

Tennessee Academy of Science

TAS

**Program
of the
119th Meeting**

**The University of Tennessee, Knoxville
Carolyn P. Brown University Center**

October 29-30, 2009

Institutional Sustaining Members of the Tennessee Academy of Science

Austin Peay State University
Middle Tennessee State University
Motlow State Community College
Rhodes College
Lincoln Memorial University
Tennessee Technological University
The University of Tennessee, Knoxville
The University of Tennessee at Martin
The University of Tennessee Space Institute
Volunteer State Community College

Affiliated Societies of the Tennessee Academy of Science

American Association for the Advancement of Science
Barnard Astronomical Society
Clarence T. Jones Memorial Observatory
National Association of Academies of Science
Tennessee Association of Science Department Chairs
Tennessee Entomological Society
Tennessee Psychological Association
Tennessee Junior Science and Humanities Symposium
Tennessee Science Teachers Association

TAS Home Page Information

For information about TAS, including information for the annual and collegiate division meetings, the Tennessee Visiting Scientist Program, the membership list, and more, visit the TAS website at:

<http://www.mtsu.edu/~tnacadsc/>

TAS Future Meeting Sites

2010 Tennessee Technological University

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ANNOUNCEMENTS

Registration: Meeting attendees may register by mail (see previous mailing) or onsite in the Carolyn P. Brown University Center.

Luncheon Tickets. Extra tickets may be available at the registration table.

Membership: Application forms for membership in the Tennessee Academy of Science will be available at the Registration Desk. A completed application accompanied by first year dues may be left for the TAS Treasurer at the registration table or mailed to: Dr. Steven Murphree, Department of Biology, Belmont University, 1900 Belmont Blvd., Nashville, TN 37212-3758. Current annual dues by category are: Regular \$40; Sustaining, \$50; Supporting, \$100; Life, single payment \$400; Student or Emeritus, \$10. Membership includes a subscription to the TAS Journal.

MEETING SCHEDULE

Thursday, October 29

6:00 – 10:00 **TAS Executive Committee Meeting**
Four Points by Sheraton Hotel, Parkview A/B

Friday, October 30

8:00-3:00 **Registration – Tennessee Auditorium Lobby**
Carolyn P. Brown University Center.

9:00 -10:00 **Plenary Lecture – Tennessee Auditorium**
“Will Our Great Smoky Mountains Someday Go Up In Flames?”
Dr. Henri D. Grissino-Mayer, The University of Tennessee

10:00-11:00 **2009 TAS Business Meeting – Tennessee Auditorium**
Dr. M. Gore Ervin, 2009 TAS President, Presiding

10:00 - 11:00 **Science Chairs Meeting – UC 220**

11:00-12:00 **TAS Symposium – Tennessee Auditorium**
“What’s New In STEM Education”
Dr. Linda K. Jordan, Dr. Richard Audet, Ms. Tammy Jones
Tennessee State Department of Education

9:00-12:00 **Poster Session– Room 223/224**
(Student presenters must attend 10:00-11:00)

12:00-1:00 **TAS Luncheon – Tennessee Ballroom**

1:00-5:00 **TAS-Oak Ridge National Laboratory Field Trip**
Reservation required. Assemble in Auditorium Lobby

1:00 - closing **Section Business and Technical Sessions:**

PLENARY PRESENTATION

9:00 Tennessee Auditorium

“Will Our Great Smoky Mountains Someday Go Up in Flames?”

Presented by

Dr. Henri D. Grissino-Mayer

Associate Professor and Director of the Laboratory of Tree-Ring Science

Department of Geography

The University of Tennessee, Knoxville

Dr. Grissino-Mayer earned an M.A. in geography from the University of Georgia in 1988 and a Ph.D. from the University of Arizona in 1995, specializing in quaternary environments and fire ecology. His current research involves reconstruction of past environments using information from tree-ring data and its applications to climatology and biogeography.

