTRACTS AS AN ANTIMICROBIAL AGENT AGAINST S. AUREUS AND MRSA.

Crystal Daigle, Tiffany Quinn, Stacy Hull-Vance, Hamed Benghuzzi, Michelle Tucci

University of Mississippi Medical Center

Beta lactam antibiotics, including penicillin, function by peptidoglycan cell wall inhibition. Penicillin covalently binds to penicillin-binding proteins (PBPs), which inactivates enzymatic reactions needed by microorganisms for cell wall synthesis. *Staphylococcus aureus* is an organism consisting of four penicillin-binding proteins (PBP1 through PBP4). Methicillin-resistant *Staphylococcus aureus* (MRSA), however, possesses the aforementioned binding proteins in addition to a specific PBP encoded from the *mecA* gene (PBP2' or PBP2a). The acquisition of the *mecA* gene enabled MRSA to become resistant to antimicrobial agents such as methicillin (a member of the penicillins antimicrobial group). Zhao and Hu, found a synergistic effect between a component in green tea and beta lactams against MRSA. The tea catechin, epigallocatechin gallate (EGCg), is primarily responsible for the antimicrobial activity of green tea.

There have also been reported cases of antimicrobial activity of EGCg against *Helicobacter pylori*, *Trypanosoma cruzi*, and *Chlamydia trachomatis*. The bioactive herbal component in goldenseal is berberine, which has been reported to possess antimicrobial activity against *S. aureus*, *E. coli*, and *K. pneumoniae*. The purpose of this study is to investigate the effects of goldenseal alone and in combination with penicillin against *S. aureus* and MRSA

P6.39
THE EFFECTS OF GINGER ON SHIGELLA FLEXNERI AND E. COLI WHEN COMPARED TO THE MIC OF ROCEPHIN.

Stephan Cole, Centavia Rand, Stacy Hull-Vance, Michelle Tucci, Hamed Benghuzzi

University of Mississippi Medical Center

Dysentery caused by shigellosis is a serious disease, believed by the World Health Organization to cause up to a million deaths per year. *Shigella* species are highly pathogenic, and invade the colonic epithelium cells through M cells, and then spread laterally. Common symptoms of shingella are severe diarrhea, fever, nausea, vomiting, and stomach cramps with blood, mucus, or pus being present in the stool. Zingiber officinale (Ginger) is a strong pungent herb that is used primarily as a culinary spice. It has also been used to treat a myriad of conditions from common colds, fevers, digestive problems, anti-arthritis, and antimicrobial properties. Ginger has also been advocated by alternative medicine practitioners as an alternative treatment for dysentery. Studies support ginger's antibiotic and synergistic effect, because ginger contains 10-gingerol a hydrophobic compound that is believed to cause cellular membrane damage on microorganisms. The purpose of this paper is to observe the effects of ginger on two causative organisms of dysentery *Shigella flexneri* AND *E. Coli*, to quantitate the MIC comparatively to Rocephin (3rd generation cephalosporin), and to determine the effect of ginger singularly, and in combination with Rocephin. Methods of analysis to measure the effects of ginger will be diffusion disk plating measuring the zone of inhibition.

P6.40
PLASMA-CELL DISORDER: HEAVY CHAIN DISEASE

Jessica Davis, Carolyn Beck, Margot Hall

University of Southern Mississippi

Heavy chain disease (HCD) is a rare immunoproliferative disease. It is a B-cell malignancy in which an uncontrolled mass production of monoclonal antibodies is produced. These monoclonal antibodies are produced by the abnormal multiplication of plasma cells resulting in incomplete immunoglobulins. Immunoglobulins play a major role in helping the body fight off infection. Urine protein electrophoresis (UPE), serum protein electrophoresis (SPE), and immunofixation are essential tests for the detection of monoclonal heavy chains in the urine or serum. The three types of heavy chain diseases are alpha (IgA), gamma (IgG), and mu (IgM) heavy chain disease.

The objective was to determine the underlying cause of illness in a young boy who presented with symptoms including a five month history of stomach pain, diarrhea, weight loss, clubbing of the fingers, edema, and malnutrition. The young patient also had a case of anemia due to iron deficiency. X-ray studies indicated segmentation, dilation of bowel loops, and mucosal fold thickening in the small intestine. A biopsy of the small bowel revealed villous atrophy with heavy unusual lymphoplasmocytic infiltration of the lamina propria. The symptoms of this disease were usually consistent in the small intestine and mesenteric nodes of the organ system. Diagnostic evidence for each classification of heavy chain disease, along with clinical characteristics, case studies, sites of infection, incidence, treatment, pathology, and associated diseases will be explained. Overall, the prevalence of heavy chain disease and how it can be detrimental to the vital functions of the immune system will be presented.

P6.41
ARSENIC-INDUCED CYTOTOXICITY AND MODULATION OF p53 EXPRESSION IN HUMAN LIVER CARCINOMA CELLS

Britney Green¹, Clement Yedjou¹, Paul Tchounwou¹
¹Tougaloo College, ²Jackson State University

Arsenic is a ubiquitous trace element that has been shown to induce both systemic and carcinogenic effects. Epidemiological findings indicate that arsenic is a paradoxical human carcinogen that results in increased risk of skin, lung, bladder, liver and kidney cancers. Although the systemic and carcinogenic effects of arsenic have been widely studied in a variety of systems, the mechanisms of arsenic toxicity remain largely unknown. Therefore, we proposed to use human liver carcinoma cells as a test model to evaluate the toxicity and p53 expression upon arsenic trioxide exposure. To achieve this goal, we performed MTT assay for cell viability, western blot and densitometric analyses for p53 expression and relative abundance of this protein. Data obtained from the MTT assay indicated that arsenic trioxide significantly reduced the viability of HepG2 cells, showing LD₅₀ values of 9 mg/mL upon 48 hours of exposure. Western Blot analysis demonstrated a strong dose-response relationship with regard to the expression of tumor suppression protein, p53. Findings from this research indicate that arsenic trioxide is able to cause cytotoxicity and cell cycle arrest through activation of the 53-kDa tumor suppressor protein.

This research was financially supported in part by a grant from the National Institutes of Health (Grant No. 1G12RR13459), through the RCMI Center for Environmental Health, and in part by a grant from Mississippi Functional Genomics Research at the University of Southern Mississippi.

P6.42
EFFECTS OF BINGE AND CHRONIC ALCOHOL EXPOSURE ON ZEBRAFISH GROUPING BEHAVIOR

Kiara Richardson¹, Antrice Walker¹, Stephanie Burks², Rodney Baker², Stanley Smith²
¹Tougaloo College, ²The University of Mississippi Medical Center

We are interested in developing an alcoholic liver disease experimental model in zebrafish (*Danio rerio*) and characterizing the pharmacological and biochemical consequences. To complement these ongoing studies, we investigated the behavioral changes caused by alcohol in zebrafish by developing a protocol to quantify changes in the instinctive grouping behavior. We used binge amounts of alcohol (defined as 150 mM) as well as the chronic alcohol treatment dose (50 mM) upon which our alcoholic liver disease model is based. Grouping behavior was quantified by using digital images captured from a Sony camcorder to determine the area occupied by groups of 10 zebrafish relative to the total available area of the experimental chamber. Binge alcohol amounts caused a significant increase in the relative area occupied when compared either to alcohol-naïve controls or to repetitively-treated fish reflecting an impairment of the normal grouping response of the zebrafish. With the chronic alcohol-treated zebrafish, we did not see a statistically significant change in the area occupied. However, there was a consistent trend towards decreased relative area occupied which suggests a strengthening the grouping behavior. Further studies will be necessary to determine the origin of this trend and how it relates to other alcohol effects in our experimental model. (Supported by the Mississippi Functional Genomics Network REO Program and The University of Mississippi Medical Center SURE Program)

P6.43
EMBRYONEUROGENESIS: LEVELS OF GABA RECEPTORS AS BIOMARKERS AND PREDICTORS OF DEVELOPMENTAL TOXICITY TO LOW LEVELS OF MERCURY EXPOSURES.

Wellington Ayensu, Demareo Webb, Raphael Isokpehi, Hari Cohly, Paul Tchounwou
 Jackson State University

Subunits of Gamma-AminoButyric Acid (GABA) A receptor, alpha 6 and others were over-expressed upon exposure to low doses of mercury. To date about 21 GABA receptor subunits form functional pentameric clusters in the developing brain to appropriately regulate neuronal networking in time and space. It is our hypothesis that exposures to mercury in the neonatal periods can cause highly inducible expression levels of these receptors sufficient to generate pathological neural networking. Up-regulation of GABRA6 led us to investigate the pattern of expression of the GABA receptors family in the brain during mammalian embryogenesis. Individual receptor subunits influence expression patterns of pentameric clusters via effects on signaling quality in the brain. We identified a developing

mammalian brain Gene Expression Omnibus (GEO) microarray dataset (GDS2702) on embryonic days 14.5 (E14.5), 16.5 (E16.5) and 18.5 (E18.5). We integrated microarray intensity calls (presence or absence of expression) data with expression image data annotation from in-situ hybridization transcriptome of mouse embryo at E14.5. Fourteen probes on the array slide mapped to 13 GABA receptor genes. *Gabbr1*, *Gabra2*, *Gabrb3* and *Gabrg2* were the only four GABA receptor genes expressed at stage E14.5 and E16.5. At stage E18.5, three additional genes (*Gabra1*, *Gabra3*, *Gabrg1* and *Gabrg3*) were expressed. *Gabbr1* had the highest intensity in all the three embryonic days. *Gabra6*, *Gabrb2*, *Gabrd*, *Gabrr1* and *Gabrr2* were not expressed in all the 3 samples analyzed. Correlations were seen in the annotations from microarray and in-situ hybridization assayed expressions of GABA receptor genes in the developing mouse brain at stage E14.5.

P6.44

THE CORRELATION BETWEEN HYPOXIA AND PREECLAMPSIA

Gabrielle Matthews, *William Bennett, Kedra Wallace
University of Mississippi Medical Center

The scientific hypothesis that the inflammatory cytokines: tumor necrosis factor alpha (TNF- α), interleukin 1 beta (IL-1 β), interleukin 6 (IL-6) and the anti-inflammatory cytokine, IL-10, are released in the placenta due to ischemia/hypoxia is what is being researched. Hypoxia releases all four of these cytokines. They're also released in the pregnancy disorder, preeclampsia, a hypertensive disorder that affects 5-7% of pregnancies. It normally occurs during the third trimester of gestation and it affects the human placental tissues. We used several different procedures to investigate which cytokines, if any, played a role in the correlation of hypoxia and preeclampsia. Before the placental tissue was obtained for RNA extraction, they were placed in normoxic, hypoxic, and reperfused environments. There were 9 samples of tissue collected and from these nine; six of them were placed in a hypoxic environment in a set of two while the other three were used as our control. Each set was placed in the hypoxic environment for 1 hour, 3 hours, or 6 hours and after each time frame, one was taken from each set and they were reperfused for an hour. After reperfusion, all nine samples were collected to begin RNA extraction. RNA was extracted and went through several processes to end up at what is called Real time, which tests how many of the genes are up regulated. We haven't received the full results of our experiment. Real Time is still in progress

P6.45

THE EFFECTS OF ESTROGEN ON THE MORPHOLOGICAL FEATURES OF HELA CELLS GROWN IN CULTURE

Melissa Daniel and Hamed Benghuzzi
University of Mississippi Medical Center

Cervical cancer remains a major health threat to women worldwide and the role of steroid hormones on cervical cancer

cells is not yet clearly defined. This study investigated the effects of the steroid hormone, estrogen, on the morphology of the HPV-positive HeLa cervical tumor cell line. In this study, HeLa cells were treated with physiological and supraphysiological doses of estrogen (EP and EH) and examined morphologically at 24, 48, and 72 hours. Morphological characteristics were evaluated using Papanicolaou and H&E staining. All values were compared to an appropriate cellular control. Descriptive tables were prepared to evaluate nuclear, cytoplasmic, and background characteristics. Nuclear characteristics evaluated included: prominent nucleoli, bizarre/ aberrant nuclear shape, multinucleation, coarse granular chromatin, intranuclear vacuolization, and round to oval nuclei, hydropic swelling, irregular nuclear contours / shapes, and prominent nuclear folds / grooves. Cytoplasmic characteristics evaluated included: N/C ratio = 1:1, N/C ratio < 1:1, N/C ratio > 1:1, cellular degeneration, fine cytoplasmic vacuolization, intracytoplasmic debris, spindle shapes, bizarre cell shapes, discrete vacuolization, single cells, cell aggregates, rounded cells, and fragmented cytoplasm. Criteria for background characteristics included: clean versus background debris. The morphological criteria were evaluated on a graded scale of 0 to 3, as compared to the controls. There was one table prepared for each time period. Physiological doses of estrogen did not induce changes in the cells at any time period. Supraphysiological doses of estrogen caused an increase in the fine and discrete vacuolization in all cell lines. Highlights of the results from this study indicated the Papanicolaou stain was superior for this cell line in tissue culture due to enhanced nuclear and cytoplasmic detail and less shrinkage in the cells.

P6.46

KNOWLEDGE VS CHOICE ASSESSMENT IN PURSUING CAREERS IN HEALTH RELATED PROFESSIONS FOR ACADEMIC YEAR 2007-2008

Faye Johnson*, Jamil Ibrahim, Hamed Benghuzzi
University of Mississippi Medical Center, Jackson, MS 39216

The aim of this study was to assess the magnitude of knowledge of various student groups toward health related professions (HRP), and to contribute information that may contribute to revising/upgrading recruitment efforts and admission policies. A questionnaire was given to students enrolled in various SHRP's programs CLS, CYTO, DH, EMT, HIM, OT, and PT for the 2007-2008 academic year. The major goals of the study were: (a) to assess student's knowledge and interest in various SHRP programs before enrollment, (b) to determine the first contact efforts the student had in the programs, and (c) to determine if they were informed of and participated in Program Awareness Day (PAD). A total of 279 questionnaires were distributed and returned completed. The results of this study revealed the student's knowledge base for HRP was from the following sources: counselors (11%); friends and family (36%); PAD (5%); Other (48%), and 1 did not answer the question. The data supported that students developed an



interest in HRP while either in college (51%) or high school (33%). Post graduate and other sources accounted for 10% and 6%; respectively of their awareness. The data showed interested students contacted faculty and SHRP students 68% of the time and recruiter and other sources 32% of the time. Interestingly, 31% of the students were aware of PAD, and 25% of the students attended PAD. These results provide significant information that can be utilized to efficiently and effectively improve the recruitment process.

FRIDAY MORNING GRAND BALLROOM

9:00-10:30

Health Fair (Blood pressure monitoring, glucose testing, body mass index, etc.)

FRIDAY MORNING
AMPHITHEATER

Rural Health Professional Training: Imperatives for Mississippi

- 10:00 **Welcome and Introductions**
Rob Rockhold, Ph.D.
- 10:10 **The Physician Workforce and Its Economic Impact**
Lynne Cossman, Ph.D.
- 10:25 **Place and the Training of a Health Professional Workforce for Rural Mississippi**
Chris Arthur, Ph.D.
- 10:40- **Growing Our Own: Starting High School Students on the Track to a Medical Career**
Bonnie Carew,

10:55-11:00 Break

- 11:00 **The Professional Portal Track: Another Pathway to Rural Practice**
Rob Rockhold, Ph.D.
- 11:15 **MRPSP: Growing Our Own Primary Care Physicians**
Janie Guice, Executive Director, Mississippi Rural Physicians Scholarship Program
- 11:30 **Medical Student and Residency Training: Moving Forward, Back to Our Roots**
Diane Beebe, M.D.
- 11:45 **The Mississippi Health Professional Placement Service: How a Web-based "Compatible Match" Program Can Help Rural Mississippi**
Ed Snodgrass, Ph.D.

FRIDAY AFTERNOON
AMPHITHEATER

Drug Delivery Mini-Symposium: Advances in Implantable Sustained Release Drug Delivery Systems

- 1:00 -1:05 **Welcome and Introductions**
- 1:05 -1:20 **The Use of Drug Delivery Systems as a Tool in Tissue Engineering**

- 1:20 -1:50 **Use of the Osmotic Pump for Delivery of Organic Compounds**
- 1:50 -2:20 **Development of Elastin-like Polypeptide for Thermally Targeted Delivery of a c-Myc Inhibitory Peptide**
- 2:20 -2:40 **The Use of Biocompatible Materials in Bone Healing and Repair Applications**
- 2:40 -3:00 **Novel Applications of Sustained Release Technologies**

Speakers:

Hamed Bengehuzzi, Ph.D., Professor and Chair, UMMC, s
Ateegh Al Arabi, PhD, Johnson County Community College
Gene L. Bidwell, III, PhD, UMMC
Kenneth R. Butler, Jr., Ph.D., UMMC
Michelle Tucci, PhD, Associate Professor, UMMC

3:00-4:00 DIVISIONAL BUSINESS MEETING

HISTORY AND PHILOSOPHY OF SCIENCE

Chair: Mac H. Alford, University of Southern Mississippi
Vice-chair: Andrew Harrell, US Army Corp of Engineers

THURSDAY AFTERNOON

CHESNUT ROOM

07.01

1:15 PRELUDE TO DARWINIAN EVOLUTION: NATURAL PHILOSOPHY IN THE EARLY NINETEENTH CENTURY

Kenneth J. Curry, Paula J. Smithka
University of Southern Mississippi

Since the time of the ancient Greeks (Plato, Aristotle), natural philosophers (we call them 'scientists' today) have tried to organize living creatures into scientifically useful classificatory schemes. The quest for archetypes in ancient through early modern times largely focused on essences (eidos) which were either internal or external to the organisms, or instilled by God at the act of creation. By the nineteenth century, the search for the archetypes focused largely on natural processes that influenced biological morphology. Competing views emerged regarding the nature of those archetypes. Some natural philosophers held views regarding static archetypes (Cuvier, Owen), while others argued that archetypes could change (Goethe, Geoffroy), and Larmarck and Darwin maintained that archetypal change was a function of adaptation to the environment. In addition to these views, the early nineteenth century was characterized by arguments between uniformitarians (natural processes in the past are similar to those operating today) against catastrophists (natural processes in the past were remarkably different in kind or intensity to those operating today) and transmutationists (new species evolve) against fixists (who denied transmutationism). Here we explore early nineteenth-century natural philosophy, from its German Romantic idealist foundations (Fichte, Schelling, Hegel) to the emergence of Darwinian evolution as a fecund scientific theory.

O7.02**1:45 A 19TH CENTURY "RADICAL" SOLUTION TO THE SPECIES PROBLEM?**

Paula Smithka, Kenneth Curry

University of Southern Mississippi

The nature of a biological species has been debated in both philosophical and biological contexts largely since the 1960's, but gaining even more press since the 1980's in the English speaking world. However, the debate may have been going on in 19th century Germany. This is significant because biologist Michael Ghiselin's 1974 "A Radical Solution to the Species Problem" (*Systematic Zoology* 23: 536-544) may not have been so radical after all. Such a solution may have already been proposed by Carl Nägeli in 1865 in his *Entstehung und Begriff der Naturhistorischen Art*. Ghiselin's radical solution was to consider biological species as individuals, not natural kinds, and not a conceptual grouping of individual organisms as a means of organizing the physical world. Philosopher David Hull supported Ghiselin's hypothesis and the Species-As-Individuals (SAI) hypothesis was born. SAI garnered much attention and support, igniting the current debate in philosophy of biology and biological systematics regarding the nature of species. We explore the extent to which the "current debate," may have been anticipated by 19th century German scholars, Nägeli and Karl Möbius, (who seems to defend the view that species are concepts [1886. "Die Bildung, Geltung und Bezeichnung der Artbegriffe" *Zoologische Jahrbucher*, vol. 1: 241-274]), in order to determine the nature of the 19th century formulation of the "radical solution" to the species problem.

O7.03**2:15 LOGICAL PROBABILITY AS A QUALITATIVE SYSTEM OF EPISTEMIC WARRANT**

John Sylvia IV

The University of Southern Mississippi

Qualitative probability has emerged as an important concept for fields as varied as medicine and artificial intelligence. In technical fields such as these, it is often not possible to assign a real or accurate numerical degree of belief to a particular proposition, yet decisions relying on the epistemic warrant of the statement must be made, despite the fact that certainty does not exist. It is argued that logical probability, generally considered a dead movement, should be updated and understood as a method of epistemic warrant based on qualitative probability in order to formalize the system of reasoning to be used in situations where certainty is not possible. This form of logical probability is outlined and an axiomatization is presented before considering the typical Bayesian objection that it is never rational to accept uncertain propositions. It is argued against this objection that accepting uncertain propositions is rational because it can simplify reasoning and allow for decisions even in cases where a subjective Bayesian system would not.

2:45 Break

O7.04**3:00 CONCEPT OF A CONCEPT**

Andrew W. Harrell

Engineer Research and Development Center

Concepts form the meaning of meaningful words. They are units of thought which are smaller than a judgement, larger than a sense impression. Well-defined relationships between concepts are themselves concepts. This talk will discuss concepts from the point of view of a theory of knowledge in Plato's dialogues. This point of view added to a thousand years or so later by the transcendental idealistic terms and definitions of Dr. Immanuel Kant. What is a concept of a concept? Is there one such thing or set of rules and postulates. Are these the same in the mind of a scientist and in a theologian? Can we choose and add to whatever these rules and postulates are for ourselves? Are they predetermined in us? These are very difficult questions. Back in 1974 when I wrote a paper on about this a prevailing opinion among academic philosophers was that there was no such a thing (as a concept of a concept). Now, 35 years later, in the light of new discoveries in the philosophy of science and religion, advances in our understanding of logic and computer mathematics it seems a good time to reconsider our thoughts about this question.

O7.05**3:30 HIERARCHICAL MODELING OF BIOGEOCHEMICAL PROCESSES AND MECHANISMS THAT DRIVE CLAY NANO- AND MICROFABRIC DEVELOPMENT**

Kenneth J. Curry¹, Richard H. Bennett², Paula J. Smithka¹, Matthew H. Hulbert³

¹*University of Southern Mississippi*, ²*SEAPROBE, Inc.*,

³*Research Dynamics*

Conceptual scientific models of clay and clay fabric development can be constructed profitably by considering biogeochemical and physical systems in terms of an ordered hierarchy. We present here a hierarchical model of early stages of marine sediment clay fabric development identifying processes and focusing on mechanisms (energy sources). The physical aspects of the hierarchy are cast in terms of the spatial scale in which the mechanisms occur, primarily at the nanometer (nanofabric) level of organization. This level is nested below the micrometer (microfabric) level that includes aggregates of clay signatures and is nested above the molecular level that includes edges and faces of clay layers characterized by atomic, ionic, and molecular organo-clay interactions. The modeling scheme is a conceptual framework of mechanisms and operational spatial levels of the contemporaneous, cooperative, and discrete dynamic interactions of mechanisms both within and across levels. For example, electrochemical mechanisms that affect the assembly of clay layers and multi-layers operate at the molecular level manifesting as covalent and ionic bonding, London-van der Waal's attraction, and very short range Born repulsion. In contrast, micro-turbulence and other fluid flow mechanisms



(shear, laminar flow, etc.), operate at nanometer to micrometer spatial levels of organization. within each spatial level. Typical of hierarchical models in general, the rates and types of mechanisms operating at each level of the hierarchical model of clay fabric development do not form a continuum across spatial scales, but rather are qualitatively and quantitatively distinct and operate in discreet and natural ranges within each spatial level.

4:00 Division Business Meeting

MARINE AND ATMOSPHERIC

Chair: Hyun J Cho, Jackson State University

Vice-Chair: David Rosenfield, University of Southern Mississippi

FRIDAY MORNING

HOLLY ROOM

9:00 Division Business Meeting

08.01

9:30 A STUDY ON RUPPIA MARITIMA AND HALODULE WRIGHTII BEDS AT GRAND BAY NATIONAL ESTUARINE RESEARCH RESERVE, MISSISSIPPI FOR SEAGRASS HABITAT RESTORATION

Cristina Nica, Hyun Jung Cho
Jackson State University

Global seagrass beds have been declining due to alteration of natural habitats and decline in coastal environment quality. The more significant declines occurred in *Thalassia testudinum* and *Syringodium filiforme*, which have resulted in the increased relative abundance of opportunistic species such as *Ruppia maritima* L. and *Halodule wrightii* Aschers in northern Gulf of Mexico. In order to provide information needed to understand the current limiting factors and restoration needs, we conducted studies: (1) to identify areas that can support SAV (Submerged Aquatic Vegetation) growth. We hypothesized that there were significant spatial and short-term fluctuations in the coverage of *Ruppia*/*Halodule* beds. We tested the hypothesis using field data collected biannually at five sites in Grand Bay National Estuarine Research Reserve, Mississippi. Three-way ANOVA was used to analyze seagrass depth distribution and abundance, which we surveyed along water depth gradients and shoreline orientation. The SAV community, which consisted of *R. maritima* and *H. wrightii*, displayed significant short-term changes in abundance and species dominance, largely attributed to changes in *R. maritima* abundance between summer and fall. Our results on site variation in SAV coverage suggest that shore orientation within the estuarine system might be a contributing factor to the spatial difference in the shallow estuary. Our results suggest that consistent SAV survey efforts are needed to reduce

errors in assessments of disturbance/restoration impacts and long-term trends.

08.02

9:50 ESTUARINE MIXING BEHAVIOR OF CARBOHYDRATES AND DISSOLVED ORGANIC CARBON IN THE BAY OF SAINT LOUIS ESTUARY AND MISSISSIPPI SOUND

Xuri Wang, Yihua Cai, Laodong Guo
The University of Southern Mississippi

Due to their roles as the energy storage and transportation media for auto- & heterotrophic organisms in the aquatic environment, carbohydrates are the active and labile component in the bulk dissolved organic carbon (DOC) pool. To study the abundance, distribution and biogeochemical behavior of carbohydrates and DOC in the estuarine mixing zone, water samples were collected from the Bay of Saint Louis (BSL) and Mississippi Sound (MS) from 2006 to 2008. DOC, total dissolved carbohydrates (TCHO), monosaccharides (MCHO) and polysaccharides (PCHO) were measured along a salinity gradient from freshwater (Jordan River) to seawater (Mississippi Sound). DOC, TCHO, MCHO and PCHO all showed a similar trend, decreasing with increasing salinity. The percentages of TCHO in the bulk DOC pool ranged from 11% to 42%. MCHO was the dominant species in the carbohydrate pool in the low salinity area, accounting for as much as 80% of TCHO. MCHO concentrations exhibited a removal behavior along the salinity gradient, indicating preferential bacterial utilization during the estuarine mixing process. In contrast, the percentages of PCHO in TCHO gradually increased with salinity and became dominant outside the mouth of the BSL, which might indicate that other *in situ* sources (phytoplankton excretion, degradation of debris) also contributed to the PCHO pool. Our results demonstrate that the proxies, such as MCHO/DOC, MCHO/TCHO and PCHO/TCHO, are a useful tool to investigate the biogeochemical cycles of organic matter in marine environments.

08.03

10:10 USING OCEAN COLOR TO MEASURE COASTAL SEA-SURFACE SALINITY OF THE LOUISIANA SHELF

Virgilio Maisonet¹, Joel Wesson², Chris Osburn³, Derek Burrage², Stephan Howden¹

¹*University of Southern Mississippi*, ²*Naval Research Laboratory*, ³*North Carolina State University*

Taking advantage of a natural river plume, simultaneous airborne optical and microwave sensor data are analyzed to arrive at a relationship between Colored Dissolved Organic Matter (CDOM) and Sea Surface Salinity (SSS). We report here on aircraft measurements made in May, 2007, with the NRL STARRS (Salinity, Temperature and Roughness Remote Scanner), and optical multi-wavelength radiance and irradiance sensors (Satlantic OCR-507 at SEAWIFS wavelength bands).

These measurements were made in conjunction with in situ measurements of SSS, ocean color, and fluorescence in the Atchafalaya River outflow from the R/V Pelican. In this work we demonstrate the ability of airborne radiance and irradiance sensors to: a) detect the plume's persistent salinity gradient and corresponding color fronts as observed by in-situ shipboard measurements as well as STARRS, and b) provide context for the in situ measurements by providing synoptic measurements over a wider area than the ship was able to cover. A multi-linear regression for salinity, based on three of the optical channels, provides an excellent qualitative proxy for large scale salinity in the Atchafalaya plume region.

10:30 Break

08.04

10:50 MULTI-SPECTRAL VEGETATION INDEX FOR FLOATING AND CANOPY-FORMING AQUATIC VEGETATION

Hyun Jung Cho

Jackson State University

The unique spectral characteristics of green vegetation, low reflectance in red and high reflectance in Near-Infrared (NIR), have been used to develop vegetation indices, including Normalized Difference Vegetation Index (NDVI). We tested if NDVI can be used to detect/discern between canopies of aquatic plants in shallow waters by examining the effects of water depth and vegetation shoots on the upwelling energy from a 100-gallon-outdoor tank lined with black pond liners. We collected spectral data over floating waterhyacinth (*Eichhornia crassipes*), tanks containing SAV (submerged aquatic vegetation), and black panel at varying water depths using a spectroradiometer. The measured upwelling radiance was converted to % reflectance; and the hyperspectral reflectance was averaged to match the Red and NIR bands of three satellite sensors: Landsat 7 ETM, SPOT 5 HRG, and ASTER. NDVI values ranged 0.6-0.65 when the SAV canopy was at the water level, then they decreased linearly with increasing water depths in clear water. When corrected for water attenuation using the data obtained from the black panel, the NDVI values significantly increased at all tested depths (0.1 - 0.5 m). Our results suggest the conventional NDVI: (1) can be used to depict SAV canopies at the water surface; (2) is not a good indicator for submerged plants even at shallow waters (0.3 m); and (3) the index values can significantly improve if information on spectral attenuation by water volume increases is collected simultaneously through ground-truthing and integrated in the index.

08.05

11:10 CLASSIFICATION OF AIRBORNE HYPERSPECTRAL DATA FOR SHALLOW ESTUARINE SEAGRASS BEDS

Hyun Jung Cho, Philemon Kirui

Jackson State University

Remote detection of underwater vegetation has proven

to be challenging because of water absorption of Near Infra Red (NIR) and light scattering from suspended particles. We used an experimental approach to identify unique spectral regions of the underwater vegetation that can be used in classification of airborne hyperspectral data obtained over seagrass beds. Reflectance curves for submerged vegetation at varying water depths and at turbidity levels were generated through controlled experiments and the spectral wavelength regions (bands) with distinct spectral peaks were visually selected. The covariance among the depth-induced reflectance variations at those bands was studied in order to find key wave bands that can be used to detect vegetation and reduce data redundancy. Airborne AISA hyperspectral data were obtained in October 2003 over the seagrass beds in Grand Bay National Estuarine Research Reserve, Mississippi. Spectral Angle Mapping (SAM) was utilized to classify the AISA data. Only the three AISA bands whose centers were closest to the three key wavelength regions were used in SAM classification. Compared to the original 20-band image, use of the NIR bands made chlorophyll-containing objects, both seagrass beds and waters with high phytoplankton concentrations, more distinguishable. While the shallow areas near the shore were correctly classified as SAV, the overall accuracy for the seagrass class was less low when compared to the field data probably due to interference by suspended particles which reduced the substrate signal. Phytoplankton with similar spectral signals to those of vascular plants may also have introduced sources for the misclassifications.

08.06

11:30 WHY RESEARCH SCIENTISTS SHOULD PARTICIPATE IN THE COSEE:CGOM IN 2009

Jessica Kastler¹, Sharon Walker¹, Michael Spranger², John Dindo³, Dan Brook⁴

¹*J.L. Scott Marine Education Center-Gulf Coast Research Laboratory-The University of Southern Mississippi*, ²*University of Florida*, ³*Dauphin Island Sea Lab*, ⁴*Mississippi State University*

Since 2003, 24 research scientists and 48 classroom teachers have traveled to the Barataria Terrebonne Estuarine System in southeast Louisiana to work as colleagues in the Central Gulf of Mexico Center for Ocean Sciences Education Excellence (COSEE:CGOM) Teacher Scientist Institute, a professional development program. Amid the backdrop of the Mississippi River delta plain, via research cruises into Terrebonne Bay, canoeing through salt marsh creeks, and field sampling in marsh, bay and island habitats, teachers and scientists work in teams together to learn from each other. Scientists share their experience of research, specific content and the nature of science. Teachers share their experience of classroom culture, curriculum and science education standards. By the end of the week each scientist-teacher team produces a lesson plan for use with the teachers' students. Participants attend for a variety of reasons. What frequently starts among scientists as an opportunity to provide a service unexpectedly



becomes 1) an opportunity to network among marine scientists and educators, 2) an aid to grantsmanship, 3) an act of stewardship and 4) an exhausting week of fun. Consider joining us June 21-26, 2009 for the 2009 Louisiana Teacher Scientist Institute of the COSEE:CGOM for an enlightening experience.

O8.07

11:50 SUCCESS OF POM-BASED INDONESIAN SEAS MODEL: COMPARING RESULTS WITH 3 YEARS OF IN SITU DATA

David Rosenfield, Kieran O'Driscoll, Vladimir Kamenkovich, Dmitri Nechaev

University of Southern Mississippi

The flow through the Indonesian Seas, or Indonesian Throughflow (ITF), from the Pacific to the Indian Ocean, helps determine how heat and salt are transported around the globe and is an important part of the Earth's climate system. Unfortunately, the ITF is both extremely complicated and very remote. In an effort to measure the flow through the major inflow and outflow straits, 11 deep-ocean moorings were deployed to create a 3-year comprehensive dataset called INSTANT (full water column in situ velocity, temperature and salinity). A number of simulations of this region exist and an effort is being made to compare these simulations to the INSTANT dataset. The recent release of this data can be used by numerical ocean modelers to develop a metric to help determine a simulation's success. An Indonesian Seas Model (ISM; O'Driscoll and Kamenkovich 2005, 2006) simulates circulation and mixing within the entire region. ISM is a baroclinic version on the Princeton Ocean Model (POM) with a horizontal resolution of 10 km with 29 sigma levels. It has a terrain-following sigma-coordinate system in the vertical and an orthogonal curvilinear coordinate system in the horizontal. In this talk I will demonstrate how our simulation compares to the INSTANT dataset – i.e. how successfully the ISM simulates this complex natural environment.

FRIDAY AFTERNOON

GRAND BALLROOM

1:00-2:00 **Poster session**

P8.01

IMPACTS OF GLOBAL/REGIONAL CLIMATE CHANGES ON ENVIRONMENT AND HEALTH: NEED FOR INTEGRATED RESEARCH AND EDUCATION COLLABORATION

Francis Tuluri, Anjaneyulu Yerramilli, Suseela Reddy
Jackson State University

Climate Variability may be due to natural internal processes within the climate system, or to variations in natural or anthropogenic (human-driven) external forcing. Global climate change indicates a change in either the mean state of the climate or in its variability, persisting for several decades or longer. This includes changes in average weather conditions on Earth, such as

a change in average global temperature, as well as changes in how frequently regions experience heat waves, droughts, floods, storms, and other extreme weather. It is important to examine the effects of climate variations on human health and disorders in order to take preventive measures. Similarly, the influence of climate changes on animal management practices, pests and pest management systems, and high value crops such as citrus and vegetables is also equally important for investigation. New genetic agricultural varieties must be explored, and pilot studies should examine biotechnology transfer. Recent climate model improvements have resulted in an enhanced ability to simulate many aspects of climate variability and extremes. However, they are still characterized by systematic errors and limitations in accurately simulating more precisely regional climate conditions. We must develop a greater understanding of the synergistic impacts of environmental change, and improve development, testing and validation of integrated stress impacts through computer modeling. In the present study we present a detailed study of the current status on the impacts of global/regional climate changes on environment and health with a view to highlighting the need for integrated global research and education collaboration.

P8.02

ECOTOXICOLOGY AND RISK ASSESSMENT OF MERCURY IN GRAND BAY NATIONAL ESTUARINE RESEARCH RESERVE

Melanie McHenry, Zikri Arslan, Paul Tchounwou, Yerramilli Anjaneyulu

Jackson State University

Mercury is a dangerous pollutant of the environment and is transported by air and water throughout the earth. Natural sources contribute two-thirds of the mercury in the environment and one-third were result of human activity. Human activities such as metal smelting, coal production, chemical synthesis and use, and waste disposal will contribute to the pollution. These mercury compounds will transfer between soil, atmosphere, and surface waters during the life cycle of mercury in the environment. The three main forms of mercury that exist in the environment are elemental mercury, inorganic mercury, and organic methyl-, ethyl-, and phenyl-mercury. Each form of mercury has a different solubility, reactivity, biological effects, and toxicity. Methylmercury is formed by microorganisms from elemental mercury. The most important route for mercury vapor is inhalation. Exposure to methylmercury occurs mainly via consumption of fish. This study investigates the levels and distribution of Hg in the Grand Bay National Estuarine Research Reserve (NERR). Water, sediment and fish samples collected from NERR were analyzed for Hg content. Dissolution was made by nitric acid in closed vessels while acidified water samples were analyzed without digestion. Preliminary analysis by ICP-MS indicated that Hg levels in water column were higher than in sediment. Speciation of total mercury to inorganic and

methly mercury will be performed on several samples and will applied to fish collected from NERR. It is expected that levels in fish would be substantially higher than in sediment and water.

P8.03

TROPHIC GUILDS OF TROPICAL WESTERN ATLANTIC FISH

Rogerick Magee, *Jackson State University*

Scientific literature and online databases were used to classify tropical fish in the Western Atlantic territory according to preferred habitat. The Western Atlantic territory included Florida, Bahamas, Carribean, Puerto Rico, Virgin Island, Gulf of Mexico, and South Atlantic states. The trophic guild classification of fish included piscivores, herbivores, and omnivores. Data on various reef fish species were collected and applied to an Excel spreadsheet, which displayed the fish species, trophic guild categories, diet of the fish, and the proportion of the diet associated with trophic categories for each species. Data will be used to determine habitat related patterns in the distribution of a trophic guilds in coral reef ecosystems.

P8.04

SURFACE ENERGY BALANCE OVER SOYBEAN CROP IN MISSISSIPPI

Heping Lui, Jamal West, Yu Zhang, *Jackson State University*

Characteristics of the surface energy balance over a soybean field are analyzed using the data measured by an eddy covariance system during the period from June 6 to July 31, 2006 in a soybean field in Newton County, Mississippi. The data are divided into two categories based on volumetric soil moisture content: dry and wet. The goal of this study is to determine the effects of soil moisture conditions on surface energy partitioning and energy exchange between the soybean surface and the atmosphere. The data indicate that the different weather conditions significantly affected soybean growth, which led to differences in partitioning of the surface energy budget. Under dry weather conditions, more available energy was partitioned into sensible heat flux as compared with latent heat flux. Under wet weather conditions, more evapotranspiration occurred, which caused an increase in latent heat flux and a decrease in sensible heat flux. Therefore, the results will provide experimental evidence and fundamentals for parameterizing land-surface processes over agricultural croplands in Mississippi.

P8.05

ESTIMATE OF CONTRIBUTION OF MAIN TIDAL COMPONENTS TO THE TRANSPORTATION THROUGH ALEUTIAN PASSES

Yao Li, Dmitri Nechaev, *University of Southern Mississippi*

The tide is hypothesized to play an important role in the transportation through the Aleutian Passes. To test such a hypothesis, two methods will be employed to analyze the current time series data obtained by ADCP deployed on four mooring

sites in the Amukta Pass, one of the Aleutian Passes. The first method is to apply the Fourier Transform to analyze the power spectrum of the current velocity. It can be seen from the power spectrum that the tidal constituents do make great contribution to the velocity variability, especially the K1 and P1 constituents. The main diurnal and semidiurnal constituents are filtered to show their contribution. After filtration, the remaining amplitude of the velocity is only about one third of the original, indicating a great contribution of the tides. The second method of data analysis is to apply the Least Square Regression to fit the data to tidal components corresponding to different frequencies. Then the ones with the same frequencies as the main diurnal and semidiurnal tidal constituents will be filtered. Mike Foreman's tidal tool package will be employed in this method. Finally, the results of both methods will be compared and discussed, and the tide's contribution to the volume transport in the Amukta Pass will be estimated.

P8.06

A PRELIMINARY STUDY OF THE INFLUENCE OF REGIONAL WINDS ON BERING STRAIT TRANSPORT

Chudong Pan¹, Dmitri Nechaev¹, Gleb Pantelev²
¹University of Southern Mississippi, Dept. of Marine Science,
²University of Alaska, International Arctic Research Center

The goal of this study is to determine the role of the wind in the Chukchi and Bering Sea in the controlling transport through the Bering Strait. Wind data from 1990-1991 (6 hourly, 0.5x0.5 degree resolution) is analyzed using EOF (Empirical Orthogonal Functions) method. Velocity measurements taken from a mooring stationed in the Bering Strait are used to calculate the transport through the strait. Correlations between the wind EOFs and the Bering Strait transport are calculated. The experiments also determine the extent of the region where winds affect the transport using wind data from different locations. The correlations between some wind EOFs and the transport are larger than the correlations with the local winds, which indicates that these wind EOFs may play more important role for the transport in the region. Also, some preliminary results on wind and sea surface height correlation analysis will be presented.

P8.07

A STUDY ON THE VALIDITY OF BUOY MOUNTED ACOUSTIC DOPPLER CURRENT PROFILERS: A COMPARISON OF UPWARD AND DOWNWARD LOOKING SYSTEMS IN ONSLOW BAY, NC

Lea K. Locke¹, Richard L. Crout¹, *The National Data Buoy Center*, ²The University of Southern Mississippi

The National Data Buoy Center (NDBC) maintains an extensive array of moored buoys around the world. Hence, mounting Acoustic Doppler Current Profilers (ADCPs) to these buoys has proven to be an avenue worth exploring. In a previous study done by Seim and Edwards (2007), a downward looking ADCP from NDBC buoy 41008 was compared to an upward looking ADCP from the University of North Carolina at Chapel

Hill (UNC)), which was located in close proximity to buoy 41008, to test the validity of measurements made by a buoy mounted ADCP. Because the sampling frequency and bin sizes were not standard for the two ADCPs, the two did not agree very well. Since this time, NDBC has made several changes to its ADCP configuration. The objective of this study is to compare NDBC's present buoy mounted ADCP configuration with an upward looking ADCP from the University of North Carolina at Wilmington (UNCW). For this effort, both ADCPs are configured the same. Both of these systems are located on the shallow continental shelf of Onslow Bay, North Carolina. Time series data from each system were filtered using band pass, high pass, and low pass filters in order to see in more detail the differences between the two systems. Preliminary results show good agreement between the two systems, with most variance found in the upper portion of the water column. The cause of this variance still remains unknown. It is postulated that excessively high wave heights may be affecting buoy mounted measurements.

P8.08

A STUDY OF LARGE-SCALE SURFACE FLUXES AND VERTICAL MOTIONS ASSOCIATED WITH LANDFALL OF HURICANE KATRINA

R. Suseela Reddy, Harene Natarajan, Christopher Lockett, Quinton Williams

Jackson State University

We investigated the possible relationship between the large-scale heat fluxes and intensity change associated with the landfall of Hurricane Katrina. After reaching the category 5 intensity on August 28th, 2005 over the central Gulf of Mexico, Katrina weakened to category 3 before making landfall (August 29th, 2005) on the Louisiana coast with maximum sustained winds of over 110 knots. We also examined the vertical motions associated with the intensity change of the hurricane. The data on Convective Available Potential Energy (CAPE), sea level pressure, and wind speed were obtained from the Atmospheric Soundings and NOAA National Hurricane Center (NHC), respectively for the period of August 24 to September 3, 2005. We developed an empirical model and a C++ program to calculate surface potential temperatures and heat fluxes using the above data. We also computed vertical motions using CAPE values. The study showed that the large-scale heat fluxes reached maximum (7960W/m²) with the central pressure 905mb. The Convective Available Potential Energy (CAPE) and the vertical motions peaked 3-5 days before landfall. The large vertical atmospheric motions associated with the land falling hurricane Katrina produced severe weather including thunderstorms and tornadoes.

P8.09

EXPERIMENTAL INFECTION OF *LITOPENAEUS VANNAMEI*, *PALAEMONETES PUGIO*, AND *FARFANTEPENAEUS AZTECUS* WITH NECROTIZING HEPATOPANCREATITIS BACTERIUM (NHPB) BY PER OS EXPOSURE

Thompson William, Lotz Jeffery, Parson Ryan

The University of Southern Mississippi

Since its emergence in 1985, Necrotizing Hepatopancreatitis which is caused by Necrotizing Hepatopancreatitis Bacterium (NHPB) has affected domestic shrimp aquaculture in Texas. NHPB causes high mortality of farmed raised *Litopenaeus vannamei* but the reservoirs in the Gulf of Mexico for NHPB are unknown. Two of the most common species that might serve as reservoirs are the grass shrimp, *Palaemonetes pugio*, and the brown shrimp, *Farfantepenaeus aztecus*. To evaluate their role as reservoirs as well as the effects of NHPB on them, the two native species were exposed to NHPB in controlled experiments. Sixty animals (20 from each species) were exposed orally to 0.05 g of NHPB-infected hepatopancreas. Four negatives of each species (12 total) were fed 0.05 g of Ziegler, 35/10 shrimp grow-out pellets. All specimens were kept in individual aquatic habitats at 30°C and 30 ppt salinity for 31 days. Mortalities were recorded post-exposure. The presence or absence of NHPB was determined by PCR and histological examination. Pathogenicity and virulence were evaluated by comparing the death rates, and the percent infected of each wild shrimp species relevant to *L. vannamei*. *Farfantepenaeus aztecus* and *P. pugio* were found to be susceptible to infection with NHPB. In addition the two native shrimp exhibited higher mortality rates and higher rates of infection than *L. vannamei*. These results indicate that the two native species could serve as reservoirs for NHPB and that the effects of NHPB on native species may be greater than on cultured species.

P8.10

CARRYING CAPABILITY OF WHITE SPOT SYNDROME VIRUS (WSSV) IN SUB-TERRESTRIAL CRAB CARRIERS

Ryan Parson, Jeffery Lotz, William Thompson

University of Southern Mississippi

White Spot Syndrome Virus (WSSV) was first reported in 1992 when Chinese shrimp aquaculture facilities were completely devastated by the virus. WSSV causes high mortality rates in shrimp and other crustaceans. Sub-terrestrial crabs may be able to serve as reservoirs; transporting WSSV to other bodies of water and even coastal aquaculture facilities. *Callinectes sapidus*, the blue crab, is very susceptible to WSSV but the susceptibility of sub-terrestrial species of crab are unknown. *Sesarma cinereum*, the wharf crab and *Uca longisignalis*, the fiddler crab are sub-terrestrial species common to the Gulf of Mexico that could serve as reservoirs of infection. Twenty specimens of each three species were obtained for the



experiment. Sixteen individuals of each species were exposed to the virus via injection while the remaining four were injected with saline to serve as the negative controls. The wharf crab, *S. cinereum*, and the fiddler crab, *U. longisignalis* received a dosage of 0.05 mL, while the blue crab, *C. sapidus*, received a 0.10 mL dose of WSSV. All specimens were kept in individual aquatic habitats. Mortalities were recorded post-injection. The crabs were then tested for the presence of the virus using PCR and histological analysis. The virulence and susceptibility of the sub-terrestrial species were compared to the highly susceptible *C. sapidus*. *Uca longisignalis* and *S. cinereum* were less susceptible to WSSV but are capable of serving as carriers. The results show that each sub-terrestrial species could serve as reservoirs and lead to possible disease outbreak at aquaculture facilities.

FRIDAY AFTERNOON HOLLY ROOM

08.08

2:00 MULTISCALE MODELING COMPARISON OF AIR QUALITY FOR AN OZONE EVENT DURING THE 1996 Paso del Norte OZONE CAMPAIGN

Duanjun Lu, Remata Reddy, Rosa Fitzgerald, William Stockwell, Quinton Williams, Paul Tchounwou
Jackson State University

More attention has been focused on the fine scale air quality modeling with a relatively limited information for showing what spatial resolution is necessary to successfully capture the high ozone event with accurate central strength and sufficiently detailed structures. In this work, an air quality modeling system including a chemistry and transport model, CMAQ, an emission processing model, SMOKE, and a mesoscale numerical meteorological model, WRF, was used to investigate an ozone event occurring during the period of 1996 Paso del Norte Ozone Campaign. The results show that grid resolution evidently influences the simulations of ozone formation, dispersion, transportation and structural distribution. The coarser the spatial resolution of model, the more the lag of peak ozone occurs. All models underpredicted the peak ozone concentration but fine grid model produced the best. The problems of maximum ozone underprediction and minimum ozone overprediction can be mitigated by increasing the spatial resolution of model. Compared to fine models, coarse models provided rather simple and smooth structures. It was found that the high ozone event can hardly be captured by using coarse spatial resolution models, and the high resolution model (grid spacing is no greater than 4 km) is necessary.

2:20 Student Awards for Best Presentations

MATHEMATICS, COMPUTER SCIENCE AND STATISTICS

Chair: Elegenaid Hamadain, University of Mississippi Medical Center

Vice-chair: Paul Ruth, University of Mississippi

THURSDAY MORNING

HICKORY ROOM

09.01

9:00 DEVELOPMENT OF AN AUTOMATED WEB-BASED FACULTY PERFORMANCE EVALUATION INSTRUMENT

Sumalatha Allam, Natarajan Meghanathan
Jackson State University

Faculty Performance Evaluation Instrument (FPEI) is the paper document currently used by the Department Chairs at Jackson State University (JSU) to evaluate the annual accomplishments of their faculty members. Faculty members are evaluated in the following four areas for their annual accomplishments: (i) Academic Citizenship and University Service, (ii) Teaching and Advising Effectiveness, (iii) Research and Scholarly Activities and (iv) Professional Service Activities. Every year, this paper-based document is completed manually by every faculty member in every department. The Department Chair also then manually goes through the accomplishments for each of the above four categories and the supporting documents submitted by each faculty member. The paper-based procedure consumes a lot of time and resources for both the faculty members and the Department Chairs. In this paper, we have developed a web-based automated FPEI using which a faculty member can login online and submit all of his/her accomplishment information and supporting documentation in electronic format. The Department Chair can also login to his/her account, be able to access the information submitted by each faculty member and obtain automatic evaluation results based on the information submitted by the faculty member including the overall ranking and the area-wise ranking for each faculty member. The category-wise ranking and the overall ranking can be either "Outstanding" or "Good" or "Satisfactory" or "Needs Improvement" or "Unsatisfactory". The results of faculty performance evaluation for every year will be stored in the system database. The technologies used in this project are: Macromedia Dreamweaver, JavaScript, PHP and MySQL.

09.02

9:25 IMPLEMENTING MIXED CHAINING IN A CLASSIFICATION TYPE EXPERT SYSTEM

Andrew W. Harrell

U.S. Army Engineer Research and Development Center

Expert systems applications include decision



management, diagnosis /troubleshooting, classification and interpretation of situations, planning and scheduling analysis, manufacturing design, configuring objects under constraints, instruction and intelligent documentation, configuration design, and process control. In this talk we will discuss some details of how to implement a particular classification type system. The two goals were to develop an understanding of the physical sedimentary processes in rivers and streams and to develop a conceptual model of these processes. An auxiliary computer program was written to topologically sort the 120 rules in the knowledge base. Because of the general to specific nature of the backward ordered reasoning (from goals to input data) it is hard to organize sets of rules that lead to multiple goals. We want to write the software so all the information that one would expect to be generated is outputted before the series of program generated questions ends. So, the conclusions of the rules were used as the means by which to define a partial order of the questioning logic flow through the knowledge base.

09.03

9:50 GOOGLE PAGERANK AND MATRIX EIGENVALUE RANKINGS: A COMPARISON

Toyin Alli, James Reid

University Of Mississippi

There is intense interest in NCAA football in this country. Choosing which teams have had the best seasons is a heavily debated topic. In this project, National Collegiate Athletic Association Bowl Championship Series, Division 1 football team are compared and ranked. To find the ranking results, each team's win/loss results were put into a matrix and then imported into the mathematical computer program "Mathematica". The computer program calculated the results and provided team rankings based on the Google PageRank system, which ranks WebPages and an eigenvalue algorithm. We have two hypotheses. The first hypothesis is that the matrix eigenvalue approach can be used to provide accurate rankings of entries in a data set where the data set is only partially ordered. The second hypothesis is that the matrix eigenvalue approach will provide more accurate results than the PageRank algorithm when the partial order information is sparse. Both of these hypotheses were accepted. In conclusion, ranking college football teams is subjective and is of great interest each and every college football season. We have provided a novel link between the ranking of WebPages and that of football teams using elementary linear algebra. The eigenvector method uses here compares very favorably with both the final human polls as well as the Google PageRank system.

09.04

10:15 CREATING APPLICATION SHUTDOWN SCRIPTS FOR THE CATERPILLAR INC. SERVER MAINTENANCE PROCESS

DeMarcus Thomas*Mississippi Valley State University*

This project was created in an effort to develop a methodology to generate an automated process of application shutdown at Caterpillar Inc. These processes would be used to improve total shutdown times for server maintenance, reduce personnel required to manually work on servers during change windows, and to initiate their course of action to decrease the separation of Information Technology groups within Caterpillar Inc. For this to be accomplished, application groups were consulted to provide requirements on how their applications could be shutdown and those requirements were implemented in shell scripts. A shell script would provide an efficient means of server maintenance and reduce the chance of human error during work on mission critical server systems.

09.05

10:40 HIGH DIMENSIONAL DATA MODELING ANALYSIS USING NORMALIZED LATENT SPACE MODEL

Fei Teng, Yixin Chen*University of Mississippi*

Current study on exploring the high-dimensional datasets usually follows the following two basic steps: (1) generate a model that associates each entity with a point in p-dimensional Euclidean latent space; (2) apply multidimensional scaling (MDS) for an approximate projection of entities into a lower dimensional space. However, the projection derived from MDS is sensitive to spatial outliers in the original space. In this paper, we propose a novel feature mapping which associates each point in the original space to a point in a unit hypersphere in the same space. We illustrate this algorithm on several data models by applying MDS to the mapped feature points and demonstrate improved robustness of MDS against spatial outliers.

09.06

11:05 AN EXPERIENCE TEACHING UNDERGRADUATE OPERATING SYSTEMS WITH EMBEDDED XINU

Paul Ruth*University of Mississippi*

The study of Operating Systems continues to be one of the core elements of mainstream Computer Science curricula. Although, Operating Systems is a fundamental element of Computer Science, most undergraduate programs do not include hand-on systems courses. The act of implementing a project gives students a better understanding of the theoretical concepts discussed in the classroom. At the same time, the opportunity to complete a hands-on operating systems project often provides the "cool" factor that engages students motivates them to achieve a deeper level of understanding. This talk presents an experience with teaching an undergraduate Operating Systems course utilizing an Embedded Xinu laboratory. The philosophy of the project is to have students implement portions of a simple operating system (Xinu) for a simple, yet prolific, architecture (MIPS-based Linksys WRT54GL router). The Xinu project is attainable enough for undergraduates to complete and the use of

the Linksys router holds their interest. Further, the entire 12-station laboratory cost less than \$3000 and can support as many as 48 individual student projects. This experience with Embedded Xinu shows it to be both inexpensive and effective.

THURSDAY AFTERNOON
HICKORY ROOM

1:05 Special Presentation

Trimble Mapping and GIS Capability
Mr. Chad Hicks,
Navigation Electronics Inc (NEI)

09.07

1:30 AN APPROXIMATION ALGORITHM FOR GENERATING NEIGHBORHOOD GRAPHS

James Church, Yixin Chen *University of Mississippi*

In graph theory, a graph consists of vertices and edges. In many realworld situations, the vertices represent observations that are accumulated through data collection, while edges are determined based the similarity of those observations. When working with large scale datasets, it is usually desirable to have sparse graphs to make subsequent processing of the graph computationally efficient. However, a brute force approach to creating a sparse graph carries a complexity of $O(|V|^2)$ where $|V|$ is the number of vertices, which turns out to be the bottle neck of many algorithms on sparse graph. In this work, we apply a Random Projection algorithm to generate an approximate edge list under a probabilistic framework. We demonstrate that the Random Projection algorithm efficiently produces an appropriate neighborhood graph for large sample sizes.