TAS SYMPOSIUM

11:00 Tennessee Auditorium

“What’s New in STEM Education”

Organized by

Dr. Linda Jordan

Dr. Linda K. Jordan, Dr. Richard Audet, Ms. Tammy Jones of the Tennessee State Department of Education will provide a workshop on the new Tennessee Science Standards for those in higher education who help train pre-service teachers in our respective disciplines. The new mandatory standards will affect all of us in higher education regardless of what discipline we teach.

BOTANY
Room 235 - Shiloh
J. Hill Craddock, Presiding
The University of Tennessee, Chattanooga

- 1:00 SECTION BUSINESS MEETING: ELECTION OF OFFICERS FOR 2010
- 1:15 **PRELIMINARY RESULTS OF A FLORISTIC SURVEY OF CLARKS RIVER NATIONAL WILDLIFE REFUGE IN WESTERN KENTUCKY.** *Matt Bruton* and Dwayne Estes, Austin Peay State University, Clarksville, Tennessee.*
- 1:30 **A NEW SPECIES OF *POLYMNIA* (ASTERACEAE) FROM THE SEQUATCHIE VALLEY OF TENNESSEE.** *Dwayne Estes, Austin Peay State University, Clarksville, Tennessee.*
- 1:45 **THE ONGOING FLORA OF THE SEQUATCHIE VALLEY IN SEQUATCHIE COUNTY, TENNESSEE.** *John R. Evans* and Joey Shaw, University of Tennessee at Chattanooga, Chattanooga, Tennessee.*
- 2:00 ***VITIS RUPESTRIS* (VITACEAE) REDISCOVERED IN TENNESSEE.** *Sunny Hart* and Dwayne Estes, Austin Peay State University, Clarksville, Tennessee.*
- 2:15 **A PRELIMINARY EVALUATION OF THE FLORA AND VEGETATION OF SEASONALLY WET LIMESTONE CEDAR GLADES OF THE SOUTHEASTERN UNITED STATES.** *Kim Norton* and Dwayne Estes, Austin Peay State University, Clarksville, Tennessee.*
- 2:30 **TESTING THE UTILITY OF THREE NONCODING CHLOROPLAST DNA REGIONS FOR DNA BARCODING USING *PRUNUS* (ROSACEAE).** *Ian M. Cohen* and Joey Shaw, University of Tennessee at Chattanooga, Chattanooga, Tennessee.*
- 2:45 **CURRENT STATUS OF *CLEMATIS MOREFIELDII* IN TENNESSEE INCLUDING NEW POPULATIONS AND HABITAT MODELING** *Todd Crabtree, Tennessee Department of Environment and Conservation, Nashville, Tennessee*
- 3:00 **Break**
- 3:15 **RELATIONSHIPS AMONG THE DENSITY OF THE INVASIVE SPECIES BUSH HONEYSUCKLE (*Lonicera maackii*), INVASIVE SPECIES MANAGEMENT FREQUENCY, AND ARBOREAL COVER FOR FORESTS IN RADNOR LAKE STATE NATURAL AREA.** *Jesse Germeraad, Travis Treece*, Daniel Wakefield*, Robert Loeb, and Steve Ward, Lipscomb University, Nashville, TN (JG, TT, DW), Pennsylvania State University, Dubois Campus, Dubois, PA (RL), and Radnor Lake State Natural Area, Nashville, TN (SW).*
- 3:30 **CURRENT STATUS OF *BUCKLEYA DISTICHOPHYLLA* IN TENNESSEE.** *Roger A. McCoy, Division of Resource Management, Tennessee Department of Environment and Conservation, Nashville.*
- 3:45 **ALLELEOPATHIC INFLUENCE OF *RHUS GLABRA* L.** *Harold A. Simmons and Mark Montgomery, Northwest Mississippi Community College, DeSoto Campus, Southaven, Mississippi.*
- 4:00 **ESTABLISHMENT OF PERMANENT PLOTS AND ANALYSIS OF WOODY VEGETATION IN THE TENNESSEE RIVER GORGE, MARION AND HAMILTON COUNTY, TN.** *Gerald R. Woodworth*, Joey Shaw, University of Tennessee at Chattanooga.*