09.08

1:55 STRATEGY FOR CONCEPT AND RELATIONSHIP IDENTIFICATION IN CONCEPTUAL MAP CREATION

Susan Lukose *University of Mississippi*

A knowledge base for a decision support system that guides an author in course creation and a student in customizing their course needs to have a ranked conceptual map and domain dependant document corpus. Conceptual map creation is a very tedious, time consuming and expensive process if done manually. The goal of this research is to develop design strategy for automatic identification of concepts and their relationships for conceptual map creation. For this we propose an approach that uses domain specific glossaries, natural language processing techniques and statistical methods. The application domain, "Remote Sensing and Photogrammetry", is selected for evaluation. A case study was conducted at IAEGS, The Institute of Advanced Education in Geospatial Sciences and the results were satisfactory.

09.09

2:20 DEPLOY1

Myron Lott

Mississippi Valley State University

As an intern with Caterpillar Incorporated, I worked in the Systems and Processes Division on IT-Asset Management Team. Upon receiving my user-log-in information, I created my SMART Goals, completed the required modules 1-4 of Asset Management, IBM-MainControl Basics, and I learned how to use "Snag It". Also, I had to receive security training to gain access to the data center for asset tagging. Once I got up to speed on everything, I attended team meetings and got included on my first project (Deploy1). Deploy1 is a project that gathers data about IT-storage devices in the Peoria area. My daily duties included labeling company IT-assets with IT-asset tag numbers, using a barcode scanner to record IT-asset tag numbers into Microsoft Excel Spreadsheets, updating the IBM-MainControl application with IT-asset tag numbers, IT-asset serial numbers, and other IT asset identity information. Also, I created new IT-asset identity information in the IBM-MainControl application and audited the newly updated IT-asset data of the IBM-MainControl application to ensure that the data was accurate. As a result of the project, we gathered and processed all the required data about IT-storage devices.

09.10

2:45 WRITING PEOPLE FRIENDLY SOFTWARE

Deepak Mantena

University of Mississippi

The technologies of the last fifteen years have inspired the complete democratization of the software market. Anyone with an idea for a product has the ability to reach millions of people. As the software market becomes more cluttered, independent developers are required to think of ways to deliver standout products to consumers. We will discuss high level tips for independent developers in regards to development, marketing, and business that help in creating software that will succeed in today's market. The application of the concepts to be discussed led to the sale of thousands of iPhone apps by TapeShow (<http://www.tapeshow.com>).

09.11

3:10 A COMPUTATIONAL INVESTIGATION OF THE DISTRIBUTED-GENOME HYPOTHESIS IN LISTERIA

Susan Salkeld, Susan Bridges, Chelsea Steele, Mark Lawrence

Mississippi State University

The distributed-genome hypothesis (DGH) states that: "pathogenic bacteria possess a supragenome that is much larger than the genome of any single bacterium and that these pathogens utilize genetic recombination of a large, noncore set of genes as a means of diversity generation" (Hiller et al, 2007, J. Bact.). The goal of our study was to determine if the DGH holds for a group of pathogenic and nonpathogenic



strains/species of *Listeria*. We designed custom software in Python to test this hypothesis. Our program calls stand-alone BLAST and does a comparison of all protein coding genes in the species/strains under consideration. Genes are considered to be orthologs if they share 70% identity over 70% of their length. In our experiment we used 6 genome sequences: 4 *L. monocytogenes* strains, one *L. innocua* strain, and one *L. welshimeri* strain. Genes are classified into one of three groups: 1) core genes shared by all species/strains; 2) distributed genes shared by more than one but not all species/strains, and 3) unique genes occurring in only one species/strain. Initial experiments demonstrated that many genes of *Listeria welshimeri* are not shared with the other species/strains. Of the five remaining species/strains, a total of 3,816 orthologous clusters were found, and 2,187 (57%) of those contained all of the strains. Our findings provide evidence supporting the DGH among the 4 *Listeria monocytogenes* strains and the *Listeria innocua* strain, but the *Listeria welshimeri* strain is more divergent and does not appear to be included in this supragenome group.

O9.12

3:35 BAYESIAN NETWORKS FOR MEDICAL DECISION SUPPORT

Jyotirmay Gadewadikar, Ognjen Kuljaca, Kwabena Agyepong, Erol Sarigul, Yufeng Zheng
Alcorn State University

Bayesian networks have an unparalleled advantage of being able to exploit the explicit structure of the domain model to derive a graphical representation for learning. The encoding of independencies in the network topology admits the design of efficient procedures for performing computations over the network. A Bayesian Network is a graphical model that represents relationships of probabilistic nature among variables of interest. This paper gives an introduction to the Bayesian networks for the exploration of implementing an automated breast cancer detection support tool at Systems Research Institute, Alcorn State University. It is intuitive that Bayesian networks are employed as one viable option for computer-aided detection by representing the relationships between diagnoses, physical findings, laboratory test results, and imaging study findings. Physiological knowledge has a typical causal representation, which can be used in diagnostic expert systems to provide suitable explanations of the cause-effect relationships connecting findings with diagnostic conclusions. The experience gained in a diagnostic expert system combining heuristic and causal knowledge, makes it possible to use physiological information in assessing, the compatibility and consistency of diagnostic conclusions. In addition it provides the opportunity of using the causal network to inquire directly about the domain, entering the system at different levels (findings, states and hypotheses) independently from patient data. In this paper a brief background concerning causal networks, probability theory and Bayesian networks is given. The paper will also provide

various tools available to realize inference algorithms in the context of Bayesian Network including the description of the implementation steps.

THURSDAY EVENING GRAND BALLROOM

**6:00 Dodgen Reception and Poster Session
Grand Ballroom
Please set up between 4:00p and 4:30p**

P9.01

DESIGNING AND DEVELOPING A PORTAL FOR THE POLAR GRID HIGH PERFORMANCE COMPUTING SYSTEM AT ELIZABETH CITY STATE UNIVERSITY

Jonathan Henderson¹, Jeff Wood¹, Camden Hearn¹, Patrina Bly¹, Justin Deloatch¹

¹*Elizabeth City State University*, ²*Mississippi Valley State University*

Polar Grid is a National Science Foundation (NSF) Major Research Instrumentation (MRI) program funded partnership of Indiana University (IU) and Elizabeth City State University (ECSU) to acquire and deploy the computing infrastructure needed to investigate the urgent problems in glacial melting. When fully completed the grid will be comprised of ruggedized laptops and computer clusters deployed in the field in the Polar Regions and two large scale computing clusters for detailed analysis in the U.S. - one to be installed at IU and the other at ECSU. This installation will give ECSU a 5 Teraflop Minority Serving Institution High Performance Computing (MSI HPC) system, building on its distance education and undergraduate laboratory infrastructure to create tremendous outreach capabilities. Accessing this computing cluster will entail the development of a grid portal that provides security, access to data, the ability to process data, and education/outreach functions. Development of this portal started with the documentation of terms, processes, and software needed to develop a portal and the understanding of what the grid is. This project then progressed to produce Extensible Markup Language (XML) page structures that could display processed data acquired during expeditions in Greenland and Antarctica. Another aspect has been the development of "iGoogle Gadgets" that simulate the portal user environment along with the process of converting that gadget into an RSS feed.

P9.02

TECHNICAL LIBRARY DATABASE UPDATE

Gabrielle Meeks

Mississippi Valley State University

At NASA Goddard Space Flight Center, the Facilities Management Division has to perform an annual update of their technical library database. This database is self-service oriented library where individuals can check out manuals and return them

through check-in upon completion of usage. My objective with this project was to update this technical library. All 1,600 manuals were scanned and new manuals were entered into the database. New ID labels were generated for all new manuals. Manuals were placed in the appropriate category. A summary report of all manuals was generated to determine the validity of the data within the Technical Policy Group. Upon completion, it was found that there were inconsistencies between the actual library and the database.

P9.03

Withdrawn

P9.04

UTILIZING VIRTUAL MACHINES TO IMPROVE PERFORMANCE AT THE MISSISSIPPI CENTER FOR SUPERCOMPUTING RESEARCH

J. Sam Testa, Brian W. Hopkins, Paul M. Ruth

University of Mississippi

Modern cluster resources are typically managed such that each processor or group of processors is dedicated to a specific job. This method can be highly inefficient when a job does not fully use the resources assigned to it. On a production cluster with many jobs and a relatively small number of nodes, this translates to long queue times for waiting jobs. For many jobs, the amount of time spent waiting in the queue is significantly longer than the amount of time spent processing. Virtual machine technology has been employed in an attempt to balance jobs more evenly across processors and improve cluster productivity. Placing multiple jobs with low processor efficiency together on a single processor improves overall processor use. This poster describes a virtual machine technology to improve cluster usage by assigning more than one virtual machine to a single physical processor. This technology reduces queue wait times by maximizing processor efficiency and allow more jobs to be completed in a given time span. The theory and implementation of the technology will be presented, along with preliminary results on the efficiency gains realized by employing virtualization on a small test cluster.

P9.05

FOLD AND BT BIFURCATION ANALYSIS OF TWO COUPLED RELAXATION OSCILATORS OF THE VAN DER POL TYPE WITH DELAY

Xiaoqin Wu

Mississippi Valley State University

In this paper, we study the following system of two coupled relaxation oscillators of the van der Pol type with delay

$$\begin{cases} \dot{x}_1 - (1 - x_1^2) \dot{x}_1 + x_1 = h(x_2(t-\tau) - x_1(t-\tau)), \\ \dot{x}_2 - (1 - x_2^2) \dot{x}_2 + x_2 = h(x_1(t-\tau) - x_2(t-\tau)). \end{cases}$$

\end{array}\right.

\end{eqnarray*}

We show that this system can exhibit codimension-1 singularity (fold bifurcation) and condimension-2 singularity (Bogdanov-Takens bifurcations) under certain conditions of the time delay τ and the S-shaped nonlinearity of $I(Y)$ by using the normal form method. Moreover, we use the normal forms of the system to obtain bifurcation diagrams such as homoclinic bifurcation and double limit cycle bifurcation.

FRIDAY MORNING

HICKORY ROOM

O9.13

9:00 UNITED STATES GRID SECURITY AND RELIABILITY CONTROL IN HIGH LOAD CONDITIONS

Christopher Lanclos, Andy Loebel, Brandon Davis
MVSU

The command and control of electrical systems is a major focus issue throughout the United States. The objective of this study is to better understand the performance aspects of physical phenomenon that impact a power grid and the ability to assure that electricity is available. This study has examined the Northeastern Interconnect Blackout of 2003, which began at 16:05:57 on August 14 leading to an outage affecting 50 million people. A technical understanding of detailed performance characteristics is the first necessity of security and assurance. As seen in the Northeastern Interconnect Blackout of 2003, electricity supply and demand must be ensured with rapid actions to control the negative effects of propagating system failures. The research goal was to examine the course of events which led to the Northeastern Interconnect Blackout of 2003 and to explain the importance of mathematics as a basis of grid performance and sustainability.

O9.14

9:25 SIMULATING ACOUSTICS IN 3-DIMENSIONAL POROUS MATERIALS

Carl Jensen

University of Mississippi

A 3-dimensional fluid solver has been developed to model the pore-scale flow through samples of porous materials in order to investigate their acoustic and thermoacoustic properties. Details of the compressible, thermal fluid model being used will be presented as well as implementing the code in OpenMP for use on the servers at the Mississippi Center for Supercomputing Research. The results of the simulation for simple geometries compare favorably to established theory, and the results for porous geometries will be presented and compared to theories that have been proposed for these materials.

**O9.15****9:50 A PROBABILISTIC LATENT SEMANTIC ANALYSIS APPROACH TO MOVIE RATING PREDICTION**

Xiaofei Nan, Yixin Chen
University of Mississippi

The growing popularity of e-commerce brings an increasing interest in recommendation systems. Most recommendation systems are based on collaborative filtering approaches which analyze relationships between users and/or among products to identify new user-item associations. In this work, we propose a novel algorithm for predicting user ratings of items using probabilistic latent semantic analysis (PLSA) that we originally introduced to solve the automated document indexing problem. PLSA introduces a latent variable associated with each item, which can be viewed as "clusters" or "topics" of items. Therefore the joint distribution of users, items, and ratings could be translated into a probability model of the summation over the possible choices of the latent variable. The joint probability distribution is estimated using the expectation maximization algorithm. We apply the PLSA to the data set from Netflix Prize, a competition organized by Netflix to create a recommendation system for movies.

O9.16**10:15 A BRIEF DISCUSSION ON POWER AND SAMPLE SIZE ANALYSIS AND COMPARISONS OF AVAILABLE POWER AND SAMPLE SIZE STATISTICAL SOFTWARE**

Elgenaid Hamadain
University of Mississippi Medical Center

Power and sample size Analysis is used to justify appropriate sample size for testing hypothesis. Power is the probability of the test to reject a false null hypothesis. Power analysis can be done before or after data collection. Before conducting the research, an appropriate sample size is determined to achieve certain power. Post-hoc analysis is conducted using the obtained sample size and effect size to determine power. Power depends on three factors: the significance level α ; size of the difference; and sensitivity of the data. Power can be increased by increasing the significance level. The greater the effect size, the greater the power. Sensitivity can be increased by using statistical controls and by increasing sample size. P-value is used to decide whether we have enough evidence to reject the null hypothesis. As such, power is the probability of obtaining a p-value less than 0.05 Adequate sample size ensures that the study yields reliable information. Many studies were conducted with inadequate sample sizes, making interpretation of negative results difficult. Learning techniques of sample size and power analysis has been difficult, because of complex mathematical considerations. There has been a tremendous improvement in availability and ease of use of commercial sample-size determination software for a wide

variety of statistical methods. The objective of this presentation is to describe the concepts underlying sample size and power analysis. Several commercial statistical softwareS will be illustrated, compared, and discussed.

O9.17**10:50 MISSISSIPPI SUPERCOMPUTER USER ADVISORY GROUP OPEN MEETING**

Jason Hale, David Roach
Mississippi Center for Supercomputing Research

The Mississippi Center for Supercomputing Research (MCSR) will hold an open meeting of the Mississippi Supercomputer User Advisory Group (MSUAG). Since its creation in 1987, MCSR has provided free supercomputing access and support services for all of Mississippi's public universities. MSUAG is a group of user representatives from each campus that provides feedback and policy guidance to the MCSR staff, to help ensure MCSR is fulfilling its mission effectively and fairly. All MCSR users and potential users are invited to attend, and learn how your Mississippi colleagues on other campuses are making use of MCSR's resources in research and instruction. MCSR leaders will give a brief update on current activities and initiatives, introduce new staff members, and facilitate a group discussion. MCSR will also present an award for the divisional presentation that represents the best use of MCSR resources for high performance computing.

11:45 Divisional Business Meeting**PHYSICS AND ENGINEERING**

Chair: Alina Gearba, University of Southern Mississippi
Vice-chair: Hazar Dib, University of Southern Mississippi

THURSDAY MORNING**HOLLY ROOM****8:30 Welcome****O10.01****8:45 RESPIRATORY AEROSOL CHARACTERIZATION COMPARISONS BETWEEN THE ELECTRONIC SINGLE PARTICLE AERODYNAMIC RELAXATION TIME ANALYZER AND THE TSI AERODYNAMIC PARTICLE SIZER SPECTROMETER**

Mohammed Ali, Allen Sinegal
Jackson State University

Characterizing the aerodynamic diameter of aerosol particles has been subject of research for a long time. In this study we present the performance comparisons between two aerosol particle sizing instruments which incorporate real time

characterization of both atmospheric and respiratory drug aerosols. The instruments were: the single particle aerodynamic relaxation time analyzer (ESPARTA) and the aerodynamic particle sizer spectrometer (APSS). The ESPARTA (US Patent 4633714 of the University of Arkansas at Little Rock, AR) operates on the principle of Laser Doppler Velocimetry, whereas the APSS (TSI Incorporated, Shoreview, MN) operates on the principle of Time-Of-Flight technique. The tested aerosols were generated from several commercially available asthma drug inhalers, nebulizer, and blow-off cup aerosol generators. They were 1) Qvar Metered Dose Inhalers (MDIs) (3M, Northridge, CA), 2) Albuterol MDIs (Warrick Pharmaceuticals, Reno, NV), 3) Ventolin MDIs (Allen&Hanburys Respiratory Care, Victoria, Australia), 4) PARI-LC Plus Nebulizer, 7mg/ml of NaCl (PARI, Midlothian, VA), 5) Polymer Microsphere (Duke Scientific, Fremont, CA), 6) Lactose Monohydrate (Gallade Chemical Inc., Santa Ana, CA), and 7) Mannitol (Aceto Corp., Lake Success, NY). The results showed that both instruments demonstrated comparable results for the aerosols with count median aerodynamic diameter (CMAD) > 4.0 μm and mass median aerodynamic diameter (MMAD) > 4.0 μm . However, both instruments were unable to characterize smaller particles with CMAD and MMAD less than 4.0 μm . The ESPARTA was providing electrical charge of each particle in addition to particle's aerodynamic diameter. Acknowledgement: This work was supported by Mississippi Functional Genomics Network's REO Summer 08 award.

O10.02

9:00 DEVELOPMENT OF AN OBJECT ORIENTED DATABASE TO IMPROVE LEARNING IN CONSTRUCTION ESTIMATING

Hazar Dib, B. Gokhan Celik

University of Southern Mississippi

Today's construction technology and management education programs are committing more resources to find new methods for improving the learning process. The ultimate goal of these programs is to help students become knowledgeable in identifying problems, analyzing and thinking critically about problems and their resolutions, as well as being innovative with use of technology as a medium to become more efficient and competitive. One of the crucial requirements in achieving these goals, in construction technology education, is to help students understand drawings, specifications, and building components in order to develop a mental image of a building. Existing commercial software for estimating and quantity-take-off allow users and students to find the values and quantities of various components within the building with only a few clicks. However, this convenience does not benefit the students, as they do not immerse themselves in the study of the project drawings and specifications. The challenge is to develop software that helps students comprehend all drawings and specifications associated with a particular project, while making the learning process more efficient with the help of technology. This paper introduces a

concept for developing an object-oriented database to help students document construction estimating and quantity-take-off in a thorough methodical way that will allow them to create a mental image of a particular project.

O10.03

9:15 LARGE HADRON COLLIDER AND ITS IMPORTANCE TO UNDERSTANDING THE UNIVERSE.

Amin Haque

Alcorn State University

LHC is the most powerful and important tool yet for particle physicists, which may help to unlock the secrets of the universe, both on the tiny (trillionth) scale of quantum mechanics and the light year scale of galaxies, testing Standard Model, String Theory, and Supersymmetry, and their predictions, including the Higgs Boson or God particle, super partners of Standard Model particles, dark matter, and seven extra dimensions. Physicists expect major mysteries about the composition of matter and energy will be resolved, which will lead to clear understanding of the fundamental building blocks of all things. The 14 TeV LHC will create conditions similar to just after the Big Bang. About 600 million collisions per second of beams of high energetic protons traveling in opposite directions will occur, each collision producing thousands of particles at nearly the speed of light at very high energy, according to Einstein's equation $E = mc^2$. Four detectors will record the energy and momentum of particles coming out of the exploding matter. The LHC is guaranteed to create antimatter. It will try to explain why almost everything in the universe is made of normal matter and not antimatter. At the beginning of the universe, matter and antimatter were created in equal quantities, and they got annihilated. But due to fluctuation somehow matter got very slightly the upper hand, which is what we observe. It will create tiny black holes as predicted by Hawkings.

O10.05

9:30 AIRSPEED CONTROL TUNNEL

Carlos Morales, Kamal Ali

Jackson State University

The goal of this project is to simulate true airspeed for a Micro Air Vehicle autopilot. This is achieved by comparing the air pressure in a Pitot tube to the atmospheric pressure outside the airplane (Static Pressure). The difference between these two readings may be translated into airspeed.

To simulate airspeed, we have constructed an air tunnel of 1" x 1" x 2" with two outlets of 1/8" on it's the back. The front houses a fan controlled by a PIC microcontroller. The fan is used to regulate the pressure in the tunnel. The microcontroller receives three inputs, namely, the Pitot pressure from a sensor connected to one of the tunnel's outlets, static pressure from a second pressure sensor measuring atmospheric pressure, as well as the desired wind speed which is supplied by the user. The microcontroller calculates the current wind speed from the readings of the two pressure sensors. It then calculates the error

between current and desired wind speed and changes the fan speed accordingly. The system utilizes a proportional controller to maintain the desired wind speed. The second outlet is connected to the autopilot's pitot input allowing the autopilot to sense the desired wind speed.

This system is used with a three-degrees-of-freedom gimballed platform, an altitude simulation chamber and a GPS generator to allow for the evaluation of an autopilot's behavior in the lab. Due to the limited fan power, the wind speed simulator is capable of simulating wind speeds from 0 to 20 knots.

O10.06

9:45 CLASSICAL ORBITS OF PT-SYMMETRIC QUANTUM POTENTIALS

Steven Fortenberry, Lawrence Mead

The University of Southern Mississippi

Recently, Bender and many collaborators have studied the quantum mechanics of PT-symmetric Hamiltonians. Even though such Hamiltonians are often complex, their spectra can be real. In this paper, we study the purely classical motion of a particle subject to the same PT-symmetric forces. It is found that particles subject to such forces wander off into the complex plane in interesting ways. In addition, we study the inverse square force; we plot the trajectory of particles in the complex plane with their initial energies having a complex component.

10:00 Break

O10.07

10:30 WHAT GOES UP MUST GO ROUND: ANALYSIS OF FALLING MAPLE SEEDS

W. Tyler McCleery, Kileigh Peturis, Lawrence Mead

University of Southern Mississippi

Seeds of maple trees increase their dispersion range by extending the fall time through autorotation. The seed remains in the air longer than it would without rotating, which increases its chances for being blown laterally by the wind therefore increasing its dissemination. It is our intent to determine which physical parameters control the autorotation and therefore maximize this dissemination. We started this project under the guidance of Professor Lawrence Mead in the summer of 2007. Our first task was to analyze what parameters control the motion of the seed. Through dimensional analysis we used these parameters to derive equations for the dependent variables: terminal velocity, rotational speed, and coning angle. We then measured our parameters and dependent variables using various experimental techniques. Our next step is to correlate our values with our derived equations and test our theory. If our equations are correct, we will be able to study more closely how each parameter affects the terminal velocity. If our equations are not correct, we will use our experimental data to guide the correction of our derived equations.

O10.08

10:45 VIBRATION TESTING OF A CARBON COMPOSITE FUSELAGE

Jutima Simsirwong, Rani W. Sullivan

Mississippi State University

This paper describes the details of an experimental investigation focusing on the vibration characteristics of a composite fuselage structure of an ultralight unmanned aerial vehicle (UAV). The UAV has a total empty weight of 155-lb and an overall length of approximately 20.6-ft. The fuselage structure consists of the fuselage body with an integrated vertical stabilizer. All structural components are fabricated from oven-cured laminated carbon composite materials using uniaxial and biaxial prepreg fabric. In the current effort, the modal characteristics of the fuselage structure are determined for a free-free configuration which is simulated by suspending the test structure from its wing attachment points through the use of springs. A centrally located shaker system is used to induce vertical oscillations in the structure, which is instrumented with nineteen dual axis accelerometers. Dynamic properties such as the frequency, damping and associated mode shapes are obtained for aeroelastic analysis. The design and implementation of the vibration tests along with the experimental results are presented.

O10.09

11:00 CALCULATED SHELL MODEL STRUCTURE OF THE EVEN MASS ISOTOPES OF ARGON

Shadow Robinson

Millsaps College

The even even isotopes of Argon (Ar) are examined in the shell model using both the WBT effective interaction and the newer SDPF interaction. Previous calculated results on these nuclei have largely been done using the WBT effective interaction and any differences between WBT results and SDPF results could affect previous theoretical conclusions. It is found that for the lower mass isotopes of Argon $A=38-42$ that the results are largely identical. The non yrast structure of 44Ar begins to show some divergence in the two cases and in the case of 46Ar the two interactions present a two very distinct pictures of this nucleus. While initial spectroscopic information favors the SDPF interaction, it is the magnetic moments in 46Ar that show the clear distinction between the two interactions.

O10.10

11:15 MEASURING THE ACCELERATIONS OF SPHERICAL PROJECTILES USING A HIGH-SPEED VIDEO CAMERA

Jake Lancaster

University of Mississippi

The experiment was designed to determine if a high-speed video camera could accurately measure the accelerations of small seeds launched horizontally. In order to do so, we first used $\frac{1}{4}$ inch steel ball bearings launched horizontally to see if we

could obtain the correct acceleration of gravity when measured using the high-speed camera and analysis software. Several factors were taken into account when performing the calibration: the accuracy of the camera's timer, the degree to which camera tilt affected the data, the affect of the ball being out of the plane of the grid, and Logger Pro's curve fit line with respect to the true Y-intercept. The calibration shows that the factors that affected the data the most were the last two. Before correcting for the last two factors, the analysis of the high-speed videos yielded accelerations of gravity of around -8.8 m/s^2 . By compensating for the ball traveling out of the plane of the calibration grid and by inputting the true y-intercept into the curve fit line, we were able to correctly measure the predicted acceleration of gravity and drag of a $\frac{1}{4}$ inch steel ball bearing.

O10.11

11:30 CENTRIFUGAL SEPARATION OF dsDNA FROM AN ssDNA OLIGOMER MIXTURE

Taiquitha Robins¹, Dacia McPherson², Chenhui Zhu², Mark Moran², Dave M. Walba², Giuliano Zanchetta³, Tommaso Bellini³, Noel A. Clark²

¹Jackson State University, ²University of Colorado at Boulder, ³Università degli Studi di Milano, Faroe Islands

Double stranded deoxyribonucleic acid (DNA) is known to form lyotropic liquid crystal (LC) phases, nematic and then columnar with increasing DNA concentration in water. Single stranded (DNA) does not form liquid crystal phases. We study the phase separation of short (6-20bp) DNA. In the mixture solution of self complementary sequences (scDNA) and non-complementary sequences (nscDNA), the scDNA forms DNA double helices and hence forms LC phases while the nscDNA stays in the isotropic phase, the LC appearing in the form of phase separated droplets. We report results of the use of centrifugation to produce complete spatial segregation of complementary and non-complementary DNA, based on their different LC-formation tendencies. This work is supported in part by the NSF MRSEC Grant DMR 0213918 and NSF Grant ITS-0606528 and the Minority Access to Research Careers/Undergraduate Student Training in Academic Research (MARC/*USTAR) Program (NIH-MARC 5 T34 GM007672-27).

O10.12

11:45 ANALYSIS OF "BID SHOPPING" IN CONSTRUCTION ETHICS

Kimberly Williams, Bilge Gokhan Celik

University of Southern Mississippi

In today's society, the matter of ethics involves doing the right thing without relying on law. Along with other industries, construction industry faces certain industry related actions that are lawful, but not necessarily ethical. One of the differences between ethics and law as they apply to construction is that even though good ethical practice require industry to refrain from "bid shopping", the law does not. Bid shopping is

harmful because it creates a detrimental business environment, eliminates the benefits of the bid system, and lowers the standards of quality operations. Bid shopping is considered unethical because subcontractor bids are submitted to prime contractors in confidence, thus deserve to be kept confidential. This study examines the causes and consequences of bid shopping in the construction industry. It presents a literature review and the results of a construction industry questionnaire that help authors generate a set of recommendations that can regulate the problem. Results of this study indicate that there are various associations in the construction industry that have efforts to fill in the gaps of ethical standards left by legal regulations. However, it is evident that individual efforts of associations cannot be the only solution to the problem. This study recommends educating contractors of the adverse effects of bid shopping while integrating more effective codes into associations' standards as some of the means of reducing the occurrence of bid shopping in the construction industry.

THURSDAY AFTERNOON

HOLLY ROOM

O10.13

1:30 MESON MASS SPECTRA IN THE FRAMEWORK OF THE SCHRODINGER EQUATION WITH RELATIVISTIC KINEMATICS

Mallika Dhar, Charles Werneth, Khin Maung
The University of Southern Mississippi

Mesons are the bound states of quarks and anti-quarks. The theory governing the interaction between the quark and anti-quark is known as Quantum-Chromodynamics (QCD). Quarks and anti-quarks always exchange particles known as gluons. Gluon exchange gives rise to the potential between them. Just like the hydrogen atom, these quark-antiquark bound states have a ground state as well as various excited states. In order to produce the mass spectra, we solve the Schrodinger equation for a two-body bound state with relativistic kinematics. The correct potential to employ is the sum of the linearly rising and a Coulomb-like potential. The linearly rising potential is necessary for confining the quarks and the Coulomb-like potential is necessary to simulate the short-range behavior of Quantum Chromodynamics (asymptotic freedom). The input mass used for each quark is taken from the constituent quark mass model. We also added spin-orbit interaction and spin-spin interaction in our potential model. For the mesons known as charmonium and bottomonium, the mass spectra produced by our computations agrees well with the experimental meson mass spectra.

O10.14**1:45 EXTENDING THE SUCHER EQUATION TO INVESTIGATE MESON MASS SPECTRA**

Charles Werneth, Khin Maung, Mallika Dhar

The University of Southern Mississippi

The Dirac equation is a relativistic one body equation incorporating spin into its formulation. The extension of the Dirac equation to two bodies gives rise to Brown-Ravenhall disease--that is, no lower bound on the energy--resulting from the possible interaction of virtual positive and negative energy particles. As a result, the potential has been redefined by Sucher to include positive energy projectors thereby eliminating Brown-Ravenhall disease. The modified Dirac equation is known as the Sucher equation and has been used in models of nucleon-nucleon interactions. The inherent inclusion of relativity and spin into the Sucher equation makes it ideal for use in meson spectroscopy. We extend the Sucher equation to mesons and investigate the mass spectra of quarkonia.

O10.15**2:00 ALTITUDE CONTROL CHAMBER**

Joshua Etchison, Kamal Ali

Jackson State University

The Altitude Control Chamber is part of a Hardware In the Loop Simulator (HILS) system that aims to simulate flight for a Micro Air Vehicle (MAV) autopilot. The complete HILS system compiles a three-degrees of freedom Gimbaled Platform, wind speed simulator, GPS signal generator, flight simulator software, and the Altitude Control Chamber. An autopilot placed in the system will be able to experience the flight scenario of the user's choice. The Altitude Control Chamber uses a PIC microcontroller to control the pressure. The microcontroller receives the desired altitude from the user then reads the current pressure of the chamber from a pressure sensor in the chamber. The PIC then applies the appropriate power to the blower to minimize the error between the two inputs. The PIC runs a proportional controller to achieve this task. The Altitude Control Chamber simulates the atmospheric pressure a MAV would experience with altitude. The chamber will particularly simulate the reduction of air pressure from ground level to 500 feet. By using the Altitude Control Chamber with the Gimbaled Platform inside, we can simulate the flight of a MAV in a controlled environment. This will allow the testing and calibrating of the autopilot to be more efficient, easier, and cheaper.

O10.16**2:15 MYSTERIES OF THE UNIVERSE NEED SOLUTION**

Amin Haque

Alcorn State University

According to the Standard Model, based on quantum mechanics, there are 17 fundamental constituents of matter: 16 are known and one, the Higgs Boson or God particle, is

predicted. These particles are : 12 Fermions (spin $\frac{1}{2}$)- six quarks, and six leptons; four Bosons (spin 1) which are force carriers of the Fermions. A Higgs boson is required to give mass to other particles. The long-elusive "graviton" carry the force of gravity in the way that gluons, W and Z bosons, and photons (ν) carry their own respective forces. Finding gravitons will help unite the two great theories of physics - Quantum Mechanics and General Theory of Relativity. String Theory, which predicts the existence of eleven dimensions and Supersymmetry, is a unifying attempt. Supersymmetry theory requires each of the particles in the Standard Model to have a so far undetected superpartner that serves to balance its properties in a mathematically symmetrical manner, and that the Higgs boson emerges quite naturally. The predicted neutralino is a mixture of the superpartners and it is "Dark matter". Visible matter makes up just 4 % of the universe. The other 22 % is "Dark Matter", that can be detected from its gravitation effects. The remaining 74 % of the universe is known as "Dark Energy", which pushes the universe apart. The Large Hadron Collider might help to solve some of the mysteries. The LHC will create micro black holes which would quickly decay by Hawking radiation.

O10.17**2:30 ACOUSTIC PROPAGATION IN THE OCEAN AND EQUIVALENT-FLUID MODELING OF AN ELASTIC SEAFLOOR**

Michael Vera

University of Southern Mississippi

Acoustic energy propagates effectively to long ranges in the ocean interior because of the physical properties of the marine environment. The dependence of sound speed on depth results in a waveguide that permits the detection of acoustic energy at ranges, in some experiments, of thousands of kilometers. Often, in modeling long-range propagation, interaction with the seafloor can be neglected. For certain geometries and bottom materials, however, reflection back into the water column by the solid must be considered. The performance and stability of propagation models can be substantially improved if equivalent fluids can be used to accurately characterize bottom interaction. The use of equivalent fluids is intended to depict the conversion of acoustic energy into elastic shear waves. Rather than treat the combined elastic-acoustic system, equivalent parameters for a fluid material are generated with the sole purpose of accurately mimicking the solid's reflection coefficient. Receptions were recorded from a bottom-mounted, broadband source located near Kauai, Hawaii as part of the Basin Acoustic Seamount Scattering EXperiment. Travel times for arrivals from this source have been modeled at basin-scale ranges using complex-density equivalent fluids for the elastic seafloor material. The collection of acoustic data at shorter ranges allows for a more detailed examination of the accuracy attainable by an equivalent-fluid representation of the seafloor. The correspondence between the model and the data

demonstrates the ability of equivalent fluids to represent materials for which the acoustic loss is dominated by shear.

2:45 Break

O10.18

3:00 GAS TRANSPORT CAPABILITIES OF THE VORTEX RING

Barnabas Kipapa

University of Mississippi

The vortex ring is known to transport a volume of fluid throughout its propagation. The previous report [MAS 2008, O10.17] used data that was produced with commercial membrane-piston driven vortex ring generators. The primary disadvantage of the membrane-piston is the lack of a full stroke, resulting in a large amount of wasted gas. The data was reasonable, in that it showed a linear dependence between the transport efficiency and the distance at which the vortex ring was shot. A new set of vortex ring generators, equipped with a conventional full stroke piston, are tested in an attempt to increase gas transport efficiency. In addition to an improvement in the vortex ring generator, a more sophisticated trap design was developed to improve gas capture. A similar linear dependence is expected from the full stroke vortex ring generator with an overall improvement in transport efficiency.

O10.19

3:15 AUTONOMOUS UNMANNED GROUND VEHICLE USING GPS NAVIGATION AT LOW-SPEEDS

Ivan Walker, Kamal Ali

Jackson State University

Research at the Army Research Laboratory currently focuses on developing the Future Combat System (FCS). One component of the FCS is autonomous vehicles. Autonomous vehicles present the opportunity to carry out tasks that might be tedious or dangerous to soldiers, such as the discovery of an improvised explosive device (IED). A proof-of-concept (POC) system was developed and tested that navigated using waypoints.

The platform was implemented using Linux from the Slackware Distribution with a Traxxas E-maxx 300 vehicle. The current focus of the autonomous unmanned ground vehicle (UGV) project at Jackson State University is to expand this system so that it can utilize ubiquitous software to extract route/way-point information to affect urban navigation. The final system will accept street-level addressing and generate the necessary waypoint(s) allowing the vehicle to navigate unaided to that address.

O10.20

3:30 IN BALLISTICALLY PROJECTED SEEDS, LIFT INDUCED BY BACKSPIN SHOWN TO POTENTIALLY INCREASE SEED DISPERSAL DISTANCE IN NATURE.

Wendy Garrison, Richard Raspet, William Lancaster

The University of Mississippi

Using *Croton capitatus* seeds as a model, the objective of this study was to determine whether, at biologically realistic projection speeds of 1 through 9 m/s, the lift gained by back-spinning seed rotation could keep a seed in the air long enough to increase seed projection distance. A high-speed video camera was used to record the trajectory of seeds in one dimension as they were artificially projected using a custom modified device. For comparison, seeds were projected with no spin ($n=46$); backspin ($n=52$); or topspin ($n=72$). We found that in this system, even taking drag into effect, backspin could provide a distance advantage. As compared to no spin, backspin increased the calculated ideal final distance traveled by 10 - 20%, while topspin decreased it by 10%. We conclude that the increased ideal dispersal distance resulting from backspin is such that we expect to find it in some ballistic seed dispersal systems in nature.

O10.21

3:45 TIME EVOLUTION OF COHERENT EXCITATION IN A LASER-COOLED, THREE-LEVEL RUBIDIUM SYSTEM

Alina Gearba¹, Marc Trachy², Giorgi Veshapidze², Mudessar Shah², Howard Camp², Hyounguk Jang², Brett D. DePaola²

¹*University of Southern Mississippi*, ²*Kansas State University*

A tremendous amount of work, both theoretical and experimental, has recently been invested in finding efficient coherent excitation techniques to control the population transfer between specified energy states. Efficient preparation of a system in the desired state is important for advances in quantum computing, atom optics, quantum degenerate molecules, laser assisted chemistry and solid state physics. Stimulated Raman Adiabatic Passage (STIRAP) is a robust technique used to coherently transfer population from an initial state to a desired final state, via an intermediate state, with little or no population accumulation in the intermediate state. No experimental studies to date have measured the dynamics of population transfer, nor have probed all atomic levels involved in the coherent excitation process. Our experiment employs a modern diagnostic technique, known as Magneto-Optical Trap Recoil Ion Momentum Spectroscopy (MOTRIMS), which makes use of an ion beam as a non-intrusive probe of a three-level rubidium ladder system, coherently excited via the standard STIRAP method. Several cases are investigated, in which the temporal delay between the two laser pulses is varied, ranging from the so-called counter-intuitive order to the intuitive order. The population dynamics of all three levels involved in the STIRAP process is measured with a resolution of a few nanoseconds. Experimental results are compared with predictions of theory.

4:00 Divisional Business Meeting

THURSDAY EVENING GRAND BALLROOM



**6:00 Dodgen Reception and Poster Session
Grand Ballroom
Please set up between 4:00p and 4:30p**

**P10.01
DOCUMENT MANAGEMENT USING MICROSOFT
SHAREPOINT, INFOPATH AND GROOVE**

Donald Boyles

University of Southern Mississippi

This paper addresses the use of Microsoft Corporation Office 2007 software for construction document management. A case study was performed with one general contracting construction company that has had a software development company create a document management program using Microsoft SharePoint as the platform. Microsoft InfoPath was utilized to create forms commonly used by the company in its course of business. Users were able to import and export other Microsoft Office Suite software based items with little or no modification due to the interoperability of the Office Suite of programs. This study compares the length of time required for new users of this software to become proficient with its use with the length of time required for new users of comparable software's more commonly in use currently within the construction industry. There was also a comparison of time for return of investment between the several software utilizing both the cost of the software as well as the costs associated with deployment and implementation throughout comparable sized general contractor construction companies. A synopsis of software support issues is provided. The results show that it is more cost effective for a general contracting construction firm of comparable size to develop a system based upon Microsoft Office SharePoint, InfoPath and Groove than to purchase one of the more common softwares currently in use.

**P10.02
BENEFITS OF PURCHASING PRIMAVERA P6 VERSUS
THE CONTINUED USE OF PRIMAVERA SURETRAK
FOR MID-SIZED CONSTRUCTION FIRMS**

Justin Carter

Univ. Of Southern Miss

This paper addresses the benefits for mid-sized commercial construction firms (\$10M-\$50M) to purchase Primavera P6 scheduling software, along with the training involved, versus the continued use of the older version of scheduling software Primavera Suretrak they already own. Today, most owners require general contractors to use a construction scheduling software, but do not narrow it down to a specific software. This study addresses the advantage of using the new features incorporated within the new version of the software versus the added cost of Primavera P6 to the project. The author approaches this problem by gathering information from mid-sized construction firms nationwide via internet survey. The author will take into consideration the average price

of Primavera P6, the length of time to generate a schedule versus the size of the project, and the time needed to train employees to use the new software. The results will help determine if there is an added value and benefits for using Primavera P6 over the older version of Primavera Suretrak. The study will help shed the light and help the mid-sized contractors decide if it is worth it for them to invest in the new version of the software or stick with the old version of the software.

**P10.03
BUSINESS INFORMATION MODELING (BIM) FOR
PROJECT PLANNING AND SCHEDULING**

Jenna Wright

Univ of Southern Miss

Throughout the last couple of decades, project planning has been accomplished through Gantt charts and PERT diagrams. These are great tools for contractors who understand the visualization of these diagrams. However, there are many other stakeholders involved in the project that may not necessarily be able to visualize the project's progression using Gantt charts. BIM has introduced visualization of the project through 4D modeling. Autodesk Consulting has developed a bidirectional link between Revit and Microsoft Project that will keep the model and schedule up-to-date throughout the project life cycle. This paper will discuss the research and assumptions involved in 4D modeling and how Autodesk Revit and Microsoft Project link together to produce a visual representation of a construction project. The author will also discuss the actors involved in the traditional method and how they compare with the BIM method of 4D visualization.

**P10.04
MoO3 NANORODS FOR ELECTRICHEMICAL
BATTERY APPLICATIONS**

Venkata S Channu¹, Edwin H Walker Jr.¹, Quinton L Williams²,
Rajamohan R Kalluru²

¹*Department of Chemistry, Southern University and A&M College,* ²*Department of Physics, Atmospheric Sciences and Geoscience, Jackson State University*

MoO₃ nanorods were prepared using poly (vinyl pyrrolidone) (PVP) as a surfactant through the hydrothermal process for making a cathode for a lithium battery. Scanning electron microscopy images reveal the nanorods dimensions on the order of 1-10 μ m in length and 50-200nm in diameter. X-ray diffractometry, Fourier transformation infrared spectroscopy, thermo gravimetric analysis and cyclic voltammetry were used to characterize the nanorods. The measured specific charge of MoO₃ nanorods, prepared through a 15-day hydrothermal route, was 156 mAhg⁻¹ during the initial discharge process.

PSYCHOLOGY AND SOCIAL SCIENCES

Chair: Madhu Singh, Tougaloo College
Vice-chair: Karen Kristoff, University of Mississippi

THURSDAY AFTERNOON
GRAND BALLROOM
1:00 Poster Session
P11.01
GENDER DIFFERENCES IN TRAUMATIC EXPERIENCES OF AFRICAN-AMERICAN ADOLESCENT OFFENDERS

Audrey Masilla, Andrea Stripling, Kristine Jacquin

Mississippi State University

This study compared the experiences of female and male adolescent offenders. Twenty-six African-American adolescent offenders completed questionnaires assessing past experiences, including trauma and violence, and current behaviors. Traumatic experiences were common among adolescent offenders. Chi-square analyses were used to compare groups. More females (66.7%) than males (29.4%) reported being hit, whipped, or punched as forms of physical punishment, although the difference only approached significance, $\chi^2(1, n = 26) = 3.35, p = .07$. Significantly more females (77.8%) than males (17.6%) reported DHS involvement on their behalf or on the behalf of their siblings, $\chi^2(1, n = 26) = 9.65, p = .02$. Females were the only participants to report self-harm (22%), suicidal thoughts (22.2%), and attempted suicide (11.1%), with self-harm being the only behavior to show a significant gender difference, $\chi^2(1, n = 26) = 4.09, p = .04$. Significantly more males (64.7%) than females (33.3%) reported feeling safe on the school bus or walking to school, $\chi^2(3, n = 26) = 8.59, p = .04$. Similarly, significantly more males (47.1%) than females (22.2%) reported feeling safe in their neighborhoods, $\chi^2(3, n = 26) = 8.77, p = .03$. Overall, adolescent offenders experience various traumas, suggesting that trauma may play a role in the development of antisocial behavior. Different traumas were reported by males and females.

P11.02
POTENTIAL GENDER BIAS IN THE DIAGNOSIS OF BORDERLINE PERSONALITY DISORDER: AN EXPLORATORY STUDY

Andrea Stripling, Audrey Masilla, Kristine Jacquin

Mississippi State University

This study examined possible gender bias in the diagnosis of borderline personality disorder (BPD) by comparing self-reported symptoms of BPD in non-clinical samples. We found that females and males report similar numbers and types of BPD symptoms but more males report antisocial behaviors. ANOVAs were used to compare the PAI and MCMI-III scores of

males and females. On the MCMI-III, males ($M = 45.15, SD = 26.10$) and females ($M = 47.04, SD = 27.99$) reported similar levels of BPD symptoms, $F(1, 107) < 1$. Similarly, on the PAI, females ($M = 57.13, SD = 10.56$) and males ($M = 58.43, SD = 10.76$) had similar scores on the full borderline scale, $F(1, 81) < 1$. There were also no gender differences on any of the BPD subscales of the PAI, including affective instability, $F(1, 81) = 1.40, p = .24$, identity problems, $F(1, 81) < 1$, negative relationships, $F(1, 81) < 1$, and self-harm, $F(1, 81) < 1$. These findings demonstrate that females and males experience a similar number and type of BPD symptoms. In contrast, gender differences were found on the PAI antisocial PD full scale, $F(1, 81) = 9.54, p = .003$, partial $\eta^2 = .11$, with males ($M = 61.04, SD = 14.02$) reporting significantly more symptoms than females ($M = 53.03, SD = 8.96$). These findings support previous research suggesting that the majority of individuals with APD are males.

P11.03
GENDER AND LOGICAL ANALYSIS SKILLS ARE ASSOCIATED WITH ENHANCED CRIMINAL PROFILE ACCURACY

Annaliese Simms, Kristine Jacquin

Mississippi State University

Although offender profiling has been utilized by psychologists and law enforcement, little research has been conducted testing techniques which may enhance profiling accuracy. Hazelwood and colleagues (1995) first proposed that logical analysis skills may enhance profile accuracy. In this study, we examined the effect of logical analysis skills on accuracy. We expected higher logical analysis scores to be associated with more accurate profiles. Additionally, based on past research, we expected female profilers to be more accurate than males (Hodges & Jacquin, 2008). Logical analysis skills of university students ($N = 260$) were assessed with Raven's Progressive Matrices (RPM; Raven, 1996). Participants then read a serial sexual homicide case and completed an offender profile. Logical analysis scores correlated significantly with total profile accuracy, $r = .26, p < .0001$, as well as accuracy for the offender's physical characteristics, $r = .19, p = .002$, and social history and habits, $r = .21, p = .001$. The multivariate effect for gender approached significance, $F(5, 248) = 2.18, p = .057$. Gender accounted for 4% of the variance in overall profile accuracy, partial $\eta^2 = .04$. Profilers with average ($M = 0.45, SD = 0.50$) to above average ($M = 0.36, SD = 0.50$) logical analysis skills were significantly better at profiling the offender's previous convictions, compared to those with below average ($M = 0.27, SD = 0.46$) logical analysis skills, $F(2, 252) = 3.65, p = .03$. Overall, the results support our hypothesis that logical analysis relates to accuracy of offender profiles.

**P11.04****FOOD CATEGORIZATION DIFFERENCES IN COLLEGE STUDENTS WITH AND WITHOUT EATING DISORDERS**

Katelyn Ullmer, Margot Fountain, Mary Wilson, Melissa Lea
Millsaps College

In an attempt to create a task that can reveal eating disorder tendencies in participants, this study experimentally examined the ways three groups of participants, normals, bulimics, and anorexics, sorted and merged food items into groups. It also explored differences in how participants from the north and the south categorized food. Participants completed a sorting and merging task and a series of questionnaires and their data and responses were coordinated to reveal trends. The sorting and merging tasks utilized realistic images of a variety of food items. Participants sorted the foods into categories and were not restricted time, number of categories, or other rules and then were asked to merge these categories until they merged the food into one category. The task proved significant for distinguishing normals and approached significance for distinguishing anorexics. More data is needed to understand bulimia and overeating disorder, and the cognitive aspects that underlay them, in order to use this task to distinguish bulimics. The results signify progress towards the understanding and recognition of eating disorders. The task proved to be an easy to administer diagnostic tool that can be given to any participant regardless of age or education level. Recommendations for future study include learning more about the cognitive aspects of eating disorders and focusing on what treatment methods to use once eating problems are identified by this task.

P11.05**EFFECTS OF SEXUAL IDENTITY AND SEXUAL ATTITUDES AMONG COLLEGE STUDENTS**

Kimberly Gooseberry, Ena Knott-Scott
Tougaloo

This study aims to examine how sexual attitudes relate to college students sexual identity (heterosexual, homosexual, bisexual). Zurbriggen (2006) found that men reported being more unrestricted than women with regards to engaging in sexual behaviors without an emotional connection. This study will use the 43 item Sexual Attitude Scale (Hendricks & Hendricks, 1987) which has four subscales that assess permissiveness, sexual practices, communion and instrumentality. There will be approximately eighty participants, forty males, and forty females with ages ranging from 18 to 28 from a local college. It is hypothesized that sexual attitudes of homosexual women will be more conservative than heterosexual women. It is hypothesized that sexual attitudes of women will be more conservative than men regardless of sexual identity. It is also hypothesized that the sexual attitude of instrumentality (sex used as a tool, no attachment) is dominant in men than women. This study is on-going and analysis plans include the use of t-tests to compare

differences between scores on the sexual attitude scale. College student's views about their own sexual activity may be related to whether they consider themselves to be heterosexual, homosexual/bisexual. Male students regardless of sexual identity have typically rated themselves less conservative in their attitudes about sexuality.

P11.06**EXPLORING FALSE RECOGNITION IN MULTIPLE CHOICE TESTING AMONG COLLEGE STUDENTS**

Brittney Jones, Ena Knott-Scott
Tougaloo College

The power of memory is essential in various daily life experiences such as personal history, knowledge of facts, and learning new skills. (Kopelman, 2002; Schacter, 1999). Memory can fail us and sometimes fool us where we may forget things or even claim to remember words that were not on a list (Schacter & Dodson, 2001). This has been called false memory. The participants will be 20 male and 20 female students from a local college, with ages ranging from 18-22. The students will be divided into two groups one being the control and the other being the experimental group. The control group will look at a list of words for 1 minute and then the multiple-choice test for 2 minutes. The experimental group will look at a list of words for 1 minute, be presented with a distracter for 30 seconds (picture of a famous person and then answer questions about the person) and then given the multiple-choice test for 2 minutes. The independent variables are gender and the distracter item and the dependent variable is the test scores. It was hypothesized that the distracter item will affect the students' recognition of words that were on the original list. It was also hypothesized that females will do better than males on the multiple choice test. T-tests will be used to analyze these hypotheses. If distraction causes students to false recognize on the multiple choice test, this information could be helpful in learning methods of studying.

P11.07**ACTIVITY LEVELS AND BMIS OF STUDENTS AT THE UNIVERSITY OF MISSISSIPPI**

Lauren Flegle, Abigail Banahan, Whitney Gadd
University of Mississippi

Obesity is a major concern that has often put the state of Mississippi in the national spotlight. Consistently ranked among the "fattest" states in the nation, Mississippi is an appropriate place to start when examining the activity level of college students and adults. Data were collected from 155 students (87 females, 68 males) at the University of Mississippi in Oxford whose ages ranged from 18 to 49 (M=22.99). Height in the sample ranged from 58 in. to 77 in. (M=67.70 in.) and weight ranged from 96 lbs. to 340 lbs. (M=166.37 lbs.). Participants' Body Mass Indexes (BMI) were calculated and ranged from 16.25 to 53.72 (M=24.75). Significant correlations were discovered between gender and BMI ($r=.245$, $p<.01$), reported

sedentary activity and desired sedentary activity ($r=.688, p<.01$), reported sedentary activity and reported exercise activity ($r=-.214, p<.01$) and reported exercise activity and desired exercise activity ($r=.567, p<.01$). The findings imply that the participants were, in general, satisfied with their amount of sedentary activity, desirous of more exercise activity if they reported high amounts already and desirous of less exercise if they reported higher amounts of sedentary activity. More results and implications for the field of obesity research are discussed on the poster.

P11.08 Withdrawn

P11.09 Withdrawn

**P11.10
SELF-EFFICACY AND EMOTIONAL INTELLIGENCE
BETWEEN AFRICAN-AMERICAN COLLEGE AND HIGH
SCHOOL STUDENTS**

Kanasha Reese, Shaila Khan
Tougaloo College

Self-efficacy is one's feelings of competence and assessment of one's capabilities to achieve successful levels of performance. Self-efficacy influences choice of behavior, thought patterns and emotional reactions. Emotional intelligence involves the ability to accurately perceive, express, and regulate emotions to promote emotional and intellectual growth (Kumar & Lai, 2006). Higher emotional intelligence was associated with a variety of better outcomes, including employment and academic performance (Van Rooy & Viswesvaran, 2004). Components of perceived emotional intelligence predicted self-efficacy beliefs (Chan, 2004). The present study examined self-efficacy and emotional intelligence between African American college and high school students. It was hypothesized that: 1) college students will have higher self-efficacy and emotional intelligence than high school students; 2) females will have higher emotional intelligence than males; 3) males will have higher self-efficacy than females, and 4) there will be a correlation between self-efficacy and emotional intelligence scores. 80 subjects (40 college students and 40 high school students) were administered the General Self-efficacy Scale (GSE; Jerusalem & Schwarzer, 1993) and the Emotional Intelligence Scale (EIS; Schutte, 1998). The preliminary results showed that although the mean emotional intelligence score for females and mean self efficacy scores for males were higher but none was found to be statistically significant. A significant positive correlation between self-efficacy and emotional intelligence score was found ($r=.607, p<.01$) was found. It may be concluded that the ability to assess one's capabilities relates to the ability to accurately perceive one's emotions.

P11.11

**A COMMUNITY SAMPLE'S RESPONSE TO THE
EFFECTS OF RACE AND HELP-SEEKING BEHAVIORS.**

Zenova Williams, Porshia Haymon, Joseph Johnson, Pamela Banks

Jackson State University

Underutilization of mental health services by African Americans can best be explained by a constellation of barriers that deter them from seeking mental health services. Some of these barriers include societal stigma, cost, and fragmentation of services, lack of availability, and mistrust of the professionals, fear, racism and discrimination. Perceptions of the role that race plays in seeking professional mental health services and expectations of how the African American community should respond to mental health problems are two issues that may influence underutilization of these services. The present study assessed these perceptions. Forty-two recipients of health services from a "free community-based health care clinic" were administered two surveys. Survey #1 assessed barriers to seeking mental health treatment, perceptions and preferences related to mental health services. Survey #2 addressed myths and beliefs about the mentally ill, stigma, and discriminatory behavior toward individuals with mental illness. This presentation presents an analysis of the extent to which being an African American affects help-seeking behaviors and perceptions of what should be the African American community's response to mental health. Preliminary data revealed that 13% of the sample felt that race was an influential factor regarding seeking mental health services. Forty-seven percent of the participants felt that mental illness was more common in the African American community. Themes of being proactive toward mental health and offering community support were commonly reported expectations of what the community should promote. These findings support the need to develop strategies that will reduce stigma associated with mental illness.

P11.12

**FAMILIAL PUNISHMENT ON MOTHERS AND THEIR
DISCIPLINARY PRACTICES TOWARDS THEIR
CHILDREN**

Geralyn Mass, Shaila Khan
Tougaloo College

Familial punishment is the method of punishment practiced within a particular family. The childhood experiences of the mothers may have an effect on the way in which they discipline their children. A significant relationship was found between the experiences of discipline as a child and approval rates of using discipline towards children (Bower, 2001). Punishment is intended to correct the inappropriate behavior that has been displayed. Not only does the history of childhood discipline have an affect on disciplinary practices, but the attitudes towards discipline do also (Russa, 2001). The purpose of the present study was to investigate how the punishment that mothers received from their parents during childhood, may affect

their disciplinary practices toward their children. It was hypothesized that mothers receiving punishment during childhood will display strict disciplinary practices towards their children. Eighty African American and Caucasian mothers were given a Demographical Questionnaire (gender, age, marital status, race, number of children, parents marital status), and the Dimensions of Discipline Inventory Form A and Form P (Straus & Fauchier, 2007). These forms had nine core scales: Corporal Punishment, Deprivation of Privileges, Diversion, Explain/Teach, Ignore Misbehavior, Penalty Task & Restorative Behavior, Psychological Aggression, Reward, and Monitoring. The independent variable for the study was the familial punishment on mothers and the dependent variable was the disciplinary practice toward children. The statistical test that will be used to test the hypothesis is Pearson's Correlation Coefficient.