**CELL and MOLECULAR BIOLOGY (C&M)
MICROBIOLOGY (MICRO)
HEALTH AND MEDICAL SCIENCES (H&M)**

Room 226

Michael W. Thompson, Middle Tennessee State University, presiding (C&M)

John M. Zamora, Middle Tennessee State University, presiding (MICRO)

J. Michael Redding, Tennessee Technological University, presiding (H&M)

- 1:00 SECTION BUSINESS MEETING: ELECTION OF OFFICERS FOR 2010
- 1:15 **TRANSLATION MACHINERY OF ADENOVIRUS IS INDEPENDENT ON HOST 4E INITIATION FACTOR BUT UNDER THE CONTROL OF BOTH VIRAL IRES AND HOST RIBOSOMAL S6.** *Augustinus Rinaldy, Kuntebommanahalli Thimmaiah, Larry Sylvester, Harold Simmons, Paul Grisham, Ray Cox, John Easton, Phillip E Brenton and Peter J. Houghton. St Jude Children's Research Hospital, Dept. of Molecular Pharmacology, Memphis, TN 38105 (AR, KT, ,JE, PH), Northwest Mississippi Community College, DeSoto Campus, Science Department, Southaven, MS 38671 (AR, KT, LS, HS, PG, RC), McGill University, Dept. of Biochemistry, Montreal, QC H3G 1Y6 (PB)*
- 1:30 **INACTIVATION OF BAD via a PKC- SIGNALING PATHWAY IS LINKED TO PROTECTION FROM RAPAMYCIN-INDUCED APOPTOSIS BY IGF-I IN SARCOMA CELLS.** *Kuntebommanahalli Thimmaiah, John Easton, Larry Sylvester, Paul Grisham, Ray Cox, Harold Simmons, Augustinus Rinaldy and Peter J. Houghton, Northwest Mississippi Community College, Southaven, Mississippi (KT, LS, PG, RC, HS, AR), and St. Jude Children's Research Hospital, Memphis, Tennessee (KT, JE, PH).*
- 1:45 **INTERACTION OF APOLACTOFERRIN WITH THE HEMOPEXIN DOMAIN OF PRO-MMP-2.** *Michael W. Thompson, Caroline A. Spencer-Green, and Rebecca L. Seipelt, Middle Tennessee State University, Murfreesboro, Tennessee.*
- 2:00 **TESTOSTERONE REQUIRED FOR RIGHT VENTRICULAR HYPERTROPHY IN LOAD STRESS.** *Karen A. Beasley* and Anna R. Hemnes, Vanderbilt University Medical Center, Nashville, Tennessee.*
- 2:15 **EVALUATING THE ANTIMICROBIAL ACTIVITY OF MELITTIN ON STAPHYLOCOCCUS AUREUS.** *Christina Russell* and Chad Brooks. Austin Peay State University. Clarksville, TN.*

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CHEMISTRY

Room 221

Daniel J. Swartling, Tennessee Technological University, presiding

- 1:00 SECTION BUSINESS MEETING: ELECTION OF OFFICERS FOR 2010
- 1:15 **HARTREE-FOCK STRUCTURES OF ALKOXYSINANES AND PROPOSED SOL-GEL PRODUCTS.** *Tara Greer**, *Ngee Sing Chong*, *William H. Ilsley*, and *Judith Iriarte-Gross*, *Project SEED Student at Middle Tennessee State University, Middle Tennessee State University, Murfreesboro, Tennessee.*
- 1:30 **THEORETICAL MODELING OF ELECTRON TRANSFER RATES BETWEEN CYTOCHROME C AND SMALL TRANSITION METAL COMPLEXES.** *Thusitha Pathirathne**, *Scott Northrup*, *Tennessee Technological University, Cookeville, Tennessee.*
- 1:45 **COMPARATIVE PROTEOMICS OF TRICLOSAN TOXICITY TO GREEN ALGAE CHLAMYDOMONAS REINHARDTII,** *Upul Deepthike*, *Jeffrey O. Boles*, *Tennessee Technological University, Cookeville, Tennessee.*
- 2:00 **THE PREPARATION AND MASS SPECTRA STUDIES OF A SERIES OF TRIMETHYLSILYL AND TRIMETHYLGERMYL OXY AND THIO CHLOROALKANES.** *Brian M. Agee**, *Eugene A. Kline*, *David J. Crouse*, *Daniel J. Swartling*, and *Gene A. Mullins*, *Tennessee Technological University, Cookeville, Tennessee.*