**P11.13
FIRST IMPRESSIONS: THE EFFECT OF ATTRACTIVENESS AND LIKEABILITY ON VIEWS OF COMPETENCE AND TRUSTWORTHINESS**

Phylcia Fitzpatrick

Tougaloo College

Individuals frequently use their judgments of facial appearances to draw inferences about attractiveness and likeability (Willis & Todorov, 2006). Therefore, the hypothesis governing this study holds that the more likable or attractive the participants deem the images, the more competent and/or trustworthy they will also view the images. In addition, this study aims to highlight the ways in which gender affects participants' perceptions of each image. It is hypothesized that women will rate images more favorably than males on all levels. Utilizing a computer-based experiment, in which 40 participants, both male and female, are shown eight images for 2 seconds, followed by four questions, participants are asked to rate each picture on a 9-point scale ranging from *Not at all* to *Extremely*. There are eight trials (one for each manipulation of the original 2 images), which examine three independent variables on 2 levels: race (black/white), gender (male/female), and physical disability (disabled/ non-disabled). Although this is an ongoing study, the preliminary results reveal that females did in fact view all images more favorably than males on all levels. A t-test was used to analyze the data, which resulted in a $t = -.169(13)$, $p < .05$ for likeability and $t = .901(13)$, $p < .01$ for attractiveness. There is a positive correlation between likeability and competence of $.859$ $p < .01$, competence and attractiveness of $.798$ $p < .01$, competence and trustworthiness of $.645$ $p < .01$, likeability and attractiveness of $.529$ $p < .05$ and likeability and trustworthiness of $.578$ $p < .05$. However, attractiveness did not correlate with trustworthiness.

**P11.14
DIFFERENCES IN OUR PERCEPTION OF NAMES AND NICKNAMES.**

Erica Douglas, E. Menton McGinnis, Lauren Vucovich, Melissa Lea

Millsaps College

The connotation of formal names and nicknames, both traditionally and uniquely spelled, were investigated in this study, as well as regional differences in trait attributions of names. Previous research has shown that formal names, such as Robert, attribute more responsibility to an individual as compared to the less formal nicknames, such as Bobby. There have been no studies investigating what connotations uniquely spelled nicknames conjure and little systematic investigations into regional differences in name attributions. The current study examined these three types of names (formal, nicknames, and uniquely spelled nicknames) by asking participants to rate, on a 9 pt. Likert scale, the names on the basis of: Ethical Caring, Popular Fun, and Successful, and some participants were also asked whether they would hire the individual as an attorney. Our main hypotheses were (1) all nicknames would be rated as more Popular Fun and less Ethical Caring and Successful than their formal counterparts, (2) traditionally spelled nicknames would be viewed as more Popular Fun in the southern U.S. as opposed to the northern U.S., and (3) formal name would be more likely to be chosen as their lawyer. The results supported our hypotheses in most cases, although interesting patterns emerged regarding regional differences. According to this study, an individual can alter how others see them based on the formality and/or spelling of their name. Implications of this research can be applied when applying for a job or when moving to different regions of the U.S.

**P11.15
THE EFFECTS OF ATTACHMENT STYLE ON INFIDELITY IN INTIMATE RELATIONSHIPS**

Leslie Anderson, Ena Knott-Scott

Tougaloo

This research project will study the effects of adult attachment styles on infidelity in intimate relationships. The Relationship Questionnaire (Bartholomew & Horowitz, 1991) and The Relationship Scales Questionnaire (Griffin & Bartholomew, 1994) will be used to assess college students' level of adult attachment in their intimate relationships. The sample population will include 80 students at a historically black college in Mississippi. Male and female participants will be between the ages of 18 and 22. It is hypothesized that participants who feel more attached to their partners will be less likely to be unfaithful. It is also hypothesized that females will feel more attached to their partners than males, and the length of time in the relationship will affect the levels of attachment. The independent variables are attachment style (personality characteristics) and the gender of the participants. The dependent

variables are the levels of attachment to the participant's current relationship and admittance of fidelity or infidelity. Though the study is on-going, the analysis plan includes using t-tests to compare the differences. How attached a person is to a current intimate relationship can be a factor of his or her attachment style (securely attachment, avoidant, ambivalent) and can give some information about willingness toward fidelity.

**P11.16
EXPLORING RELATIONSHIPS BETWEEN TRAIT AND STATE ANXIETY, EXERCISE TOLERANCE, AND PERSONALITY**

Jarrett Lewis¹, Ashley Albers², Sarah Camhi³, Deborah Rohm Young³

¹Jackson State University, ²Northern Kentucky University, ³University of Maryland, College Park

Research studies have continually concluded that physical activity has an overall positive affect on psychological well-being (Dishman, Sallis, and Orenstein, 1985). Repeatedly, exercise is clinically proven to improve mental health. Despite popular awareness that regular and relatively strenuous exercise improves physical health, few people exercise. The purpose of this study is to explore relationships between anxiety, exercise tolerance, and personality to ultimately investigate psychological influences involving physical activity. Initially, personality, exercise tolerance, and baseline state anxiety were assessed. State anxiety was reassessed after two seven-minute periods of moderate intensity physical activity: normal pace walking and brisk walking. Significant correlations are present between Neurotic personalities and Trait Anxiety ($R = -.927, P = .000$), as well as between Conscientiousness personalities and Exercise Tolerance ($R = -.771, P = .003$). There were no statistically significant differences from Baseline State Anxiety to State Anxiety after Normal Walking and Brisk Walking and in State Anxiety from Normal Walking to Brisk Walking (Table 3). In conclusion, each personality type showed relatively low variation among anxiety and exercise tolerance scores, but only Conscientious personalities showed a significant correlation with Exercise Tolerance. Also, Neurotic personalities showed a significant correlation with Trait Anxiety and Neuroticism decreased with walking.

**P11.17
INVESTIGATING CHILDREN'S TOY PREFERENCE: DOES SKIN COLOR MATTER?**

April Hampton, Ena Knott-Scott

Tougaloo College

The present study examines children's toy skin preference using an experimental design. Questions were based on those used in the Clark's 1940 Doll Study. Negative or positive characteristics were ascribed to either a black or white doll. The proposed sample will consist of approximately 40 children ages 5 to 9. It was hypothesized: 1) that White children will ascribe more positive characteristics to the White doll than

the Black doll. 2) Black children will ascribe more negative characteristics to the Black doll than the White doll. 3) As the age of children increase, regardless of race, negative and positive characteristics will be given to both races equally. The independent variables are the children's age and race. The dependent variables are the children's perceptions of the Black and White dolls. This study is on-going and correlation analyses will be used to assess these relationships. More than sixty years have passed since Drs. Mamie and Kenneth Clark conducted the original experiment. However children's views of themselves and of those who look like them may not have made as many positive changes as would be expected.

**P11.18
A NEW MODEL FOR EFFECTIVE WEIGHT LOSS IN ADULTS**

Andrew Kurt Thaw, Rocky Khanna, Jessica Quinn
Millsaps College

Over 60% of the US population is overweight with nearly a quarter obese. It is clear that effective weight management is a priority for our nation. In 1998 the National Institutes of Health sought to create and implement a definitive set of guidelines for weight management. Their exhaustive review of factors contributing to weight gain/loss resulted in useful recommendations, yet little implementation. Specifically, the suggestion that each person in need of weight management employ the services of a physician, exercise physiologist, psychologist, nutritionist/dietician, and personal trainer was problematic and unaffordable. Here we report a modification of these recommendations as a viable alternative. This research project trained student volunteers to be experts in the above noted areas, focusing weight loss only. So while they were instructed in the area of calorie use and metabolism (nutrition and physician), they were not trained in calculating the total energy of foods or digestion processes; they could explain why exercise was important, but not how muscles grew or functioned; etc. The students then served as weight loss counselors for 40 volunteer subjects and 20 control subjects aged 26-50. Experimental subjects met weekly with the counselors for 12 weeks and received written information each session. Additionally, subjects set weekly goals for exercise, eating and other behaviors. Results show substantial weight loss with the modified-counselor approach compared to control (17lbs versus 2lbs). We conclude that the modified program described is an effective alternative to the NIH guidelines as data indicate sustained weight loss with minimal cost.

**P11.19
STRESS, OVER WEIGHT, AND DIETARY HABITS: A CORRELATION AMONG AFRICAN AMERICAN COLLEGE FEMALE STUDENTS**

Candace Jones, Shaila Khan

Tougaloo College

Stress is good for all human beings every day life

experiences because it helps us to be more productive. However, too much stress can be harmful to the body. It can cause different illness that can also be fatal. Dieting, eating may be perceived as undesirable and may cause distress in the form of negative mood states (Solomon, 2001). In the present study relationship between stress, over-weight, and dietary habits was investigated among African American female college students. It was hypothesized that 1) stress, over-weight and dietary habits will have a positive relationship There were 80 African American female participants who were given a Demographical Variable Questionnaire, a Stress Questionnaire (Hanley, 2002), and a Fat-Related Diet Habits Questionnaire (Kristal, 1990). The independent variable for the study was stress and the dependent variable was weight and dietary habits. In the preliminary analysis the correlation between stress and dietary habits did not show any significant relationship. However, on the Fat-Related Diet Habit questionnaire there was a positive significant correlation between factor 1 (Substitution) and factor 4 (Replacement) ($r = .699, p > .01$) and between factor 1 (Substitution) and factor 5 (Avoid fat) ($r = .452, p > .01$). There was also a positive significant correlation between factor 2 (Modify meat) and factor 5 (Avoid fat) ($r = .401, p > .05$) and between factor 3 (Avoid frying) and factor 4 (Replacement) ($r = .398, p > .05$) and between factor 4 (Replacement) and factor 5 (Avoid fat) ($r = .384, p > .05$).

P11.20
ATTENTION AND MEMORY PERFORMANCE ASSOCIATED WITH ANXIETY-RELATED DISORDERS
Marilyn Brodeur St-James, Audrey Masilla, Kristine Jacquin
Mississippi State University

Participants completed a neuropsychological test battery and the Personality Assessment Inventory. Symptoms of certain anxiety-related disorders, such as obsessive-compulsive symptoms and traumatic stress, were associated with enhanced attention and memory, whereas phobias were associated with poorer attention and memory. The purpose of this study was to examine the ability of scores on the Personality Assessment Inventory (PAI) scales and subscales measuring Anxiety-Related Disorders to predict performance on measures of memory and attention. Regression analyses were conducted with the PAI scales and subscales for obsessive-compulsive disorder, phobias, and traumatic stress as the predictors and the neuropsychological summary scores as the dependent variables. Higher scores on the obsessive-compulsive subscale significantly predicted better verbal associative memory, $r = .23, p = .04$. Obsessive-compulsive symptoms also significantly predicted better performance on a measure of visual attention, $r = .26, p = .02$. Higher scores on the traumatic stress subscale significantly predicted better performance on verbal list learning tasks, $r = .22, p = .04$. Higher scores on the phobia subscale significantly predicted poorer immediate verbal memory performance, $r = -.28, p = .01$, and poorer delayed verbal memory performance, $r =$

$-.22, p = .04$. The phobia subscale significantly predicted poorer verbal associative memory performance, $r = -.23, p = .04$. In addition, higher scores on the phobia subscale significantly predicted poorer performance on a measure of auditory attention, $r = -.24, p = .03$. These findings suggest that certain neuropsychological test patterns are associated with characteristics of anxiety-related disorders.

P11.21
ETHNICITY AND SEXUAL ORIENTATION IMPACT JURORS IN SAME-SEX RAPE TRIAL

Jacklyn Nagle, Kristine Jacquin
Mississippi State University

This study investigated the influence of victim and defendant ethnicity (African American, Caucasian) and sexual orientation (homosexual, heterosexual) on mock juror decisions in a same-sex rape trial. The current study fills gaps in existing literature by considering the effects of these variables in combination. Participants were 376 undergraduate students randomly assigned to 1 of 16 conditions. Working independently, mock jurors read a trial summary and rated the defendant's guilt on a 4-point scale. The results were analyzed using ANOVA with victim sexual orientation, defendant sexual orientation, victim ethnicity, and defendant ethnicity as independent variables and with guilt rating as the dependent variable. Main effects were found for victim sexual orientation and defendant sexual orientation. When the defendant was homosexual, he was given higher guilt ratings, $F(1, 360) = 6.57, p = .01$, compared to when the defendant was heterosexual. When the victim was heterosexual, the defendant was given higher guilt ratings, $F(1, 360) = 4.31, p = .04$, compared to when the victim was homosexual. No main effects were found for victim ethnicity or defendant ethnicity. However, a significant 2-way interaction showed that when the victim was heterosexual and African-American, the defendant was assigned the highest guilt ratings, $F(1, 360) = 5.75, p = .02$, compared to other conditions. This study demonstrates that jurors in same-sex rape trials may be biased by victim and defendant sexual orientation and race. Future research should examine methods for reducing bias in same-sex rape cases.

P11.22
ASSESSMENT OF THE DISCRIMINATIVE STIMULUS EFFECTS OF COCAINE AND ANTIHISTAMINE COMBINATIONS
Phillip LeDuff, Hutson LW, Freeman KB, Woolverton WL
The University of Mississippi Medical Center

In this current project, we are testing the drugs, cocaine and antihistamines. Saline will be used as a placebo. The primary objective is to see whether a mixture of cocaine and antihistamines can be used as an abused substance. Drug discrimination will be used for the project. For this project, we are using eight adult male Sprague-Dawley rats. To start the experiment, we inject the rats with either a drug or placebo, and

then place them in the Skinner boxes. The Skinner boxes have two levers inside which the rat will press one to obtain food (the active lever) and the other will be inactive. One lever will be active when drug injections are given and the other will be active when saline injections are given. To obtain our results, we used cumulative dose testing in which we evaluated the effects of cocaine at 1, 2, 4, 8, and 16 mg/kg and saline. When the cumulative dose testing of the cocaine and saline were finished, we then performed cumulative dose testing with three antihistamines in relation to cocaine. The antihistamines that were tested were triprolidine, chlorpheniramine, and diphenhydramine. During the cumulative dose testing, chlorpheniramine seemed to substitute for cocaine at 16 mg/kg. Diphenhydramine and triprolidine did not seem to have any drug effects similar to cocaine. However, when we performed cumulative dose testing with mixtures of each antihistamine plus cocaine, the data showed that each antihistamine heightened the effects of cocaine. Supported in part by the Howard Hughes Medical Institute.

P11.23

THE IMPACT OF PARENTAL DISCUSSION ON YOUTH SMOKING SUSCEPTIBILITY

Rose Gonzalez, Robert McMillen, Brittany Wright, Annaliese Simms

Social Science Research Center

Cigarette smoking is the leading cause of preventable death in the United States. Most smokers begin smoking before age 18, so efforts to disrupt the trajectory from susceptible smoker to established smoker are critical. This study examined whether parents discussing the harms of tobacco with their children relates to the youth's susceptibility to smoking, while statistically controlling for demographic characteristics and potential mediators and moderators. To examine this relationship, we used a logistic regression model to regress susceptibility to smoking on parental discussions; while statistically controlling for other social influences, attitudes about the tobacco companies, and household smoking restrictions. The data was used from the 2008 Mississippi Youth Tobacco Survey (MS YTS). Analysis indicated that youth who reported that their parents had not discussed the dangers of smoking were 1.48 times as likely to be susceptible to smoking as those whose parents had done so. The risk for susceptibility persisted even after controlling for demographic factors. Subsequent analyses revealed that this relationship was not moderated by having friends who smoke, but that the role of parent discussions and susceptibility tends to be mediated through increased knowledge of the harms of tobacco. Tobacco control efforts should strive to educate parents about the importance of discussing tobacco with their children.

P11.24

NEONATAL SSRI EXPOSURE IN RATS PRODUCES LONG-TERM IMPAIRMENTS IN SOCIO-SEXUAL BEHAVIOR

Braxton Hicks, Sharonda Swilley, Ian Paul

University of Mississippi Medical Center

Our laboratory has demonstrated that neonatal exposure to the SSRI citalopram produces impairments in sexual and aggressive behavior and the expression of tryptophan hydroxylase and serotonin transporter that persist into adulthood. This study determined whether neonatal exposure to the SSRI citalopram results in dose-dependent changes in socio-sexual behavior, a measure of social interaction displayed between partners prior to the initiation of sexual behavior. Male Long-Evans rats were injected subcutaneously with citalopram in one of 3 doses (5-20 mg/kg/day), or saline twice daily (AM and PM) from postnatal day 8-21. The rats were allowed to reach adulthood and tested for socio-sexual behavior during the first 15 minutes of sexual behavior testing. Neonatal citalopram exposure resulted in dose-dependent alterations in male socio-sexual behavior. These results suggest that early life exposure to citalopram produces functional impairments in the serotonin system that result in long-term changes in behavior. *Supported by the Base-Pair Program and the Center for Psychiatric Neuroscience (RR-17701) to IAP. Supported in part by the Howard Hughes Medical Institute.*

P11.25

ATTITUDES TOWARDS ABSTINENCE-ONLY VS. COMPREHENSIVE SEX EDUCATION IN MISSISSIPPI: ANALYZING EFFECTIVENESS AND POLICY HISTORY

Samanthia Thompson, Shaila Khan

Tougaloo College

In Mississippi, more than \$11 million dollars are allocated to fund 'Abstinence-only-until-marriage' sex education programs each year (The National Campaign to Prevent Teen Pregnancy, 2006). According to the Mississippi has the highest unexpected teenage pregnancy and birth rates of any of the 50 states and the District of Columbia (Guttmacher Institute, 2006). In addition, the teen birth rate in Mississippi decreased from a rank of 49th place, 50 being the worst, in 2004 to 50th in 2006 (National Campaign to Prevent Teen Pregnancy, 2007). The present study investigated parental attitudes towards abstinence only and comprehensive sex education in Mississippi. A five-part questionnaire concerning opinions towards sex education (Lee, 1994) was administered to a sample of 80 African American parents and students. It was hypothesized that: gender, age, education, and income will vary on opinions on 1) Being liberal or conservative about sex education, 2) on current sex education in Mississippi, and 3) what adolescents and teenagers should learn in sex education in school. Preliminary results showed that the younger age group had a lower mean on the liberal and conservative scale on sex education compared to the older age group. Such a mean difference was found significant, $t(18) = -2.92, p = .009$. In order to test the second and the third hypothesis



several 2x2 Chi-squares were performed. Preliminary Chi-square results indicated that only age and education was found to be more important determinants toward comprehensive attitudes on sex education in Mississippi.

P11.26

MENTAL HEALTH AVAILABILITY FOR AFRICAN AMERICAN

Catrice Tillis, Madhu Singh
Tougaloo College

Mental illness is often an afterthought and illness of the mind remain in a cover wrapped in fear and confusion. The purpose of this study is to see whether the perceptions of people on mental health service vary by gender, age, race or socioeconomic status. (The Epidemiological Catchment Area Study, Lewin-Epstein, 1991). This research will be performed on 80 African Americans in Mississippi ranging from the age of 18 and older, 40 females and 40 males, it is hypothesized that females will perceive mental health services to be inadequate as compared to males. Participants from a lower-socioeconomic will be more dissatisfied with mental health services than those from a higher socioeconomic status. Difference in responses will be compared by age, gender and socioeconomic status. The independent variable is the age, gender, cultural diversity and socioeconomic status. The dependent variable is their perceptions of mental health care for African American and the response measured in percentages. The data will be collected and analyzed using Chi-square and T-test. The participants in the study will all have had no mental health treatment. They will answer a survey consisting of 17 questions and addressing availability of mental health services. A low score from the participant will indicate a problem area, and a high score indicate satisfaction with mental health services. This is an ongoing study and the preliminary results will vary.

P11.27

THE ROLE OF AUDITORY INFORMATION IN FOOT RUBBING BEHAVIORS IN GARNETT'S BUSHBABY

Jennifer Lamb, David Hanbury, Lauren Highfill, Sheree Watson
University of Southern Mississippi, United States

Garnett's bushbaby (*Otolemur garnettii*) is a nocturnal prosimian primate. Like many nocturnal animals, bushbabies rely heavily on scent marking to communicate with conspecifics. One form of scent marking, foot rubbing, involves scraping the bottom and sides of the foot against a substrate to distribute scent. In addition to scent deposition, foot rubbing emits an audible scraping noise. We examined whether the sound of foot rubbing is important for the communication of information. Eight male bushbabies were exposed to an audio tape of a neutral sound and a foot rubbing sound to determine if there was a difference in orientation towards the source of the sound. The responses of the animals were videotaped. The variables measured included the amount of time elapsed until the subject

looked at the source of the sound, total amount of time spent looking at the source, and duration of the initial head turn towards the source. The data were analyzed with Wilcoxon Signed-Ranks tests and sequential Bonferroni test. No significant differences were found between the two treatment conditions. These results suggest that sound alone is not a critical component of the information exchanged by foot rubbing behaviors.

P11.28

SLEEP HABITS OF HIGH SCHOOL STUDENTS

Malika V. Shettar, St. Andrew's Episcopal School, Ridgeland, MS-39157

Getting adequate sleep time and sleep quality is important at all ages and aids in maintenance of good physical and psychological health. Notably, sleep is more important during the teenage years and yet this is when they tend to get less sleep often creating difficulties with academic functioning, driving accidents, substance addiction risk, obesity, as well as aggravating any existing physical or emotional problems. In this study, sleep habits of high-school students was studied using a sleep questionnaire. The study showed that these students had decreased total sleep time, desire for more sleep, sleep/wake schedule disruptions causing problems in academic, social, or other extracurricular activities. Students engaged in poor sleep hygiene habits that often maintained the sleep problems. These findings show the negative effects of chronic sleep deprivation and the importance of increasing awareness of striving to get an adequate amount of sleep in high school students potentially benefiting them in many areas of their life

THURSDAY AFTERNOON AMPHITHEATER

O11.01

1:30 AM I A DISASTER TOURIST?: THE ETHICS AND EMOTION WORK INVOLVED IN TAKING PHOTOS DURING DISASTER RESEARCH

Ann Marie Kinnell

University of Southern Mississippi

E. L. Quarantelli, in a paper on the origins and methods of the Disaster Research Center (DRC), notes that researchers in the field were encouraged to take photographs especially of ephemeral data that could be lost forever if not recorded. These photographs would not be of physical damage or destruction but of scenes of sociological interest, i.e. search and rescue teams, helpers, volunteers, victims. Quarantelli somewhat cryptically reveals later in the same paper that, for reasons that were unclear to the DRC, it was only occasionally that research teams did take the desired photographs. Based on my experience as the official "project chronicler" for a post-Katrina survey project on the Mississippi Gulf Coast, I propose a possible explanation for why researchers are hesitant to take the sociological photographs desired by the DRC. Fundamentally, even survey work involves

researchers in emotion work. The desire on the part of researchers not to be "disaster tourists" or to emotionally burden those affected by the disaster creates a strong disincentive to take photographs in the field.

O11.02

1:45 IMPACT OF EMOTIONAL INTELLIGENCE AND PARENTAL ACCEPTANCE/REJECTION ON PSYCHOLOGICAL ADJUSTMENT OF BANGLADESHI STUDENTS

Shaila Khan

Tougaloo College

This study investigated the impact of emotional intelligence and perceptions of parental acceptance/rejection on psychological adjustments of students in Bangladesh. Emotional Intelligence Questionnaire (Goldman, 1995), Adult versions of Parental Acceptance-Rejection Questionnaire (PARQ), Personality Assessment Questionnaire (PAQ), and the Personal Information Form (PIF) (Rohner, 2005) were administered to 107 university students (30 females, and 77 males). The following results were found. Psychological adjustment was positively correlated with their perceptions of both paternal acceptance ($r=.414$, $p<.001$) and maternal acceptance ($r=.458$, $p<.001$). Psychological maladjustment was negatively correlated with emotional intelligence score ($r=-.463$, $p<.001$). Linear regression analysis was performed to determine the strength of the effects of emotional intelligence and parental acceptance/rejection on psychological adjustment. Since no significant difference in psychological adjustments were found between males and females, observations were not divided into these groups for analysis. Emotional intelligence ($b=-.358$, $t=-4.21$, $p<.001$), and maternal rejection ($b=.279$, $t=2.67$, $p<.01$) were found to contribute significantly to psychological maladjustment. However, paternal rejection ($b=.151$, $t=0.44$, $p=.15$) did not significantly contribute to psychological maladjustment. Negative b value of emotional intelligence implies that adults with higher level of emotional intelligence had less psychological maladjustment. Hierarchical regression analyses were done to explore the effect of emotional intelligence on psychological maladjustment when effects of parental rejection were removed. Individual effects of these variables are important even when effects of the other variables were removed. It may be concluded that both emotional intelligence and parental acceptance/rejection have significant impact on psychological maladjustment of students.

O11.03

2:00 MATHEMATICS TEACHING: DEVELOPING CONCEPTUAL UNDERSTANDING, UTILIZING AUTHENTIC DATA, AND EXPLORING EQUITY ISSUES

Lecretia Buckley

Jackson State University

In order to improve the state of mathematics education, a pressing responsibility, in light of current reform efforts and

changing demographics, is to prepare secondary teachers to teach a diverse student body in ways that promote conceptual understanding. Two challenges must be addressed in preparing greater numbers of teachers to meet the national shortage, especially in high needs districts. These challenges are the inadequacies that some preservice teachers indicate regarding their preparation to teach diverse learners and their own lack of understanding of concepts that they will be expected to teach. This case study examines the use of mathematical tasks in a secondary mathematics methods course aimed at supporting conceptual understanding of fundamental concepts as students were introduced to and engaged in the investigation of equity issues. The tasks were coursework requirements and shared three characteristics: (1) centered on fundamental concepts; (2) addressed a social issue; and (3) utilized authentic data. In addition to the tasks' solutions, the participant completed a focus survey and three interviews. I found that using mathematical tasks contextualized by social issues presents opportunities to investigate concepts in real world contexts; and by examining their implementation, I identified insights for teacher educators to maintain a focus on content. Findings also reveal that such tasks should be systematically integrated into the course in order to facilitate students' understanding of the relevance of equity issues in mathematics education.

O11.04

2:15 RESPONSES OF ADMINISTRATORS TO MEET THE NCLB REQUIREMENTS; A CASE STUDY

Madhu Singh¹, Hussain Al Fadhli¹

¹*Tougaloo College*, ²*Jackson State University*

The No Child Left Behind Act (2001) impelled schools to change their functioning. This evaluative study explores efforts made by three schools in Delta, MS from 2003-2007 resulting in changes in Achievement Level Index. The selected schools share similarities in socio-demographic structure and geographic proximity. Structured interviews with principals and the district superintendent were conducted in terms of seven themes: federal, state and district support in funding, teacher recruitment and retention, provisions for teachers' professional development, curriculum alignment and testing to meet state requirements, enhancing students' test-taking skills, and parental involvement in the educational process. The focus for the superintendent was on policies and implementation. For reporting purposes, responses were aggregated. What emerged is that leadership, both from the district superintendent and the principal is the key factor in influencing school achievement as evidenced in the success story of School B that has shown steady improvement over the years and School A that has maintained its ALI. Administrators felt that the definition of Annual Yearly Progress in terms of status rather than progress over time, fails to give credit for learning gains was unfair and it changes instruction in undesirable ways by focusing on students near the proficient cut score to the detriment of high or low performing students. These feelings are echoed by other educators

nationally (Cronin, et. al., 2005; Goldschmidt, 2004; Packer, 2004). The down side of the Act is higher stress, emphasis on test scores and test-taking skills, less focus on high achieving students and individual student needs

O11.05

2:30 EDUCATION AND TRAINING ENHANCE PSYCHOLOGICAL PROFILE ACCURACY FOR SEXUAL HOMICIDE

Annaliese Simms, Chandler Yonge, Kristine Jacquin
Mississippi State University

Psychological profiling is a tool that has been used by law enforcement for almost three decades (Kocsis, 2003). Despite the increased use of profiling, few studies examine factors impacting the accuracy of psychological profiles. Our study focuses on the discrepancy in literature claiming psychological knowledge either enhances accuracy of profiling (Hazelwood et al., 1994) or decreases accuracy (Kocsis et al., 2002). Two studies examined the inconsistency between existing research and the argument of Hazelwood and colleagues (1995) that knowledge of offenders should predict more accurate profiling. In study one, college students (N = 443) were assessed for psychology knowledge, then assigned to learn about a case on either sexual killers or serial arsonists. Afterward, participants completed a profiling characteristics questionnaire evaluating profile accuracy. As expected, participants who learned about sexual killers (M = 4.21, SD = 1.12) were significantly more accurate than those who learned about arsonists (M = 3.89, SD = 1.03). In study two, participants (N = 176) were randomly assigned to one of three training conditions: inductive reasoning, deductive reasoning, and a control. After training, participants studied a serial sexual homicide case and profiled the offender. Participants trained in the inductive approach were significantly more accurate (M = 4.00, SD = 1.16) than participants trained in the deductive approach (M = 3.50, SD = 1.18) and participants in the control group (M = 3.69, SD = 1.29). The results of both studies indicate that education about offenders and profiling methods enhance profile accuracy.

2:45 Break

O11.06

3:00 A STUDY OF SUICIDE BOMBING AND THE REASONS BEHIND IT

Landon Thomas *Tougaloo College*

Terrorism is quite prevalent in today's world. Suicide terrorism is what has been gaining a lot of media attention over the past few years. Suicide bombers are used because they are low-cost, low-technology, low-risk weapons. Though suicide attacks account for a minority of all terrorist acts, they are responsible for a majority of all terrorist-related casualties. Suicide terrorism is not a recent thing either; it is centuries old, and had a "code of honor" in the beginning.

This paper focuses on suicide bombing, historical versions of it, reasons behind it and beliefs about it, female suicide bombers, what the Koran says, and an actual story of a suicide bombing.

O11.07

3:15 HOW DO CULTURAL GROUPS IDENTIFY WITH AND RESPOND TO THE CREDIBILITY OF DIFFERENT SPOKESPEOPLE PRESENTING SIMILAR RISK AND CRISIS MESSAGES?

Nahdra Curry¹, Robert Littlefield², Julie Novak³, Kimberly Cowden²

¹*Mississippi Valley State University*, ²*North Dakota State University*, ³*Wayne State University*

Credible speakers appear to be intelligent, honest, and of good will. Credibility of spokespersons in crisis or emergency risk situations is often based upon having a single spokesperson presenting a consistent message, involving experts or expert information. Using cultural agents has been found to be helpful when building trust with different publics. The present study was conducted to explore the impact of culture on credibility and test the credibility of spokespersons with different cultural groups. The focus groups used for the study were identified (African Americans and Middle Easterners). Cultural agents were used to facilitate recruitment and message testing focus groups. Focus groups watched video and were asked questions and their comments were recorded by note takers. Questions were tested with multiple groups to assure reliability. This is an exploratory study. The idea of using cultural representatives seems to have been received favorably by all groups. However, a limitation of the present study was the identification of particular culture agents. The use of someone of the same "cultural group" cannot be generally applied; rather, the credibility of the speaker is particular to a community or region. The characteristics of credibility are useful across cultures. While each cultural group responded differently, there were several characteristics that did receive comments, positive and negative. A limitation of the present study is the reliance on themes from survey data, if the objective is to make generalizations about particular cultural groups. From this research project a better understanding of credibility as a dimension of identification.

O11.08

3:30 PERSONALITY TRAITS AND PRESIDENTIAL PREFERENCES OF UNDERGRADUATES

Haley Mitchell, Reid Jones *Delta State University*

One week before the 2008 presidential election 178 undergraduates agreed to take a personality trait survey and to state their preferences for president and vice-president. The personality survey provided participant results for each of the "Big Five" traits (extraversion, agreeableness, conscientiousness, emotional stability, and openness to new experiences). Participants were also asked to rate each of the four candidates on the same five traits. Comparisons for Obama and McCain showed that Obama voters were significantly older

undergraduates and more likely to be female. A MANOVA for personality comparisons was also significant (Wilk's Lambda = .19532; $p < .01$). Those voting for Obama were significantly less extraverted but significantly higher on the other four traits. Those selecting Obama also rated him significantly more positively than McCain on all five traits. Participants were allowed to vote a "split ticket" (e.g. for Obama and Palin). While Obama won the presidential preference, Palin won the vice-presidential preference. Further, Palin was rated more positively on all five traits than was Biden. The relative youth of Obama and Palin seemed to resonate with participants. Personality profiles were presented for each of the four candidates and those who voted for them.

O11.09

3:45 FACTORS INFLUENCE ADOLESCENTS DELINQUENT BEHAVIOR

Meherun Laiju

Tougaloo College

The study examined parental attachment, school bonding, self-control, and self-esteem as predictors of adolescent delinquent behavior. Additionally, the demographic variable race/ethnicity was used to explore if there were differences among the American Indians, African Americans, and Whites with regard to the independent and dependent variables. This cross-sectional, correlational survey design used secondary data to conduct the study. The data set consisted of 1,724 high school students representing both gender and race/ethnicity. Correlational, hierarchical regression, and ANOVA techniques were used to analyze the data. The multivariate hierarchical model accounted for 12 percent of the variance in delinquent behavior. Self-control emerged as the primary predictor of delinquent behavior followed by school bonding and parental attachment. The ANOVA did not reveal any differences among the three ethnic groups with regard to self-esteem and adolescent delinquent behavior. However, it differentiated the groups in relation to parental attachment, school bonding, and self-control. A follow-up bonferroni was conducted to identify which ethnic group differed from the other two groups in relation to above three variables. The findings provide a number of major implications for social welfare policy and social work education, practice, and research.

O11.10

4:00 ARE WORDS A BARRIER TO MENTAL HEALTH SERVICE UTILIZATION FOR A COMMUNITY SAMPLE?

Zenova Williams, Portia Haymon, Pamela Banks

Jackson State University

Contradictory findings exist regarding the overrepresentation of African Americans in the mental health system and the underutilization of mental health services. Barriers to mental health service utilization include societal stigma, cost, fragmentation of services, lack of availability of services, mistrust of mental health professionals, fear, racism and discrimination, etc. However, some of these barriers may be

fueled by linguistics or semantics. Some people will avoid mental health services because of the reference to mental disease, pathology; others may steer clear because words like therapist, psychological services, and "seeing a psychologist" turn them off from seeking treatment. The present study assessed preferences for these terms and the reasons for how they may hinder or facilitate one's help-seeking behaviors. Fifty-seven recipients of health services from a "free community-based" health care Clinic were administered two surveys. Survey #1 assessed barriers to seeking mental health treatment, perceptions and preferences related to mental health services. Survey #2 addressed myths and beliefs about the mentally ill, stigma, and discriminatory behavior toward individuals with mental illness. The results revealed that for the majority of the sample (96.5%) stated that words like therapist, psychological services, and "seeing a psychologist" did not turn them off from seeking treatment. Finding that only 3.5% who believed that these terms would deter them from seeking mental health services helps support the strategies used to reduce some of the stigmas associated with mental illness has had a definite positive impact in this particular community-based sample.

O11.11

4:15 STIGMA AND MENTAL ILLNESS: HOW COMMON IS IT?

Pamela G. Banks, Porshia Haymon, Zenova Williams
Jackson State University

A major deterrent to the utilization of mental health services for many people is societal stigma. Stigma can be defined as "a mark or sign of shame, disgrace or disapproval, of being shunned or rejected by others". (SAMHSA, 2003). The present study was designed to address beliefs about the mentally ill and stigma, involving a community sample who sought health services at a community-based free health clinic. Over half of the sample reported receiving mental health treatment either in the past or currently. Sixty-one participants were read aloud a 10-item Stigma Scale using a Likert Scale, ranging from 1= Strongly disagree to 5= Strongly agree. For the majority of the sample (range = 48% to 87%), disagreement with statements associated with the stigmatization of mental illness was evident. The strongest disagreement was found for statements regarding ridicule or laughing at individuals who exhibit odd behaviors and limiting contact with family members of individuals with mental illnesses. Agreement with statements indicative of stigma was evident in a sizable subset of the sample. For example, 28% believed that mentally ill persons are dangerous to self and others and 27% believed that they would not want a mentally ill person to work in the same unit on their jobs. One out of every five respondents stated that they use negative labels to describe the mentally ill, believe they would experience rejection by family/friends if mental illness behaviors were demonstrated and stated that despite need, stigma would interfere with their seeking mental health treatment.

4:30 Divisional Business Meeting



SCIENCE EDUCATION

Chair: Samuel Clardy, Usm Gulf Coast Research Laboratory,
Vice-chair: Johnny L. Mattox, Blue Mountain College

THURSDAY MORNING

ASH ROOM

O12.01

8:00 ESTROGEN IMPROVES SPATIAL MEMORY AFTER CEREBELLAR LESIONS

Joshua Hamer¹, Elaine Day²

¹Millsaps College, ²The University of Mississippi

The cerebellum has long been known to play a role in motor function and has more recently been shown to play a role in vertebrate cognition. In addition, a role of estrogen in normal functioning and repair of damaged cerebellum has recently been discovered. However, little work has been done showing how estrogenic compounds might affect cognitive deficits after cerebellar damage. Zebra Finches, or songbirds, are good examples to use to explore the involvement of the estrogen in recovery of cognitive function after cerebellum damage; studies have shown that steroids are synthesized in the Zebra Finch brain and that these steroids aid in the repair of cerebellar damage. To explore these processes, we compared performance on a spatial task for three groups of zebra finches; sham-lesioned birds, cerebellar lesioned birds with normal estrogen levels, and cerebellar lesioned birds with blocked estrogen synthesis. The cerebellar lesions produced cognitive deficits only in those birds that had blocked estrogen synthesis.

O12.02

8:20 EDUCATING ELEMENTARY AND SECONDARY SCHOOL STUDENTS IN THE IMPORTANCE OF CONSERVATION OF NATIVE MISSISSIPPI SNAKE SPECIES

Johnny Mattox, Curt Huffstatler, Brad Pressley
 Blue Mountain College

Native snakes play a significant role as a part of the ecosystems of Mississippi, especially in predator-prey relationships. In some instances, snakes occupy the top of the food chains of nature. The unnecessary extermination of many of the helpful snake species should be avoided. The Blue Mountain College Biology Department has established a program for elementary and secondary school students to educate them on the important ecological roles of native snake species, the proper care and handling of snakes as pets, the identification of the venomous snake species of Mississippi, and the conservation of

beneficial native snake species. Several native snake species are displayed during programs upon request. The programs have met with much success since the inception and student interest, fascination, and appreciation of snakes of Mississippi have been elevated.

O12.03

8:40 NEW WAYS OF TEACHING CHEMISTRY TO PRESENT GENERATION OF STUDENTS

Mudlagiri Goli

Mississippi Valley State University

It is well known to us that the number of students getting in to science education is decreasing, particularly so in chemistry areas. This trend begs for an answer, what we can do to reverse this trend and also what can we do to motivate our students to succeed once they get in to our classes. When we were growing up we were in-depth learners. Now, what about our present day students? What kind of students shall we produce for 21st century? Many of our teaching techniques may be outdated. One has to wonder/ponder about what works and what does not work. Having lived here for many years, I have to adopt my teaching style according to the needs of the students. Fortunately, I have seen that few techniques apparently work to some extent. For example, students are visual learners, and like hands on activities, computer assisted molecular modeling to name few. I have also initiated a Process oriented guided inquiry learning (POGIL) in Organic Chemistry classes. The details of the activities will be presented. The floor will be opened to discuss the impact of socio-economic factor on education.

O12.04

9:00 RESEARCH AND EVALUATION OF THE NSF MISSISSIPPI EPSCOR SUMMER BIOINFORMATICS WORKSHOPS FOR TEACHERS

Sherry Herron, Tamilselvi Gopal

University of Southern Mississippi

The research and evaluation of three summer workshops in bioinformatics for high school and college instructors will be described. In total, 71 secondary and postsecondary biology educators participated in workshops funded by the National Science Foundation - Mississippi EPSCoR 'Innovations through Computational Sciences'. The curriculum supplement Bioinformatics and the Human Genome Project, a downloadable standalone instructional module, provided one instructional component of the workshops. Developed by BSCS in 2003, the module provides authentic web-based and print materials set within the context of a fictional biotechnology company to teach the principals of bioinformatics and explore related ethical issues. Participants of the summer workshops took the same pretest and posttest that was used in schools across the United States during field-testing of the module. Teachers also provided systematic feedback about the conduct of the workshops. Analysis of both the quantitative and qualitative data

demonstrated an increase in subject-area knowledge and awareness. Teachers scores increased significantly and their scores were higher than students' pretest and posttest scores. Qualitative data revealed that the workshop provided valuable information and experiences, but not necessarily those that were expected.

O12.05

9:20 SCIENTIFIC CARICATURES: INCORPORATION OF VISUALIZATION TOOLS FROM THE GOLDEN AGE OF GEOLOGY (1788-1840) IN MODERN SCIENCE CLASSROOMS

Renee Clary¹, James Wandersee²

¹Mississippi State University, ²Louisiana State University

During the Golden Age of Geology (1788-1840), scientists drew or commissioned scientific caricatures (SCs) to dispute their colleagues' proposed hypotheses in a humorous, but effective fashion. SCs issued a theoretical challenge, or deliberately exaggerated a proposal's impossible scientific implications. This unique form of graphic representation encapsulates key issues of theory and practice in science, and reveals the history of science, and the culture, politics, and society in which scientific theories evolved. Our research investigated the reintroduction of SCs in modern science classrooms. When historical SCs were utilized in a large-enrollment college Earth History course, student response was positive. Therefore, we offered student-constructed SCs as an optional assessment tool. Paired t-tests that compared individual students' performances with the SC option, as well as without the SC option, showed a significant positive difference favoring scientific caricatures ($\alpha = 0.05$). Content analysis of anonymous student survey responses revealed three consistent findings: (a) students enjoyed expressing science content correctly but creatively through SCs, (b) development of SCs required deeper knowledge integration and understanding of the content than conventional test items, and (c) students appreciated having SC options on their examinations, whether or not they took advantage of them. Our research indicates that the incorporation of scientific caricatures during assessment may effectively expand the variety of methods for probing understanding, and that additional student benefits potentially exist with SC inclusion in geoscience classrooms.

O12.06

9:40 PHYSICS MAJORS, GRADUATES, AND FACULTY IN MISSISSIPPI

Jacob Clark Blickenstaff

University of Southern Mississippi

While over-all enrollment at the undergraduate level has been increasing in recent years, the number of students choosing to major in physics has been in decline (Thacker 2003; Murphy and Whitelegg 2006). The decreasing numbers of physics degrees has exacerbated the shortage of qualified physics teachers in high schools across the country. Nationally, only

one-third of high school physics teachers had certification and a major in the field in 2001, the last year that data was compiled (NCES 2003). Women are under-represented in the physics major nationally, and Mississippi is no exception. One way to address the problem of poorly qualified physics teachers in high school is to graduate more physics majors and encourage those graduates to enter the teaching work force. This study examines the retention of physics majors in Mississippi at public four-year institutions through enrollment data provided by departments across the state. In addition, interview data with physics majors at the outlier institutions will be presented. It appears that student-student recruiting, participation in undergraduate research, and completion of summer internships are particularly effective measures to increase graduation rates for young women. Murphy, P., and Whitelegg, E. (2006). Girls and physics: Continuing 'barriers to belonging.' *The Curriculum Journal* 17(3): 281-305. National Center for Education Statistics. (2003). *The Condition of Education 2003*. , NCES 2003-067, Washington D. C. U.S. Government Printing Office. Thacker, B. A. (2003). Recent advances in classroom physics. *Reports on Progress in Physics*, 66: 1833-1864.

O12.07

10:00 THE ANTIMICROBIAL EFFECTS OF SOLENOPSIS INVICTA VENOM

Natalie Offiah¹, Susan Bender¹

¹Jim Hill High School, ²University of Mississippi Medical Center

Since its accidental introduction into the southern the Red Imported Fire Ant, *Solenopsis invicta*, has been a menace to the entire region. When the fire ant moves into an area, it usurps the position of the local ant populations and begins to attack other indigenous species of animals. *Solenopsis invicta* is especially dangerous to small animals and human because of the potential toxicity of its' sting. Unlike, other members of the order Hymenoptera, fire ants do not loose their stinger after the first injection of potentially lethal venom, However, all is not lost. Recent research indicates that the venom of the Red Imported Fire Ant has antiangiogenesis properties as well as marked antimicrobial properties. In this experiment, isolated species of bacteria and fungi have been subjected to simulated venom and actual venom extracts to determine its' effectiveness in inhibiting or eliminating these organisms. This is an ongoing project and the results will be discussed as a part of the presentation. This research is funded in part through a grant awarded to theBase Pair/SOAR programs at the University of Mississippi Medical Center, Dr. Rob Rockhold Project Director

10:20 Break

**O12.08****10:40 DEVELOPMENT OF A SIZE ANALYSIS PROTOCOL FOR TEACHERS USING EASILY AVAILABLE MATERIALS**

Vicdaly Williams¹, Jessica Kastler³

¹*Cooperative Intern Program with the Mississippi Gulf Coast Community College—Jackson County Campus Honors Biology Students*, ²*The National Aeronautics and Space Administration*, ³*The University of Southern Mississippi-Gulf Coast Research Laboratory-J.L. Scott Marine Education Center*

Grain size analysis is a procedure that geologists have used for decades. Also known as particle size analysis, grain size analysis is perhaps the most basic technique used to characterize and interpret sediments and sedimentary rocks. This procedure can also be used to teach basic physical concepts by connecting those concepts to real world applications, for example sediment movement by wind or water. Materials for the grain size analysis method are not excessively expensive; however, some school laboratories may not have the budget to invest in them. In this project, the standard protocol of grain size analysis will be modified to develop a more economical method that can be used by teachers in their classrooms. The modified method will include the use of ordinary materials, such as plastic bottles, instead of costly lab materials. To determine the accuracy of the modified method, the percentage error between results obtained using each method will be calculated and compared. Also, the time required to complete the analysis will be investigated to minimize time necessary and make the procedure fit into a standard class period. This will be done by a series of experiments that consider temperature as a modifying factor. Results will allow teachers to use this technique in their curriculum as an effective way to teach scientific skills as well as the relationship between sediment properties and processes acting on them.

O12.09**11:00 CULTIVATING AN ATMOSPHERE OF HIGH ACHIEVEMENT AMONG GIFTED THIRD GRADE CHILDREN**

Brian M. Watson¹, Adelle Register³

¹*Cooperative Intern Program with the Mississippi Gulf Coast Community College—Jackson County Campus Honors Biology Students*, ²*The National Aeronautics and Space Administration*, ³*The Pecan Park Elementary School*

The third grade gifted class at Pecan Park Elementary is a collection of exceptionally adept students whose intellectual abilities exceed those of their peers. The purpose of the project was to cultivate an atmosphere of high achievement among such students. Research within the third grade Mississippi Science Framework was conducted to develop and implement a series of lessons focusing on space science and physical science content strands of the framework. The lessons employed a combination of digital multimedia presentations, and interactive, hands-on

activities in order to facilitate an efficient assimilation of the subject matter. Preliminary and posttests were administered to determine the effectiveness of the procedures.

O12.10**11:20 UPDATING TUTORIAL VIDEOS CONCERNING PARTS AND FUNCTIONS OF A MICROSCOPE AND PLANT AND ANIMAL CELLS**

Angela Quintana¹, Eric Place¹, Patrick Chiang¹, James Baggett¹, Doug Mansfield¹

¹*Cooperative Intern Program with the Mississippi Gulf Coast Community College—Jackson County Campus Honors Biology Students*, ²*The National Aeronautics and Space Administration*

The purpose of this project was to produce updated tutorial videos for use in Biology I and Biology II college classes. After reviewing existing student films, scripts and storyboards were developed, and an extensive editing process was undertaken to produce newly-updated films. The first video describes the parts and functions of a microscope, and demonstrated its use as well as proper care and handling techniques. The second video provides information on the parts of the cells and their functions while pointing out the differences between animal and plant cells.

11:40 Divisional Business Meeting**THURSDAY AFTERNOON
ASH ROOM****O12.11****1:00 NATURE GUIDE FOR OCEAN SPRINGS, MISSISSIPPI**

Sarah Curtis¹, Debra Harvey³

¹*Cooperative Intern Program with the Mississippi Gulf Coast Community College—Jackson County Campus Honors Biology Students*, ²*The National Aeronautics and Space Administration*, ³*The University of Southern Mississippi-Gulf Coast Research Laboratory*

The purpose of this project was to create a nature guide for the trail beside the Ocean Springs Middle School. Plant research was completed on-site and on the computer. The first step was to go to the nature trail and take pictures of the variety of plants in the area before finding a guide online to help identify the plants. The pictures and information were then put into a guide for the students to be able to use. The result was a useable field guide of local plants.

O12.12**1:20 INTRODUCTION OF ELEMENTARY LEVEL SCIENCE OF FLIGHT**

Karmel Keeton¹, Roma Flowers³, Nicole McClendon³

¹*Cooperative Intern Program with the Mississippi Gulf Coast Community College—Jackson County Campus Honors Biology Students*, ²*The National Aeronautics and Space Administration*, ³*Oak Park Elementary School*

The purpose of this project was to involve and educate children in the field of flight. Teachers at Oak Park Elementary assisted with the development and teaching of lesson plans in which children construct rockets and track launches. Students were guided and supervised during the building and launching of model, straw and water rockets using a Pitsco Rocket and AquaPort Launcher. At the beginning of the lessons a pretest was given to assess student knowledge on the subject. Following implementation of the lesson plans, a posttest was administered to determine knowledge gained as a result of the study.

O12.13**1:40 DEVELOPMENT AND IMPLEMENTATION OF AN INTERACTIVE STUDY UNIT ON WASTE MANAGEMENT FOR ELEMENTARY STUDENTS**

Hayley Carpenter¹, Anya Comerford³, Lamar Estis³

¹*Cooperative Intern Program with the Mississippi Gulf Coast Community College—Jackson County Campus Honors Biology Students*, ²*The National Aeronautics and Space Administration*, ³*Magnolia Park Elementary School*

The authors developed an elementary level study unit on waste management. The primary objectives were to aid the students in 1) understanding their involvement in the waste cycle, and 2) recognizing things they cannot control, such as nuclear waste or the materials economy that advances waste build-up in landfills through planned obsolescence. Two teachers at Magnolia Park Elementary School assisted in the development of a unit of hands-on activities and assignments to promote environmental awareness and critical thinking skills. The unit also touched on the importance of avoiding waste as well as the recovery of waste and the importance of conservation.

O12.14**2:00 CREATING ACTIVITIES FOR YOUNG MINDS AT THE WALTER ANDERSON MUSEUM OF ART**

Amber Grubbs¹, Jessie Smith¹, Blair Williams³

¹*Cooperative Intern Program with the Mississippi Gulf Coast Community College—Jackson County Campus Honors Biology Students*, ²*The National Aeronautics and Space Administration*, ³*The Walter Anderson Museum of Art*

The purpose of this project was to provide an array of school-aged children's activities for the Walter Anderson Museum of Art. The hands-on activities that were created incorporated Walter Anderson's appreciation for science and literature, which come alive throughout his artwork and poetry. Research commenced by examining the chosen aspects of nature

found in his work, including birds, animals, marine life, plants, and insects. Topics of interest included species, habitat, Anderson's use of them in his work, a few fun facts, and the use of Anderson's own words in describing the given life forms. After completing the research, hands-on activities were created. The museum staff and interns compiled research results for each hands-on activity to display in the museum. Children attending the museum participated in the exciting hands-on learning experience about Anderson's creatures.

2:20 Break**O12.15****2:40 PREPARATION AND ARTICULATION OF A JUVENILE BOTTLENOSE DOLPHIN (TURSIOPS TRUNCATUS) SKELETON FOR DISPLAY AT THE J.L. SCOTT MARINE EDUCATION CENTER**

Aaron P. Boyd¹, Shelia A. Brown³

¹*Cooperative Intern Program with the Mississippi Gulf Coast Community College—Jackson County Campus Honors Biology Students*, ²*The National Aeronautics and Space Administration*, ³*The Gulf Coast Research Laboratory, J.L. Scott Marine Education Center, The University of Southern Mississippi*

A Bottlenose dolphin (*Tursiops truncatus*) carcass was found on Bangs Island in the Grand Bay National Estuarine Research Reserve by reserve personnel July 31, 2008. The mummified calf was transported to the U.S. Fish and Wildlife compounded in Moss Point, MS to continue decay. Calf remains were later transported to J.L. Scott Marine Education Center for implementation of this project October 13, 2008. The Articulations of a Porpoise Skeleton: A Step by Step Guide to Assembling Small Whale Skeletons by Lee Post was the primary resource guide used to acquire information on the processing of the bones for proper care, preservation and skeletal assembly. The process involved the removal of the remaining tissues from the bones followed by boiling to separate bones and rid the skeleton of connective tissue and fat. After all tissues were removed from the skeleton, de-greasing of the bones completed the final stage of preparation. Following accepted assembly protocol, construction of the skeleton model was completed. The final articulated skeleton resides at J. L. Scott Marine Education and represents proper dolphin skeletal morphology. The model represents an additional display for the center and teaching tool for studies on cetacean biology.

O12.16**INVESTIGATING THE POLYMATH SYSTEM™ OF SCIENCE TEXTBOOK ANNOTATION**

James Wandersee¹, Renee Clary²

¹*Louisiana State University*, ²*Mississippi State University*

3:00 Purpose: To study the effects of our Polymath System™ of science textbook annotation on students' reading and evolving comprehension of assigned science texts at a research university in the Deep South. Design and Methods: We employed a qualitative, interpretivist research design (Strauss & Corbin,

1990) that involved triangulating data from (a) thousands of system-conforming textbook annotations composed by college biology students (N=24); (b) students' written, post-course feedback comments on the educational value of the system; and (c) instructor notes on text-related classroom conversations and observations about the coverage and depth of classroom discussions based upon the textbooks the students annotated. Results: The majority of the student participants (86%) endorsed the Polymath System™ as being superior to their previous book-based studying approaches. Additionally, endorsees spontaneously emphasized its capabilities to make the reading relevant to them (83%); to sustain their focus across the length of the book (91%); and to integrate text's contents with what they already knew (85%). Conclusions: The Polymath System™ enhanced both the teaching and the learning opportunities in the university biology classroom that was studied. The instructor was able to: (a) examine the students' resultant, unique cognitive responses to the textbook's contents; (b) confirm that each student had actually read the book; (c) re-teach any annotation-flagged content areas revealing ambiguity or science misconceptions; and (d) evaluate, grade, and reward a student's science-reading-based annotations. Students confided that they had spontaneously begun using the system in other university courses as well—an indicator of perceived learning value.

O12.17

3:20 COMMUNITY AND STUDENT INVOLVEMENT IN SERVICE LEARNING AND RELATED INITIATIVES IN MISSISSIPPI DELTA

Prince Showi Showemimo

Mississippi Valley State University

Mississippi Valley State University has adopted a compulsory new course titled "Service learning" for our students. It helps us to identify the needs of the community and helps our students to get involved with their community and builds a civic responsibility in them. The presentation is going to look in to few aspects of that course that includes technology and feed backs from students, community members and faculty involved. This service learning activities has drawn the attention of many in the capital and has won a ward for its activities.

O12.18

3:40 THE EFFECTS OF OVER THE COUNTER PAIN REMEDIES ON THE HEART RATE OF DAPHNIA MAGNA AND IT IMPLICATIONS TO HUMAN CARDIOLOGY

Angshylea Jones¹, Kayla Coleman¹, Susan Bender¹

¹*Jim Hill High School, ²University of Mississippi Medical Center*

Many may not know, *Daphnia magna* has a heart that is similar to the human heart. As we create the concentrations, we will make sure the *Daphnia* are in a stable environment. A stable environment will be an important key factor in the test. We will make sure that each culture of the *Daphnia magna* will receive the same concentrations at the same time of the same medication.