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**ENGINEERING and ENGINEERING TECHNOLOGY (E&ET)
PHYSICS and ASTRONOMY (P&A)**

Room 237

**Ismail Fidan, Tennessee Technological University, presiding (E&ET)
Eugene de Silva, Lincoln Memorial University, presiding (P&A)**

- 1:00 SECTION BUSINESS MEETING: ELECTION OF OFFICERS FOR 2010
- 1:15 **SOME THEOREMS ON POTENTIALS AND ELECTRIC FIELDS OF POINT, LINE AND PLANE CHARGE DISTRIBUTIONS.** *Arjun Tan, Mohammed Karim, Tianxi Zhang, and Matthew Edwards, Alabama Agricultural and Mechanical University, Normal, Alabama.*
- 1:30 **FUNDAMENTAL QUANTITIES AND FUNDAMENTAL CONSTANTS.** *Arjun Tan, Mohammed Karim, Tianxi Zhang, and Matthew Edwards, Alabama Agricultural and Mechanical University, Normal, Alabama.*
- 1:45 **A STUDY OF APPLICATIONS OF PHYSICS IN FREE-THROWS IN BASKETBALL.** *Samantha Thomas* and Eugene de Silva , Lincoln Memorial University, Harrogate, Tennessee.*
- 2:00 **A COMPARISON OF THE EFFECT OF ALUMINUM BATS VS. WOOD BATS IN BASEBALL.** *Isaac Adams* and Eugene de Silva , Lincoln Memorial University, Harrogate, Tennessee.*
- 2:15 **USING A LASER TO MEASURE THE SPEED OF LIGHT IN JELLO.** *Beth Mattie* and Eugene de Silva , Lincoln Memorial University, Harrogate, Tennessee.*
- 2:30 **EVALUATING THE RELATIONSHIP BETWEEN AGE/GENDER AND LUMBAR STRENGTH USING TORQUE AND ANGLE ANALYSIS.** *Naquita Ahern* and Eugene de Silva, Lincoln Memorial University, Harrogate, Tennessee.*
- 2:45 **APPLICATION OF PHYSICS FOR A HOMERUN.** *Samantha Christian* and Eugene de Silva, Lincoln Memorial University, Harrogate, Tennessee.*
- 3:00 **BREAK**
- 3:15 **CAPSTONE PROJECT EXPERIENCES FOR ELECTRICAL ENGINEERING TECHNOLOGY ELECTRONICS OPTION.** *Adel Salama, Austin Peay State University, Clarksville, Tennessee.*
- 3:30 **BUILD A REMOTE CONTROL SECURITY ROBOT AS A CAPSTONE PROJECT.** *Grant Brewer*, Adel Salama, Austin Peay State University, Clarksville, Tennessee.*
- 3:45 **AUTONOMOUS SECURITY DRONE AS A CAPSTONE PROJECT.** *David Fiorino*, Adel Salama, Austin Peay State University, Clarksville, Tennessee.*
- 4:00 **ADDITIVE MANUFACTURING – A DEVELOPING TECHNOLOGY.** *Chin-Zue Chen Austin Peay State University, Clarksville, Tennessee.*
- 4:15 **PROTOTYPING A DIGITAL OTTOSCOPE.** *John Ralston*, Chin-Zue Chen, Austin Peay State University, Clarksville, Tennessee.*