This is an ongoing experiment and results will be discussed during our presentation. This research is funded in part through a grant awarded to the Base Pai/SOAR programs at the University of Mississippi Medical Center, Dr. Rob Rockhold, Project Director.

O12.19

4:00 THE MUSE OF FIRE PROJECT: FOCUSING STUDENT INTEREST IN SCIENCE USING REGION-SPECIFIC BIOLOGY

Rob Rockhold¹, Elise Ackley², Susan Bender³, Seth Bordenstein⁴, Cindy Cook⁵, Tammy Cox³, Sarah Exley², Jammy Hemphill³, Brandon Hodges², Schuyler Huff², Alonzo Jackson³, Sarah Lea McGuire², James McKeown², Kathy McKone⁶, Matthew Oglesbee², Bill Reznikoff⁴, Jeff Stokes³, Leah Strickland², Donna Sullivan¹, Genia Truss⁷, Melanie Woods⁷, Annie Yates¹

¹*University of Mississippi Medical Center, ²Millsaps College, ³Jackson Public Schools, ⁴Woods Hole Marine Biological Laboratory, ⁵Puckett Attendance Center, ⁶Bogue Chitto Attendance Center, ⁷Mississippi College*

The Muse of Fire project hypothesizes that student interest in science education will be promoted by highlighting topics with which students have personal interactions. The fiery sting of the red imported fire ant, *Solenopsis invicta*, is such a topic for many students in the southeastern United States. Five interdisciplinary teams of faculty, high school teachers and undergraduate students developed high school lesson plans linked to Mississippi curriculum standards and focused on the microecology, human health impact, and symbiotic relationships with the insect bacterium, *Wolbachia* spp. Lessons also examined the toxicology and microarray analysis of genetic responses to *S. invicta* venom. Field activities as well as advanced science and biomedical topics (eg., PCR, gel electrophoresis, microarray analysis, statistical treatment of data) are introduced and supported by university faculty. Lessons are currently being piloted in five public school sites and evaluation of student outcomes will continue through 2010. The Muse of Fire is a model for enhancing high school science education. (Supported by Howard Hughes Medical Institute)

O12.20

4:20 INTEGRATION OF TECHNOLOGY IN SCIENCE CLASSROOM: TOOL FOR ENHANCED STUDENT LEARNING

Babu Patlolla¹, Jan Duncan¹, Leroy Johnson¹, Tomekia Jenkins², Phyllis Hawkins³, Tracey Banks⁴

¹*Alcorn State University, United States, ²Jefferson County School District, United States, ³Natchez-Adams School District, United States, ⁴Vicksburg-Warren School District, United States*

A four-week summer workshop was conducted for middle school and high school science teachers at Alcorn State University. Fourteen teachers from local school districts

participated in this program. Primary goals of this workshop were: to strengthen the teachers' content knowledge and teaching skills in science; to show them new classroom techniques using technology; to have hands-on experience with contemporary molecular biology laboratory techniques and to incorporate varied learning styles into teaching methods. Two follow-up sessions are planned for the 2008-09 academic year to discuss how the participants are incorporating their new knowledge in their classes. Participants have learned several new teaching methods and were eager to share their experiences with their colleagues at their school districts. (This program was funded by Mississippi Institutions of Higher Learning through No Child Left Behind: Summer Institute for Teachers Title II Program # 2008-081E)

THURSDAY EVENING GRAND BALLROOM

6:00 Dodgen Reception and Poster Session
Please set up your poster between 4:00 and 4:30p

P12.01

DR. GORDON GUNTER CENTENNIAL: A CELEBRATION OF HIS CONTRIBUTIONS TO MARINE SCIENCE

Madeline Trier-Rourke³, Jonathan P. Weaver¹, Joyce M. Shaw³
¹*Cooperative Internship Program, Mississippi Gulf Coast Community College—Jackson County Campus*, ²*The National Aeronautics and Space Administration*, ³*University of Southern Mississippi-Gulf Coast Research Laboratory*

Dr. Gordon Gunter's (1909-1998), the third director of the Gulf Coast Research Laboratory, centennial year is 2009. In celebration of this significant date, archival documents relating to Dr. Gunter, which were hastily boxed and stored following Hurricane Katrina, were reviewed and reorganized. Materials were selected for digitization and preservation. A poster and exhibit highlighting Dr. Gunter and his many contributions to marine and natural sciences were created for display at Gunter Library and over venues. This project continues a decade of documenting and preserving the history of the Gulf Coast Research Laboratory.

P12.02

DELTA STATE UNIVERSITY PROFESSORS TEACH BOLIVAR COUNTY 4-HERS ABOUT BIRD CONSERVATION

Nina Baghai-Riding¹, Eric Blackwell¹, Bolivar County 4-H¹
¹*Delta State University*, ²*Bolivar County 4-H*

Birds are sensitive indicators of biological richness and environmental trends in most ecosystems. They fulfill many ecological functions and are important economic assets. Many species of birds have declined during the past 40 years. The Mississippi Flyway which passes through Cleveland, Mississippi is an important migratory route that extends from southern Ontario to the Gulf of Mexico. This route is used by large numbers of neotropical migrants, waterfowl, and raptors. The

Bolivar County 4-Hers conducted bird surveys at Bear Pen Park in Cleveland, Mississippi in January, March, May, and August between 1-3 pm on Saturdays. Objectives were to teach 4-Hers about scientific observation and documentation. They learned bird recognition, use of binoculars and field guides, data collection and organization, recorded activities (swimming, flying, foraging, etc.) and differentiated migrants from residents. Each survey produced more than 100 individuals representing 36 species. The same students participated and remarked on significant changes they observed: 1) large flocks of starlings, cowbirds, and blackbirds were observed in March and August, 2) baby ducklings were observed in August, and 3) predatory hawks were rare. Common birds included American robins, Greater Canadian geese, domestic and mallard ducks, redwing blackbirds, and assorted doves; less common birds included blue herons, chimney swifts, barn swallows, and American bitterns. To enhance the bird conservation efforts, 4-H students cleaned and cleared vegetation around wood duck boxes at Dahomey National Wildlife Refuge in February and assembled and placed two blue bird houses and two wood duck boxes at Delta State University.

P12.03

INTEGRATION OF 5E INSTRUCTIONAL MODEL AND TECHNOLOGY IN TEACHING DIABETES MELLITUS

Tamilselvi Gopal, Jodie Jawor, Sherry Herron
The University of Southern Mississippi

Using technology in effective instructional methods will help students understand science. So far, the 5E instructional model is predominantly used in Biological Science Curriculum Study (BSCS) to develop biology curriculum and supplement materials. The 5E method encompasses many learning theories. The phases in the 5E model are Engage, Explore, Explain, Elaborate and Evaluate and these provide opportunities for students to do and experience science. As mentioned in the National Science Education Standards, technological products provide tools to promote the understanding of science. Technology plays a significant role in teaching modern biology. Appropriate use of technology in instruction facilitates teaching and learning processes. In this paper, we use recent peer-reviewed research articles on type 2 diabetes mellitus that describes its pathophysiology, development, diagnosis, treatment, and prevention and integrate these with the 5E instructional model and technology (e.g., Digitizers, Electronic white boards, Inspirational software, TrackStar, and RubiStar) to teach students about diabetes. This study explains how technology could be used in every step of the 5E model to teach students about diabetes. Very few studies have attempted to combine the 5E model and technology in teaching biology for undergraduate students. This study will also address how the same integration could be used for teaching other topics. Limitations in the implementation will also be addressed.

ZOOLOGY

Chair: Julius Ikenga, Mississippi Valley State University
Vice-chair: Alex Acholonu, Alcorn State University

THURSDAY MORNING

ELM ROOM

8:50 Introduction

O13.01

9:00 MISSISSIPPI *LEPOMIS MEGALOTIS* DIVERSIFICATION

Michael Stegall, Aaron Francois

Mississippi Museum of Natural Science

Lepomis megalotis occurs in all major drainages within Mississippi. The species is variable and at least five subspecies have been noted throughout its North American range, although the distribution of each form is not adequately defined. Within Mississippi, we recognize three forms based on nuptial male coloration and body shape (Gulf Coast, Loess, and Delta forms). Our objective was to evaluate the distributional boundary of Gulf and Loess forms along the Southern Ridge Divide which separates the Gulf of Mexico and Mississippi River drainages in the southwest corner of the state. The Southern Ridge Divide extends from Crystal Springs to Brookhaven along Highway 51 and then southwest to Centreville. Twelve sites on each side of the divide were sampled using seines and dip nets. Based on morphology and coloration patterns of the specimens of *L. megalotis* collected, the divide appears to be an effective distributional boundary for the two forms. In addition, five individuals of each form were collected at most sites and processed for DNA analysis. Preliminary testing revealed that three unique restriction enzyme sites were present in the Gulf Coast form. Further testing and data is forthcoming.

O13.02

9:20 SNAKEBITE-RELATED FATALITIES IN THE UNITED STATES: ANALYSIS OVER 100 YEARS

Dana Derrick¹, Dena Dickerson²

¹*Mississippi University for Women*, ²*USACE Engineer Research and Development Center*

The fear of snakes is great in the United States but the risk that snakes pose to humans is small. Snakebite occurrences in the United States have been estimated but few thorough studies of snakebite-related fatalities have been conducted. This study compiled data on snakebite-related fatalities in the United States over the past century by year and geographic state as well as by age, race, gender, and physical location (e.g. home, hunting, work) of the victims. Additionally, the frequency of snakebite-related fatalities was compared to other animal and insect-related fatalities. The research was conducted by gathering

and analyzing raw data on snakebite-related fatalities from: the Center for Disease Control and Prevention database (1979-2005); previous reported studies of snakebite fatalities (1920s-1970s); and historical literature (early 1800s-1920s) such as early natural history expeditions and Civil War records.

O13.03

9:40 SYMPOSIUM ON CYTOSPOIDIOSIS IN THE UNITED STATES OF AMERICA AND AFRICA: PREVALENCE OF CRYPTOSPORIDIOSIS AMONG HIV/AIDS PATIENTS AND NON- HIV/AIDS INDIVIDUALS IN MISSISSIPPI AND NIGERIA

Alexander D.W. Acholonu, Shantel Johnson, Kisha Humprey

Alcorn State University

Cryptosporidiosis is a disease caused by the protozoan parasite, *Cryptosporidium parvum* or *C. hominis*. It occurs worldwide and is a common cause of acute diarrhea in young children. Apart from infecting humans, *Cryptosporidium* occurs in a variety of animals including cattle, dogs, and cats. Cryptosporidiosis has been one of the most common causes of waterborne diseases of humans in the last twenty years. This causative agent may be found in drinking and recreational water contaminated with sewage or feces from humans or animals, or in uncooked foods contaminated with *Cryptosporidium*. The symptoms of cryptosporidiosis are usually watery diarrhea, stomach cramps, weight loss, dehydration, and a slight fever. People with HIV/AIDS, cancer, and transplant patients who are taking certain immunosuppressive drugs are all at risk for contracting *Cryptosporidium* infection. It is considered as one of the opportunistic infections for HIV/AIDS patients. This study was conducted to assess the status of cryptosporidiosis in Nigeria and Mississippi and compare the prevalence in the two areas. Available literature shows that not much work has been done on this disease in Mississippi and Nigeria. But there are more reports on it from Nigeria than from Mississippi and the prevalence is higher. Because of the public health importance of cryptosporidiosis, especially as it relates to HIV/AIDS, it is recommended that more studies be conducted on it in both Mississippi and Nigeria and that effective control measures be sought.

O13.04

10:00 QUALITY OF WATER RESOURCES AT FIVE LOCATIONS IN THE MISSISSIPPI DELTA

Julius Ikenga

Mississippi Valley State University

This study was undertaken to study the freshwater quality parameters at five locations in the Mississippi Delta. Water is an integral chemical component of all living organisms. As an essential life resource, water dictates both the quality and population densities of living organisms found in and around it. Frequent thunderstorms and prolonged rainfalls adversely impact bodies of water, including many ephemeral and intermittent water resource sites. A variety of wastes and pollutants are dumped into these bodies of water through surface run-offs and

ground water run-offs. In agricultural regions, such as the Mississippi Delta, where the use of pesticides and fertilizers by farmers are common, the effects of surface run-offs and ground water run-offs take on a more profound threat to human, bird and wildlife health. Water samples were collected using the LaMotte Water Sampler. Five water parameters were quantified using the Hanna 9828 Multiparameter probe and meter. Ten other parameters were tested using the Lab Aid qualitative water pollution kit. Dissolved oxygen in the tested samples ranged from 0.04 - 7.02 ppm. Total dissolved solids found ranged from 24 to 121 ppm and salinity levels of 0.02 - 0.11 ppm were also recorded. Phosphorous, silica, sulfide, and coliform bacteria were found in water from all locations. Copper, chromium, and cyanide were not detected in water from any location. The coliform was tested using the LaMotte Coliform Bacteria test kit. A more regular monitoring of all sites is indicated.

10:20 Break

O13.05

10:40 TSETSE FLY AND ITS IMPACT ON POVERTY IN AFRICA

Brandy Brown, Julius Ikenga, Julius Anderson, Catherine Bailey, Kevin Brown, Nahdra Curry, Ravin Byrd
Mississippi Valley State University

Tsetse fly in the genus *Glossina* is the notorious vector for the blood trypanosomes that cause African sleeping sickness. The latter is a systemic disease that becomes fatal when untreated. Three species of blood trypanosomes: *Trypanosoma brucei brucei*, *T. b. gambiense*, and *T. b. rhodesiense* are transmitted by the tsetse fly. *T. b. gambiense* is endemic to the West African countries and cause human chronic sleeping sickness (HSS). *T. b. rhodesiense* causes acute sleeping sickness and is endemic to the East African countries. Both the vector and the parasite occupy a geographic range between 15° North and 25° South latitudes across Africa. About 60 million people are at risk of HSS with about 45, 000 new cases reported annually. The signs and symptoms of the onset of HSS are non-specific but do progress to meningoencephalopathy and then death. Thus, HSS has become the leading cause of death, ahead of AIDS and HIV, in Africa. *T. b. brucei* causes nagana in livestock and other domestic animals. Three million livestock are lost annually due to nagana. The presence of tsetse fly and its activities deprive African farmers the ability to engage mixed farming, use of extensive lush lands for agriculture, drought animals for transportation and pulling of heavy ploughs, manure for fertilizing soil, hence, a lack of substantial crop production, which invariably leads to hunger and poverty.

O13.06

11:00 SYMPOSIUM ON CRYPTOSPORIDIOSIS IN THE UNITED STATES OF AMERICA AND AFRICA: PREVALENCE OF CRYPTOSPORIDIOSIS AMONG HIV/AIDS PATIENTS AND NON- HIV/AIDS INDIVIDUALS

IN LOUISIANA AND GHANA

Alexander D.W. Acholonu, Dominique Antonie
Alcorn State University

Cryptosporidiosis is a disease in humans and animals caused by *Cryptosporidium*, a protozoan parasite in the *Phylum Apicomplexa*. It affects the intestines of mammals including man. It was recently recognized as a cause of severe protracted diarrhea in persons with AIDS. *Cryptosporidium* infection in humans is characterized by watery diarrhea, cramping abdominal pain, weight loss, and flatulence. Diagnosis is based on identification of the oocysts in the stool. Literature review showed that minimal studies on the prevalence of cryptosporidiosis have been conducted in both Louisiana and Ghana. In Louisiana, the prevalence of cryptosporidiosis was reported to have increased from 2.9% in 1999 to 20% in 2004 before decreasing to 5.3% in 2008. In Ghana, it was reported among others that analysis of stool specimens from clinically diagnosed HIV/AIDS and HIV- seronegative patients revealed *C. parvum* in 28.6% of HIV/AIDS and 37.0% of the HIV-seronegative patients. This study was conducted to assess the status of cryptosporidiosis in Ghana and Louisiana and compare the prevalence in the two areas. *Cryptosporidium* is of public health importance, especially as it is a risk factor for HIV/AIDS patients. As such, it is needful that more epidemiologic studies be conducted on it in both Louisiana and Ghana.

O13.07

11:20 IS BRUGIASIS ON THE DECLINE?

Latrice Davis, Julius Ikenga, Iesha Jackson, Tiffany Day, Sonya Hentz, Alesha Horne
Mississippi Valley State University

Brugiasis is a zoonotic disease transmitted to humans through mosquito bites. *Mansonia* sp. and *Anopheles* sp. are two major mosquito vectors that transmit the filarid worms, *Brugia malayi* and *B. timori* to humans. Adult worms are viviparous and live in the lymph nodes and subcutaneous lymph nodes, where numerous microfilariae are shed. Microfilariaemia is periodic and appear advantageous for parasite transmission. The endemic areas for brugiasis overlap the pacific-geographic range for *Wuchereria bancrofti*, another formidable filarid parasite of humans. Brugiasis endemic regions invariably exhibit optimal breeding conditions for the mosquito vectors. Pathology includes lymphadenopathy, lymphagitis, fibrosis, hydrocele, and elephantiasis. Treatment with Ivermectin and diethylcarbamazine has drastically revolutionized incidences of microfilariaemia in humans. Patients misdiagnosed for loiasis run the risk of severe allergic reactions and even death, when treated with Ivermectin and diethylcarbamazine. Consequently, enthusiasm for human treatment is greatly curbed. Additionally, spreading urbanization and difficulties in reaching and treating the alternate animal hosts remain a major impediment to effective control and, hence, to expected decline of brugiasis.

**O13.08****11:40 WATER QUALITY STUDIES ON THE LOWER MISSISSIPPI RIVER**

Alex Acholonu, Donielle Drakes, Rachae Martin, Latasha Owens
Alcorn State University

Water quality standards are regulations that many different governments have adopted to protect public welfare and health. By testing the water we can appropriately address the specific problems of a water supply. It will help guarantee that the water source is being properly protected from possible contamination, and that suitable treatment is selected if and when necessary. The purpose of this study was to determine the presence of pollutants in the lower Mississippi River in the area of Port Gibson, MS and to find out if the river meets the Mississippi River Water Quality standards. During the month of October 2007, water samples were collected at three different sites, about fifty meters apart, in three replicates and at one week intervals from the lower Mississippi River in the Port Gibson area. They were taken to the laboratory and tested according to the manufactures of LaMotte pollution test kits. The chemical parameters tested and recorded in parts per million (ppm) were alkalinity, carbon dioxide, chlorine, chloride, water hardness, iron, nitrate, silica, sulfide, and zinc. The results were recorded, analyzed and compared with the Mississippi Water Quality Standard. Based on the results, the lower Mississippi River met the Mississippi Water Quality Standard with the exception of carbon dioxide, water hardness and iron. This investigation adds to the preliminary study conducted previously by Acholonu et. al. (2006).

**THURSDAY AFTERNOON
ELM ROOM**

O13.09**1:15 A REGIONAL STATUS OF LOIASIS**

Veronice Simmons, Julius Ikenga, Tiffany Little, Chiquita McDaniel, Christina Ybara, Sibbon Lawrence
Mississippi Valley State University

Loiasis is the wandering African eye-worm disease caused by the filarid worm, *Loa loa*. The latter infects the conjunctiva of the eye and is one of the filarid worms that infect about 657 million people annually. Loiasis was first reported from the West Indies, but no longer occurs there. The disease is currently endemic in the West and Central African countries and the equatorial Sudan. *Loa loa* is transmitted to humans by the hematophagous vector, *Chrysops langi*. The latter is a deerfly that is abundantly found in the swampy areas of the endemic regions. Common symptoms are intense pruritis, arthralgia, and fatigue. Current best treatment is effective for the microfilariae stage of the worm that is found in blood circulation of the host but not for the adult worms that are usually found in deep tissues. Eradication of the vector still remains a dire problem with no easy solutions.

O13.10

1:35 SYMPOSIUM ON CRYPTOSPORIDIOSIS IN THE UNITED STATES OF AMERICA AND AFRICA: PREVALENCE OF CRYPTOSPORIDIOSIS AMONG HIV/AIDS PATIENTS AND NON- HIV/AIDS INDIVIDUALS IN TENNESSEE AND KENYA

Alexander D.W. Acholonu, Tanea Fisher
Alcorn State University

Acquired Immune deficiency syndrome (AIDS) is a disease that attacks the immune system and as a result, the body is unable to fight off infections such as pneumonia, forms of cancer, and cryptosporidiosis. On the other hand, cryptosporidiosis, caused by *Cryptosporidium parvum* or *C. hominis*, is a disease that affects the intestines of mammals, including man. It is considered an opportunistic infection for HIV/AIDS patients. The mode of transmission is the fecal-oral-route. The oocysts are extremely resistant to chlorine which is commonly used for water treatment. The purpose of this study is to evaluate and compare the prevalence of cryptosporidiosis in Tennessee and Kenya. Based on literature review the prevalence for *Cryptosporidium* in Tennessee is 1.2% in 2003, 1.3% in 2004, and 0.6% in 2005. With respect to Kenya, an analysis of 4,899 samples over a two year study period showed the overall prevalence of cryptosporidiosis to be 4% and was highest among children 13-24 (5.2%) months of age and least among those 48-60 (2%) months of age. This is the result of one of several reports on the prevalence of cryptosporidiosis in Kenya. A review of literature reveals that there are more cases of cryptosporidiosis in Kenya than in Tennessee. In view of the fact that cryptosporidiosis exacerbates the severity of HIV/AIDS in infected individuals and leads to the patients' earlier demise, those diagnosed to be HIV/AIDS positive should be tested for cryptosporidiosis. Some palliative measures should be taken since there is no reliable treatment for this disease.

O13.11

1:55 SYMPOSIUM ON CRYPTOSPORIDIOSIS IN THE UNITED STATES OF AMERICA AND AFRICA: PREVALENCE OF CRYPTOSPORIDIOSIS AMONG HIV/AIDS PATIENTS AND NON- HIV/AIDS INDIVIDUALS IN GEORGIA AND TANZANIA

Alexander D.W. Acholonu, Deaundrea Smith
Alcorn State University

It is reported that, *Cryptosporidium parvum* was first recognized as a cause of human illness in 1976. In 1982 the number of reported cases began to increase dramatically along with number of HIV infected persons. This causative agent is an intracellular protozoan parasite. The purpose of this study was to assess and compare the prevalence of *Cryptosporidiosis* in Georgia and Tanzania. Studies conducted in Georgia revealed that in 2003 the prevalence of cryptosporidiosis was 3.5%, in 2004, 4.9% and in 2005, 1.8%. In Kilimanjaro, Tanzania of the 122 HIV patients studied, 22 (18%) were infected. This is the result of one of a few reports on the prevalence on

cryptosporidiosis in Tanzania. Most of the cases of cryptosporidiosis in Tanzania were related to HIV/AIDS. The most common cause of infection in the United States was due to water contamination. Available literature shows that not much work has been done on this disease in Georgia and Tanzania. But there are more reports on it from Tanzania than from Georgia and the prevalence is higher. Because of the public health importance of cryptosporidiosis, especially as it relates to HIV/AIDS, it is recommended that more studies be conducted on it in both Georgia and Tanzania and that effective control measures be sought. The need for more studies on cryptosporidiosis in humans cannot be over emphasized.

2:15 Divisional Business Meeting

**THURSDAY EVENING
GRAND BALLROOM**

6:00 Dodgen Reception and Divisional Poster Session

P13.01

COMPARATIVE STUDY OF PEPPERS (*Capsicum* spp) FOR INSECT RESISTANCE

Tahir Rashid¹, Chinthakuntla Reddy¹, Wesly Whittaker¹, Patrick Igbowke¹, Craig Abel², Larry Adams²

¹Alcorn State University MS, ²USDA-ARS

Three newly developed ASU pepper lines, Ca15xCa8 (*Capsicum annum* varieties), Cb24xCb7 (*Capsicum baccatum* varieties), and Ccs9xCcs8 (*Capsicum chinense* varieties) were compared with conventional *Capsicum* sp (Cayenne, Giant bell pepper and Jalapeno pepper) for insect resistance and yield potential. Pepper plants were hand transplanted in the field at two different locations. Each location had three replications of each variety planted in a single row of 10 plants per plot. Insect populations were monitored with three replications of each pheromone and yellow/blue sticky traps installed at both locations throughout the growing season. The insects were collected from the traps and all peppers harvested from each plant biweekly. All pepper varieties differed significantly in percent insect damage and fruit yield at both test locations. Giant bell pepper had significantly higher insect damage to the fruit than did Cb24xCb7, Ccs9xCcs8, and Cayenne. Cb24xCb7 had the lowest percent insect damage and highest yield among all varieties tested in this experiment. All varieties had significant difference in percent fruit yield at different harvest dates except Cb24xCb7 and Jalapeno peppers. Newly developed ASU pepper lines are expected to provide some insect resistance and higher yields thus minimizing the need of excess insecticide applications.