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GEOLOGY and GEOGRAPHY

Room 227

Robert Mark Simpson, The University of Tennessee at Martin, presiding

- 1:00 SECTION BUSINESS MEETING: ELECTION OF OFFICERS FOR 2010
- 1:15 **DISCOVERY OF A POSSIBLE SECOND HADROSAUR FROM THE LATE CRETACEOUS COON CREEK FORMATION, WEST TENNESSEE.** *Walter L. Markin* and Michael A. Gibson, University of Tennessee at Martin, Martin, Tennessee.*
- 1:30 **THE NEED FOR MONITORING OF CARBON DIOXIDE AS A CONTAMINANT IN THE SUBSURFACE ENVIRONMENT SURROUNDING SOLID WASTE DISPOSAL SITES IN TENNESSEE.** *Randy M. Curtis, Gresham, Smith, and Partners, Nashville, Tennessee.*
- 1:45 **ONE DIMENSIONAL HYDRAULIC MODELING OF THE ST. FRANCIS RIVER BELOW WAPPAPELLO DAM, MISSOURI.** *Gregory H. Nail, The University of Tennessee at Martin, Martin, Tennessee.*
- 2:00 **TELECONNECTIONS AND TORNADOGENESIS IN TENNESSEE: A SPATIAL PERSPECTIVE.** *Robert Mark Simpson and Jesse Winchester*, The University of Tennessee at Martin, Martin, Tennessee.*
- 2:15 **IMPROVING THE NWS FLOOD WARNING PROGRAM USING A GIS-BASED FLASH FLOOD INDEX.** *Joanne Logan, Tim Prather*, David Hotz and Brian Boyd University of Tennessee, Knoxville, Tennessee (JL, TP) and National Weather Service Weather Forecast Office, Morristown, Tennessee (DH, BB).*
- 2:30 **DRUG-RELATED CRIME ANALYSIS FOR CROSSVILLE, TENNESSEE.** *Martin Kimbrell*, Dr. Peter Li, Tennessee Technological University, Cookeville, Tennessee.*
- 2:45 **ANNOTATED BIBLIOGRAPHY OF THE BIG SOUTH FORK OF THE CUMBERLAND RIVER BASIN, TENNESSEE AND KENTUCKY.** *Robert Liddle and Steve Bakaletz, Office of Surface Mining, Knoxville, Tennessee and National Park Service, Oneida, Tennessee.*

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MATH and COMPUTER SCIENCE
Room 220
Yurily Bulka, Austin Peay State University, presiding

- 1:00 SECTION BUSINESS MEETING: ELECTION OF OFFICERS FOR 2010
- 1:15 **AN EXPONENTIALLY FITTED ONE-STEP METHOD FOR STIFF SYSTEMS.** *Samuel Jator, Austin Peay State University, Clarksville, Tennessee.*
- 1:30 **A STUDY ON THE HAZARD RATE FUNCTION OF A GENERALIZED MODIFIED WEIBULL MODEL.** *Han Wu and Ramesh Gupta, Austin Peay State University, Clarksville, Tennessee, and University of Maine, Orono, Maine.*
- 1:45 **INITIAL VALUE METHODS BASED ON SECOND DERIVATIVE METHODS FOR INITIAL VALUE PROBLEMS.** *Ramanjit K. Sahi, and Samuel N. Jator, Austin Peay State University, Clarksville, Tennessee.*
- 2:00 **BASE-3 PRIME NUMBERS AND A CHARACTERIZATION OF CANTOR PRIMES.** *Ntatin Ben, Austin Peay State University, Clarksville, Tennessee.*
- 2:15 **FOUR DIMENSIONAL JULIA SETS.** *Wherry Caleb* and Ntatin Ben, Austin Peay State University, Clarksville, Tennessee.*
- 2:30 **SPECTRAL THEORY OF MÊLÉ GRAPHS.** *Casey McKnight*, Austin Peay State University, Clarksville, Tennessee.*
- 2:45 **LOCAL UNIQUENESS OF A SOLUTION OF MULTIPLE VOLTERRA INTEGRAL EQUATIONS WITH LOCALLY LIPSCHITS KERNELS.** *Yuriy Bulka, Austin Peay State University, Clarksville, Tennessee.*
- 3:00 **EVOLVING A BLACKJACK STRATEGY WITH GENETIC PROGRAMMING.** *Robert D. French, East Tennessee State University, Johnson City, Tennessee.*

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SCIENCE and MATH TEACHING
Room 225
John Niedzwiecki, Belmont University, presiding

- 1:00 SECTION BUSINESS MEETING: ELECTION OF OFFICERS FOR 2010
- 1:15 **CLASSROOM CODE OF CONDUCT: CREATING AN ENVIRONMENT FOR LEARNING.**
Jennifer T. Thomas. Belmont University, Nashville, Tennessee.
- 1:30 **SERVICE LEARNING IN MICROBIOLOGY: SIMULTANEOUS FOOD SAFETY EDUCATION FOR STUDENTS AND SENIORS.** Richard J. Coppings. Jackson State Community College, Jackson, Tennessee.
- 1:45 **COMSOL as a tool for teaching and research in physics and chemistry.** *Eugenie de Silva* and Eugene de Silva. Lincoln Memorial University, Harrogate, Tennessee.*

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ZOOLOGY
Andrew Barrass, Austin Peay State University, presiding
Room 211 - Crest

1:00 SECTION BUSINESS MEETING: ELECTION OF OFFICERS FOR 2010

1:15 **NEW RECORDS OF THE NINE-BANDED ARMADILLO, *DASYPUS NOVEMCINCTUS* (MAMMALIA, XENARTHRA, DASYPODIDAE), IN SOUTHEAST TENNESSEE.** *Gaudin, Timothy, J., S. Erich Eichler**, and *James C. Brinson**, *Department of Biological & Environmental Sciences, University of Tennessee at Chattanooga.*

1:30 **POPULATION CHARACTERISTICS OF WHITE-TAILED DEER (*ODOCOILEUS VIRGINIANUS*) AT A SITE IN WESTERN TENNESSEE.** *Jeremy Dennison**, *Robert Kissell, Jr.*, *Steve Stephenson*, and *Michael Kennedy*, *The University of Memphis, Memphis, Tennessee (JD, MK)*, *Milan Army Ammunition Plant, Milan, Tennessee (RK)*, and *School of Forest Resources University of Arkansas, Monticello, Arkansas (SS).*

1:45 **RECORDS OF MAMMALS FROM UNICOI CO., TENNESSEE.** *Michal Summers**, *Pete Wyatt*, *Scott Dykes*, *Sterling Daniels*, and *Michael Kennedy*, *The University of Memphis, Memphis, Tennessee (MS, MK)*, and *Tennessee Wildlife Resources Agency, Morristown, Tennessee (PW, SD, SD).*

2:00 **AN ECOLOGICAL AND SYSTEMATIC ASSESSMENT OF THE GENUS *SYLVILAGUS* IN TENNESSEE.** *Tim Nguyen**, *Edward Warr*, *Roger Applegate*, and *Michael Kennedy*, *The University of Memphis, Memphis, Tennessee (TN, MK)*, and *Tennessee Wildlife Resources Agency Ellington Agricultural Center, Nashville, Tennessee (EW, RA).*

2:15 **VARIATION IN SUSCEPTIBILITY TO RANAVIRUS AMONG TADPOLE DEVELOPMENTAL STAGES.** *Nathan A Haislip**, *Matthew J. Gray*, and *Jason T. Hoverman*, *University of Tennessee Center for Wildlife Health, Department of Forestry, Wildlife and Fisheries, Knoxville, Tennessee.*