Index of Authors

Key to Index:

O = Oral Presentation

P = Poster Presentation

1st number is Division

1	Agriculture and Plant Science (pages,
2	Cellular, Molecular, and Developmental Biology
3	Chemistry and Chemical Engineering
4	Ecology and Evolutionary Biology
5	Geology and Geography
6	Health Sciences
7	History and Philosophy of Science
8	Marine and Atmospheric Sciences
9	Mathematics, Computer Science, and Statistics
10	Physics and Engineering
11	Psychology and Social Sciences
12	Science Education
13	Zoology and Entomology

2nd number is Abstract Number within oral presentations or poster session

Eg. O3.04 = oral presentation (O) number 4 in the division of Chemistry and Chemical Engineering (3)

4-H, Bolivar County	P12.02	Anjaneyulu, Y.	P8.02	Baria, Lawrence R.	O5.10
Abbas, Noah	O2.04	Anthony, Joya	P3.15	Beck, Carolyn	O6.04, P6.25, P6.40
Abdelrahma, Sumia	P6.11	Antonie, D.	O13.06	Bednar, Anthony	O3.17
Abel, Craig	P13.01	Aranciba, R.	P1.04	Beecham, Rachel	O1.04
Acholonu, Alex	O13.08	Arcizet, Fabrice	P2.02	Begonia, Gregorio	O1.02
O13.03, O13.06, O13.10, O13.11		Arends, S.J. Ryan	O2.12	Begonia, Maria	O1.02
Ackley, Elise	O12.19	Armstrong, George	O3.15	Belk, Sheila	O6.12
Adams, Larry	P13.01	Arroyo, n.	P1.04	Bellini, Tommaso	O10.11
Addae, Cynthia	O1.03	Arslan, Zikri	O3.17, P3.18, P3.19, P6.33, P8.02	Bender, Susan	O12.07, O12.18, O12.19
Afonso, Domingos	P3.18	Awwad, Hibah O.	O2.14	Benghuzzi, Ham	P6.01, P6.02, P6.03, P6.06, P6.08, P6.09, P6.10, P6.11, P6.12, P6.13, P6.14, P6.18, P6.34,, P6.16, P6.17, P6.19, P6.20, P6.26, P6.36, P6.37, P6.38, P6.39
Agachan, Sabri	O3.17	Ayensu, W.	P2.13, P6.43	Bennett, R.	.O7.05
Agyepong, Kwabena	O9.12	Baggett, James	O12.10	Bennett, William	O1.18
Albers, Ashley	P11.16	Baghai-Riding, Nina	P12.02	Bentley, Joseph	P3.10
Albritton, Hannah	P6.32	Bailey, Catherine	O13.05	Berry, R. Tyler	O5.09
Al Fadhli, Hussain	O11.04	Bailey, Jessica	P6.24	Berry, Tyler	O5.03
Alford, Mac	O4.05, O4.18	Baker, Rodney	P6.42	Beverly, Milton	O1.01
Al-Hamdan, M.	O6.11	Baker, Rodney C.	P6.07, P6.28, P6.29	Bey, George	O5.13
Ali, Kamal	O10.05, O10.15, O10.19	Baldwin, Brian	O1.06	Bhattacharyya, S.	P2.07
Ali, Mohammed	O10.01	Banahan, Abigail	P11.07	Bhavsar, Yogini	O3.05
Allam, Sumalatha	O9.01	Bandara Herath, H.M.T.	O2.10, P6.21	Bisley, James	P2.02
Allen, Andrea	P2.17	Banerjee, Souvik	O3.01	Biswas, P. K.	P3.05
Alli, Toyin	O9.03	Banks, Pamela	O11.10, P11.11	Blackwell, Eric	P12.02, P4.02
Ameera, H.	P3.13	Banks, Pamela G.	O11.11		
Anderson, Julius	O13.05	Banks, Tracey	O12.20		
Anderson, Leslie	P11.15	Barber, Hayley	P6.28		
Aneja, Arun	P6.24, P6.26	Barber, Hayley K.	P6.29		



Bland, Hilliary	O2.15	Channu, V.	P10.04	Day, Tiffaney	O13.07
Blue, Marketta	P2.05	Chatla, K.	O1.15	Delancey, Jr., James	
Bly, Patrina	P9.01	Chen, Bang-Yuan	P1.05,	P3.08	
Blythe, Eugene	O1.05	0.1.17		Deloatch, Justin	P9.01
Bograd, Michael B. E.		Chen, Wei-Lien	O1.13,,	Dement, Angela	O4.05
O5.06		O1.10		Demerite, Teresa	P3.02
Booth, Khristina	O2.07	Chen, Yixin	O9.05,	DePaola, Brett D.	O10.21
Bordenstein, Seth	O12.19	O9.07, O9.15		Derrick, Dana	O13.02
Boueiz, Adel	O2.15	Chiang, Patrick	O12.10	Dharmika A.	O2.10
Bowen, Bo	O6.05	Chinchar, Gregory	O2.13,	Dhar, Mallika	O10.13,
Boyd, Aaron P.	O12.15	P2.05		O10.14	
Boyles, Donald	P10.01	Chisolm, Russell	P6.32	Dibble, Eric	O4.01
Brackin, Bruce	O6.12	Cho, Hyun Jung	O8.01,	Dib, Hazar	O10.02
Brackin, Martha	O6.12	O8.04, O8.05		Dickerson, Dena	O13.02
Brantley, Rebecca	O4.18	Chornes, Ashley	O3.20	Dietz, Heather	P6.37
Bridges, Susan	O9.11	Church, James	O9.07	Dindo, John	O8.06
Brinkman, Katie	O2.06,	Clark Blickenstaff, Jacob		Dockery, David	O5.02,
O2.07		O12.06		O5.04	
Britson, Carol	P4.01	Clark, Noel A.	O10.11	Doucette, Matt	O2.01
Brodeur St-James, M.	P11.20	Clarkson, Marguerite	P6.27	Douglas, Erica	P11.14
Brook, Dan	O8.06	Clary, Renee	O12.05,	Drakes, Donielle	O13.08
Brown, Andrea	P2.09,	O12.16		Dukes, Matthew	P3.06
P2.10		Cliburn, J. William	O4.07	Duncan, Jan	O12.20
Brown, Brandy	O13.05	Cohly, Hari	P2.13,	Dunn, Andrew	P2.19
Brown, Kevin	O13.05	P6.43		Earleywine, Bonnie	O4.01
Brown, Shelia A.	O12.15	Coleman, John	O6.12	Ellis, April	P6.02
Brown, Shyretha	P2.13	Coleman, Kayla	O12.18	Ervin, Elizabeth K.	P10.05
Buchwalter, Abby	O2.08	Cole, Stephan	P6.39	Estis, Lamar	O12.13
Buckley, Lecretia	O11.03	Collins, Jo'Nee	P2.07	Etchison, Joshua	O10.15
Burgess, Shane C.	P2.20	Comerford, Anya	O12.13	Exley, Sarah	O12.19
Burks, Stephanie	P6.29,	Conner, Mary Helen	O6.05	Fain, Glenn	O1.05
P6.42, P6.07		Cook, Bobby	O3.10	Fair, Joshlean	O2.08
Burrage, Derek	O8.03	Cook, Cindy	O12.19	Farah, Ibrahim	O3.17,
Burton, Mary Jane	P6.22	Corbitt, Melody	O1.09	P6.33	
Butler, Afrachanna	O1.01	Couch, D. Bruce	P6.07	Faruque, Fazlay	O6.11,
Butler, David	O5.14	Cowden, Kimberly	O11.07	O6.12	
Butler, Kathy	O2.11	Cox, Caroline	P3.04	Ferguson, Shernica	P2.12
Butler, Kenneth	P6.05,	Cox, Tammy	O12.19	Feugang, Jean	P2.12
P6.23		Crosson, William	O6.11	Fisher, Tanea	O13.10
Butler, Margarette	O6.08	Crout, Richard L.	P8.07	Fitzgerald, Rosa	O8.08
Byrd, Kim	P6.13	Cuadra, Evelin	O1.18	Fitzpatrick, P.	P11.13
Byrd, Ravin	O13.05	Curry, Kenneth	O1.05,	Flegle, Lauren	P11.07
Cacapit, Yinessa	P1.03	O7.02		Flowers, Roma	O12.12
Cai, Yihua	O8.02	Curry, Kenneth J.	O1.14,	Fontaine, William	O5.13
Cameron, Joseph	P6.01,	O7.01, O7.05		Ford, Samantha	P3.03
P6.02, P6.03, P6.06, P6.33,		Curry, Nahdra	O11.07,	Fortenberry, Steven	O10.06
P6.34		O13.05		Fountain, Margot	P11.04
Camhi, Sarah	P11.16	Curtis, Sarah	O12.11	Francois, Aaron	O13.01
Campbell, Jinx	P1.01	Daigle, Crystal	P6.38	Franklin, Laura	P6.11
Camp, Howard	O10.21	Dale, Glenn	P3.24	Freeman, M. Linley	
Capello, Heath	O4.04	Dang, Ngoc	O2.14	P6.07, P6.29	
Carpenter, Hayley	O12.13	Dasary, Samuel	O3.20	Gadd, Whitney	P11.07
Carter, Casey	O6.02	Davis, Brandon	O9.13	Gadewadikar, J.	O9.12
Carter, David	O1.01	Davis, Brittny	P3.01	Galicki, Stan	O5.07,
Carter, Justin	P10.02	Davis, Colette	P2.10	O5.11, O5.12	
Cathey, Orian	P9.03	Davis, Collette	P2.09	Garrard, Susan	O5.06
Celik, B. Gokhan	O10.02,	Davis, Jessica	P6.40	Garrison, Wendy	O10.20
10.12		Davis, Latrice	O13.07	Gearba, Alina	O10.21
Chakraborty, S.	P2.19	Dawson, A.	P2.06	Gesham, Lecia	P6.04
Chamberlain, J.	P6.24	Day, Elaine	O12.01	Gibson, Don	P3.16

Gischel, Melissa	O6.04	Hereford, M.	P6.27	Johnson, Leroy	O12.20
Glorioso, Megan	P3.07	Hernández, C. Liliana	O4.18	Johnson, Leslie	P6.19
Goli, Mudlagiri	O12.03	Herron, Sherry	O12.04,	Johnson, Michael	P6.33
Gonzalez, Rose	P11.23		P12.03	Johnson, Ricky	O1.18
Gooseberry, Kimberly		Heydari, Ezat	O5.10	Johnson, Shantel	O13.03
	P11.05	Hickman, Tyrah	P6.34	Johns, Ursula	O2.01
Gopal, Tamilselvi	O12.04,	Hicks, Braxton	P11.24	Jones, Angshylea	O12.18
	P12.03	Highfill, Lauren	P11.27	Jones, Brittney	P11.06
Gorb, Leonid	O3.12,	Hildebrandt, Drew	P6.30	Jones, Candace	P11.19
	O3.13	Hodges, Brandon	O12.19	Jones, Luella	P2.08
Gordon, Sandra	P6.13	Hoeksema, Jason Dale	O4.06	Jones, Paul	P3.23
Goswami, Rubella	O1.07	Holland, Eric	O1.01	Jones, Reid	O11.08
Green, Britney	P6.41	Hollis, T. Keith	O3.09	Jones, Sarah	P3.10
Greene, Maria	O5.11	Holmes, Lenore	O3.03,	Jones, Selena	P6.33
Griffin, Jelani	O3.18,		P3.17	Jones, William S.	P3.21
	O3.21	Ho, Meng-Hsuan	O2.05	Jriffin, Jelani	O3.08
Grubbs, Amber	O12.14	Hopkins, Brian W.	P9.04	Jung, Yean-Sung	P2.18
Guillory, Bobby	P2.15	HOQUE, Jr., CHARLES		Jung, Y.	O1.08, O1.12, O1.16,
Guo, Laodong	O8.02		O1.16		O1.17
Guo, Yan-Lin	P2.19	Horne, Alesha	O13.07	Kalluru, Rajamohan R	
Hale, Jason	O9.17	Hossain, Alagmir	P3.22		P10.04
Hall, Margot	O6.04,	Hossain, Md. Alamgir		Kamenkovich, Vladimir	
	P6.25, P6.40		P3.14		O8.07
Hall, Whitney	P6.09	Howden, Stephan	O8.03	Kastler, Jessica	O12.08,
Hamadain, E.	O6.05,	Huff, Schuyler	O12.19		O8.06
	O6.10, O9.16, P6.22	Huffstatler, Curt	O12.02	Kaya, Attalya	P2.12
Hamer, Joshua	O12.01	Hulbert, Matthew H.		Keeton, Karmel	O12.12
Hamme, Ashton	O3.03,		O7.05	Kelley, Kashonda	O2.10,
	O3.04, P3.17	Hullitt, Joanna	P6.03		P6.21
Hammons, Heather	P6.16	Hull-Vance, Stacy	P6.16,	Keng, Rachel	O5.12
Hampton, April	P11.17		P6.19, P6.20, P6.36, P6.37,	Keralapurath, M..	O1.15
Hanbury, David	P11.27		P6.38, P6.39	Kermode, John	O2.02
Hanson, Phyllis	O2.08	Humphery, Kisha	O13.03	Khanna, Rocky	P11.18
Haque, Amin	O10.03,	Humphrey, II, George		Khan, Shaila	O11.02,
	O10.16		P6.30		P11.10, P11.12, P11.19, P11.25
Harrell, Andrew W.		Igbowke, Patrick	P13.01	Kholod, Yana	O3.12,
	O7.04, O9.02	Ighoavodha, Miriam			O3.13
Harris, Antoneicka	P2.01		O1.02	Khosravi, Parvanejh	
Harris, Emma	O3.19	Ikenga, Julius	O13.04,		P1.05
Harris, James	O5.13,		O13.05, O13.07, O13.09	Kianian, Shahryar	O1.04,
	O5.14	Isokpehi, Raphael	P2.13,		O1.07, P1.03
Harris, Lyndsay	P2.08		P6.43	Killcreas, Chad	O5.08
Harris, Tyrel	P6.08	Izevbigie, Earnest	P6.04	Kimble, Reginald	P2.14
Harvey, Debra	O12.11	Izevbigie, Ernest	P3.02,	Kim, Tae-Jo	P2.18
Harvey, Kristopher L.			P3.03	KIM, TAEJO	O1.08,
	P2.03	Jackson, Alonzo	O12.19		O1.09, O1.10, O1.12, O1.13,
Hassoun, Paul	O2.15	Jackson, Iesha	O13.07		O1.16, O1.17, P1.04, P1.05
Haug, Derrick	P6.10	Jacquín, Kristine	O11.05,	KINGERY, WILLIAM	
Hawkins, Phyllis	O12.20		P11.01, P11.02, P11.03, P11.20,		O1.06
Haymon, Porshia	O11.11,		P11.21	Kinnell, Ann Marie	O11.01
	P11.11	Jang, Hyounguk	O10.21	Kipapa, Barnabas	O10.18
Haymon, Portia	O11.10	JARRE, BROWN	P3.13	Kirui, Philemon	O8.05
Hearn, Camden	P9.01	Jawor, Jodie	P12.03	Klindworth, Daryl	O1.04
Heifetz, Yael	O2.11	Jeffery, Lotz	P8.09	Klunig, James	P3.02
Hemphill, Jammy	O12.19	Jeffrey, Luvallb	O6.11	Knott-Scott, Ena	P11.05,
Henderson, J.	P9.01	Jenkins, Tomekia	O12.20		P11.06, P11.15, P11.17
Henegar, Jeffrey	O2.13	Jensen, Carl	O9.14	Koo, Jaheon	P1.05
Hentz, Sonya	O1.04,	Johnson, James T.	P6.25	Kosenkov, Dmytro	O3.12
	O13.07	Johnson, Joseph	P11.11	Krantz, Cindel	P6.36



Kuljaca, Ognjen	O9.12	Manning, Melissa	P6.27	Molenaasr, Esther	P3.04
Kumar, Ranjit	P2.20	Mansfield, Doug	O12.10	Morales, Carlos	O10.05
Kwembe, Fanen	P2.13	Mantena, Deepak	O9.10	Moran, Mark	O10.11
Laiju, Meherun	O11.09	Marshall, Donna	O1.14	Morgan, Sarah	O3.10, P3.23
Lamb, Jennifer	P11.27	Martin, Rachae	O13.08	Mosca, Nicholas	O6.10
Lampkin, Edna	O3.06	Masilla, A.	P11.01, P11.02, P11.20	Mosley, Thomas	P6.05, P6.23
Lancaster, Jake	O10.10	Mason, Melissa	O1.18	Musselman, Zachary	O5.08, O5.09
Lancaster, William	O10.20	Mass, Gerylalyn	P11.12	Nadtochiy, Andriy	O3.09
Lanclos, C.	O9.13	Massodi, Iqbal	O2.09	Nagle, Jacklyn	P11.21
Langford, Ann Marie	P2.20	Masterson, D.	O3.01	Nalls, Kristin	O6.10
Larson, Steven	O1.01	Matta, Dr. Frank	O1.11	Nanayakkara, N..	P6.21
Lasater, Thomas	P6.31	MATTA, FRANK	O1.10	Nan, Xiaofei	O9.15
Lawler, Amanda	O4.07	Matthews, G.	P6.44	Nash, Calendria	P6.19
Lawrence, Mark	O9.11	Mattox, Johnny	O12.02	Natarajan, Harene	P8.08
Lawrence, Sibbon	O13.09	Maung, Khin	O10.13, O10.14	Nechaev, D.	O8.07, P8.05, P8.06
Lea, Melissa	P11.04, P11.14	May, Brittany	P6.31	Nica, Cristina	O8.01
LeDuff, Phillip	P11.22	May, Scott	O1.01	Novak, Julie	O11.07
Lee, Candace	O1.07	McCarty, Anthony	O1.01	Ntoni, Jennifer	O1.02
Lee, Chiquita	P3.12	McCleery, W. Tyler	O10.07	Ocheing, J.	P2.15
Lee, Jim	O4.07	McClendon, Eric	O3.04	Ochs, Clifford	O4.03, O4.04
Lee, Ken	P3.02, P3.03, P3.15, P3.16	McClendon, Nicole	O12.12	O'Driscoll, Kieran	O8.07
Leszczynski, Jerzy	O3.11, O3.12, O3.13	McDaniel, Chiquita	O13.09, O3.16	Offiah, Natalie	O12.07
Lewis, Carina	O6.09	McDonald, Kelley	P6.08	Oglesbee, Matthew	O12.19
Lewis, Jarrett	P11.16	McDowell, Roderick	O6.01	Omollo, Ann	O3.04
Lezon-Geyda, Kimberly	P2.08	McEwen, Jonathan	P3.21	Osburn, Chris	O8.03
Li, Hui	O6.11	McGee, Ashley	P6.15	Ostrovskii, Igor	O3.09
Limaye, Ashutosh	O6.11	McGinnis, E. Menton	P11.14	Owens, Latasha	O13.08
Littlefield, Robert	O11.07	McGuire, Sarah Lea	O12.19	Oyeleye, Mary	O2.06
Little, Tiffany	O13.09	McHenry, Melanie	P8.02	Pan, Chudong	P8.06
Li, Yao	P8.05	McKeown, James	O12.19	Pande, Manju	P1.02, P6.15
Lochhead, Robert	P3.24	McKone, Kathy	O12.19	Panicker, Girish	O1.11
Locke, Lea K.	P8.07	McLean, Timothy	P2.16	Pantelev, Gleb	P8.06
Loebl, Andy	O9.13	McMillen, Robert	P11.23	Parajuli, Suman	O3.14
Logan, Whitney	P2.11	McPherson, Dacia	O10.11	Parson, Ryan	P8.10
Lopez, Mariper	P6.15	McWright, Nicole	P3.24	Partee, Yakisha	P2.15
Lott, Myron	O9.09	Meade, John	P6.32	Patlolla, Babu	O12.20
Lotz, Jeffery	P8.10	Mead, Lawrence	O10.06, O10.07	Paul, Ian	P11.24
Love, Jeffrey A.	P6.07, P6.29	Meadows, Angela	P2.16	Payton, Danielle	P3.03
LuAllen, Jasmine	P3.15	Medina, Victor	O1.01	Peavy, Michael	P3.05
Luckett, Christopher	P8.08	Meeks, Gabrielle	P9.02	Peculis, Brenda	P3.01
Lu, Duanjun	O8.08	Meghanathan, Natarajan	O9.01	Pedigo, Susan	O3.05
Lui, Heping	P8.04	Meinhardt, Steven	O1.07	Peebles, E. David	O1.15
Lukose, Susan	O9.08	Memilli, Erdogan	P2.12	Penamon, Phoebe	O3.02
Luo, Xuan	P3.03	Miao, Wujian	O3.07, O3.14, O3.19	Penman, Alan	P6.05, P6.23
Lu, Y.	O1.16	Miller, Debbie	O6.05	Perry, Alita	O6.02
Mack, Paul	O2.11, O4.02	Miller, Gloria	O1.02	Perry, Heather	P6.16
Ma, Din-Pow	O2.05	Milliken, K. Troy	P3.11	Peterson, Dan	P2.11
Magee, Rogerick	P8.03	Minchew, Douglas	O1.16	Peturis, Kileigh	O10.07
Mahajan, Devinder	O3.15	Misra, Rahul	O3.10	Phelps, Aimee	P2.01
Mahone, William	O3.16, P3.12	Mitchell, Haley	O11.08	Phillips, George	O5.05
Maisonet, Virgilio	O8.03	Mitchell, Kanieshia	O3.08	Phipps, Kathy	O6.10
Mallik, Sanku	O3.06	Mittwede, Peter	P6.23	Pierce, Christine	P6.35
Mamoon, Naila M.	P6.28			Pittman, M. Ashley	P6.28,

P6.29		Rosenfield, David	O8.07	Snarr, Brian	P2.01
Piva, Marta	O1.03	Rout, Ujjwal	O2.04	Somlai, Alline	P3.10
Place, Eric	O12.10	Roy, Jiben	O6.09	Spencer, Patrick	P4.02
Pongruktham, O.	O4.03,	Russell, Erin	O3.17	Spiers, James	O1.05
O4.04		Ruth, Paul	O9.06	Spitsbergen, John	O2.03
Potter, Philip	P3.09	Ruth, Paul M.	P9.04	Spranger, Michael	O8.06
Pressley, Brad	O12.02	Ryan, Parson	P8.09	Standifer, Kelly M.	O2.14
Prewitt, M. Lynn	P2.09,	Saeed, M. A.	P3.14,	Starnes, James	O5.03,
P2.10		P3.22		O5.04	
Pulikanti, Radhakrishna		Safaya, Eshan	P6.15	Steele, Chelsea	O9.11
O1.15		Salkeld, Susan	O9.11	Stegall, Michael	O13.01
Purser, Christine A.	P6.07	Samarakoon, T.	O4.05	Stenina, Olga	P2.07
Pu, Xinzhu	P3.02	Sample, R.	O2.10,	Stephens, Gena	O2.08
Pyla, Rajkumar	P2.18	O2.13, P6.21		Stevens, Jacqueline	P2.14
Quinn, Jessica	P11.18	Sarigul, Erol	O9.12	Stinson, Gerald	P2.02
Quinn, Tiffany	P6.38	Sarpong, Daniel	O6.07	Stockwell, William	O8.08
Quintana, Angela	O12.10	Scott, Michael	O3.06	Stokes, Jeff	O12.19
Radke, Susanne	P2.08	Scott, Renada	O2.12	Stokes, Kenita	P6.06
Rai, Uma	O3.18	Senapati, Dulal	O3.20,	Strickland, Leah	O12.19
Rand, Centavia	P6.39	O3.21		Stripling, Andrea	P11.01,
Randolph, Erica	O2.02	Shack, L. Allen	P2.20	P11.02	
Rankin, Bethany	O3.15	Shadwick, Steven	P3.04	Sullivan, Basil	P6.37
Rashid, Tahir	P13.01	Shah, Mudessar	O10.21	Sullivan, Donna	O12.19,
Raspet, Richard	O10.20	Shah, Pratik	P2.20	O2.10, P6.21	
Raucher, Drazen	O2.09	Shariat, Zia	P2.06	Sullivan, Rani W.	O10.08
Rauch, Thomas	O4.07	Shaw, Joyce M.	P12.01	Surber, Kirk	P6.01
Ray, P..	O3.08, O3.18, O3.20,	Showi Showemimo, P.	O12.17	Sutton, Victor	O6.05
O3.21		Silva, Dr. Juan	O1.11	Swilley, Sharonda	P11.24
Reddy, Chinthakuntla	P13.01	Silva, Juan	P1.05,	Sylvia IV, John	O7.03
Reddy, Remata	O8.08	O1.08, O1.09, O1.10, O1.12,		Tardy, Felicia	P6.18
Reddy, R. Suseela	P8.08	O1.13, O1.16, O1.17, P1.04		Tawfik, Hazem	O3.15
REddy, Suseela	P8.01	Silva, Juan L.	P2.18	Taylor, Antoinette	O1.02
Reed, Wendy L.	O2.01	Simmons, Rache	O6.03	Taylor, Herman	P6.05,
Reese, Kanasha	O11.02,	Simmons, Veronica	O13.09	P6.23	
P11.10		Simms, A.	O11.05,	Taylor, Melissa	P3.01
Register, Adelle	O12.09	P11.03, P11.23		Taylor, Tamika	P6.10
Reid, James	O9.03	Simsiriwong, Jutima		Tchounwou, Paul	O8.08,
Reznikoff, Bill	O12.19	O10.08		P2.14, P6.41, P6.43, P8.02	
Richards, LaToya	P6.17	Sinegal, Allen	O10.01	Temu, Vitalis	O1.06
Richardson, Kiara	P6.42	Singh, Anant	O3.08	Teng, Fei	O9.05
Richardson, Rhea	P6.10	Singh, Anant Kumar		Testa, J. Sam	P9.04
Richmond, David	P1.01	O3.21		Thaw, Andrew Kurt	
Rickman, Douglas	O6.11	Singh, Madhu	O11.04,	P11.18	
Riding, Nina	P4.02	P11.26		Thead, Lauren	O4.02
Rishi, Anantharama	P1.03	Sitole, Lungile	O3.04	Theard, Kim	P6.11
Risica, Patricia	P6.31	Slaughter, Jr., Reo	P6.25	Thomas, DeMarcus	O9.04
Roach, David	O9.17	Sly, Channing	O2.09	Thomas, Landon	O11.06
Roach, Lauren	P2.17	Smith, Crystal	P3.23	Thomasson, Thomas	
Robertson, Rhonda	P3.23	Smith, Deaundrea	O13.11	P6.24	
Robinson, Brittany	P6.04	Smith, Jessie	O12.14	Thompson, David	O5.01
Robinson, Brittny	O2.02	Smithka, Paula	O7.02	Thompson, J.	P3.14,
Robinson, Shadow	O10.09	Smithka, Paula J.	O7.01,	P3.22	
Robins, Taiquitha	O10.11	O7.05		Thompson, S.	P11.25
Rockhold, Rob	O12.19	Smith, Keonia	O3.20	Thompson, William	P8.10
Rockhold, Robin	O2.10,	Smith, Stanley	P6.42	Tillis, Catrice	P11.26
P6.21		Smith, Stanley V.	P2.03,	Todd-Brown, Lynette	
Rogers, Phillip	P10.05	P6.07		O2.15	
Rohm Young, D.	P11.16	Smith, Tina G.	P6.07,	Torres, Deborah	O6.02
Rosado, Dale	O3.01	P6.29		Trachy, Marc	O10.21

Trier-Rourke, Madeline P12.01	P3.21	Williams, Vicdaly Williams, Zenova	O12.08 O11.10,
Trussell, Ashley N. P2.03	Wallace, Kendra P2.04	O11.11, P11.11	
Truss, Genia O12.19	Walters, Eric P2.17	William, Thompson P8.09	
Tucci, Michelle O6.01,	Wandersee, James O12.05,	Willis, Mercedes P2.09	
O6.06, P6.01, P6.02, P6.03,	O12.16	Willis, Merceds P2.10	
P6.06, P6.08, P6.09, P6.10,	Wang, Shijun O3.07,	Wilson, Felisa P6.17	
P6.11, P6.12, P6.13, P6.16,	O3.19	Wilson, Mary P11.04	
P6.17, P6.18, P6.19, P6.20,	Wang, Xuri O8.02	Wilson, Pierre P2.09,	
P6.26, P6.34, P6.35, P6.36,	Watkins, Linda P6.22	P2.10	
P6.37, P6.38, P6.39	Watkins, Marquita O2.03	Wilson, Sean P2.06	
Tuluri, Francis P8.01	Watson, B.. O12.09	Winton, Bradley O5.10	
Turner, Marla O6.03	Watson, Sheree P11.27	Witcher, Anthony O1.05	
Udemgba, Chigozie O4.06	Weaver, J. P12.01	Witcher, Carrie O1.14	
Udemgba, Chinelo O3.05	Webb, Demareo P6.43	Womack, Sharon O1.15	
Ullmer, Katelyn P11.04	Webb, Odis P3.17	Woodall, Jr., James P6.12	
Usry, Shanna P6.09	Weiss, D. O2.12	Wood, D. P3.11	
Valente, E. P3.13	Wellman, Susan E. P2.03	Wood, Jeff P9.01	
Vance, Stacy P6.08,	Wells, Adrienne P2.04	Woods, Melanie O12.19	
P6.09, P6.11, P6.13	Wells, Katrena P1.02	Wright, Brittany P11.23	
Vann, Rhonda O1.18	Wenzel, Bruce P3.15	Wright, Jenna P10.03	
Vargas, Amanda O6.02	Werneth, Charles O10.13,	Wu, Xiaoqin P9.03,	
Venkatraman, R. P3.13	O10.14	P9.05	
Vera, Michael O10.17	Wessles, Andy P2.01	Xu, Steven O1.04	
Veshapidze, Giorgi O10.21	Wesson, Joel O8.03	Yates, Annie O12.19	
Vick, M.D., Laura P6.30	West, Jamal P8.04	Ybara, Christina O13.09	
Vig, Parminder P6.15	White, Ashley P3.15	Yedjou, Clement P6.41	
Vucovich, Lauren P11.14	White, Thomas Grant P3.20	Yerramilli, A. P8.01	
Vunnam, Nagamani O3.05	Whitley, Dexter O2.13,	Yoder, Zachary J. P6.07	
Wadkins, Randy P3.06,	P2.05	Yonge, Chandler O11.05	
P3.07, P3.08, P3.09	Whittaker, Wesly P13.01	Yu, Hongtao O3.20	
Wahome, Joseph P1.02	Whittington, Alex P6.12	Yu, Weiyong O3.17	
Walba, Dave M. O10.11	Whitwam, Ross E. O2.06,	Yu, Xiaozhen P3.09	
Walker, Alice P2.14	O2.07	Zaman, Md O1.03	
Walker, Allison P1.01	Wierdl, Monika P3.09	Zanchetta, Giuliano O10.11	
Walker, Antrice P6.42	Wiggins, Walker O3.01	Zegowitz, S. O2.06,	
Walker, Ivan O10.19	Wilkins, Renee P6.14	O2.07	
Walker Jr., E. P10.04	Williams, Bennett P2.04	Zereen, Fahmida P3.19	
Walker, Sharon O8.06	Williams, Blair O12.14	Zhang, Yu P8.04	
Wallace, Karl O3.07	Williams, Kimberly O10.12	Zheng, Yufeng O9.12	
Wallace, Karl J. P3.20,	Williams, Quinton O8.08,	Zhou, Jennifer P6.36	
	P8.08, P10.04	Zhu, Chenhui O10.11	
		Zifodya, Jerry O6.06	