2:30 **THE EFFECTS OF SHORT-TERM STRESS ON CORTICOSTERONE, LEUKOCYTES, AND PROSTAGLANDIN E2 IN MALE SOUTHEASTERN FIVE-LINED SKINK (*PLESTIODON INEXPECTATUS*).** *Ryan Seddon** and *Matt Klukowski*, *Middle Tennessee State University, Murfreesboro, Tennessee.*

2:45 **A SURVEY OF THE MAMMALS AT RUSSELL CAVE NATIONAL MONUMENT.** *Christopher Grow**, and *Michael Kennedy*, *The University of Memphis, Memphis, Tennessee.*

3:00 **AN ECOLOGICAL ASSESSMENT OF THE VIRGINIA OPOSSUM (*DIDELPHIS VIRGINIANA*) IN WESTERN TENNESSEE.** *Daniel Wolcott**, and *Michael Kennedy*, *The University of Memphis, Memphis, Tennessee.*

3:15 **TEMPERATURE EFFECTS ON LOCOMOTOR PERFORMANCE IN A LATITUDINALLY WIDESPREAD SPECIES, *NERODIA SIPEDON*.** *Lacy Danikas** and *Vincent Cobb*, *Middle Tennessee State University, Murfreesboro, Tennessee.*

* student author

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POSTERS ON DISPLAY

Room 223/224

*student author # presenting author, if not first author

BOTANY

THE VASCULAR FLORA OF THE TENNESSEE RIVER GORGE, HAMILTON AND MARION COUNTIES. *Emily R. Blyveis* and Joey Shaw, University of Tennessee at Chattanooga, Chattanooga, Tennessee.*

CELL AND MOLECULAR BIOLOGY

BRAIN-DERIVED NEUROTROPHIC FACTOR (BDNF) EXPRESSION IN MD-MBA-231 CANCER CELLS. *Andrew Hall*, Amber M. Burch, and Jon H. Lowrance, Lipscomb University, Nashville, Tennessee.*

CHEMISTRY

A COMPUTATIONAL STUDY OF THE HETEROLYTIC BOND DISSOCIATION ENERGY OF WATER IN METALLOENZYME ACTIVE CENTER MIMICS. *Derek B. Allison*, Jordan A. Gault*, and J. Dominic Smith, Lipscomb University, Nashville, Tennessee.*

THEORETICAL STUDIES OF HYDROGEN ABSTRACTION FROM HYDROFLUOROPROPANES. *Wasana Senevirathna*, Titus Albu, Tennessee Technological University, Cookeville, Tennessee.*

SYNTHESIS AND CHARACTERIZATION OF SOLVOCHROMATIC DYES. *Andy Standley*, Jeremiah Woodcock*, Andrienne Friedli, Middle Tennessee State University, Murfreesboro, Tennessee.*

AN IMPROVED METHOD FOR SYNTHESIZING 5-ALKYLIDENEMALONATE DERIVATIVES OF MEDLRUM'S ACID VIA KNOEVENAGEL CONDENSATION. *Casey J. McCormick*, Daniel J. Swartling, Tennessee Technological University, Cookeville, Tennessee.*

IMPROVEMENTS TO THE RESOLUTION OF HISTIDINE. *Kevin Lavender* and Kent Clinger, Lipscomb University, Nashville, Tennessee.*

ENZYMATIC AND MASS SPECTRAL ANALYSIS OF MUTANT AND WILD TYPE SELENOMETHIONYL DIHYDROFOLATE REDUCTASE. *Molly E. Broderick*, Kathleen M. Broderick* and Jeffrey O. Boles, Department of Chemistry, Tennessee Tech University, Cookeville, Tennessee.*

PRETREATMENT OF SWITCHGRASS FOR GLYCOSYL BIOCONVERSION TO CELLULOSIC ETHANOL. *Jessika Pinto* and Jeffrey O. Boles, Department of Chemistry, Tennessee Tech University, Cookeville Tennessee.*

CHEMICAL FINGERPRINTING OF CLANDESTINE METHAMPHETAMINE BY LC/MS/MS. *Sri Bharat Madireddy*, Dr. Jeffrey O. Boles, Dr. Martha J Wells and Dr. Daniel J. Swartling, Department of Chemistry, Tennessee Technological University, Cookeville, Tennessee.*

SYNTHESIS OF A SERIES OF ALLOXAN THIOSEMICARBAZONES AND REACTIONS WITH PLATINUM AND PALLADIUM. *Andrea Wilson**, *Erica Stoner**, and *Edward C. Lisic*, Department of Chemistry, Tennessee Technological University, Cookeville, Tennessee.

A NEW SERIES OF POTENTIAL MEDICINAL COMPOUNDS: 5-ACETYLRACIL THIOSEMICARBAZONES. *Wesley Lisic**, *Michael Beck**, and *Edward C. Lisic*, Department of Chemistry, Tennessee Technological University, Cookeville, Tennessee.

FLUORESCENCE STUDIES OF PLANAR AROMATIC THIOSEMICARBAZONE LIGANDS AND THEIR PALLADIUM COMPLEXES. *Keyuri Patel**, *Ryan Wilson**, and *Edward C. Lisic*, Department of Chemistry, Tennessee Technological University, Cookeville, Tennessee.

GEOLOGY AND GEOGRAPHY

OPTIMIZATION OF X-RAY FLUORESCENCE SPECTROMETRY FOR ENVIRONMENTAL ANALYSIS OF ARSENIC AT LOW CONCENTRATIONS IN SEDIMENT AND SOIL MATERIALS. *Jennifer Pickering**, *Jessica Tonish**, *James Cares**, and *Warner Cribb*, Middle Tennessee State University, Murfreesboro, Tennessee.

GEOCHEMICAL INVESTIGATION OF POTENTIAL TOXIC METAL RELEASES FROM TVA COAL ASH SURFACE IMPOUNDMENTS INTO NEARBY RIVER WATERS AND SEDIMENTS. *Matt Jones**, *Miller Wyllie**, *Jennifer Pickering**, *Caitlin Shannon**, *Scott Crombie*, and *Warner Cribb*, Middle Tennessee State University, Murfreesboro, Tennessee.

AGGLOMERATION EFFECTS IN THE AUTOMOBILE INDUSTRY: A LOOK AT SUPPLIER AND ASSEMBLY PLANT LOCATIONS IN THE SOUTH. *Austin Rutledge**, *The University of Tennessee*, Knoxville, Tennessee

HEALTH AND MEDICAL SCIENCES

BACILLUS PUMILUS ENDOSPORES: A POSSIBLE MODEL FOR DETECTION OF BACILLUS ANTHRACIS. *Merranda D. Holmes** and *Stephen M. Wright*, Middle Tennessee State University, Murfreesboro, Tennessee.

A LABEL-FREE METHOD FOR DETECTION AND DIFFERENTIATION OF BACILLUS SPP. ENDOSPORES. *Shannon B. Murphy** and *Stephen M. Wright*, Middle Tennessee State University, Murfreesboro, Tennessee.

SMALL COLLAGEN PEPTIDES INCREASE ANGIOGENESIS. *Robert B. Burress**, *Dylan Addis*, *Beth Conway*, Lipscomb University, Nashville, Tennessee.

EFFECTS OF ENDOTHELIN CONVERTING ENZYME-1 ISOFORMS AND NEPRILYSIN EXPRESSION ON BREAST CANCER CELL INVASION. *Matthew Anderson**, *Alex Baldrige**, *Beth Conway*, Lipscomb University, Nashville, Tennessee.

DIFFERENTIAL REQUIREMENT OF ENDOTHELIN CONVERTING ENZYME-1 FOR INVASION IN HUMAN BREAST CANCER CELLS. *William Hardeman**, *Beth Conway*, Lipscomb University, Nashville, Tennessee.

H1N1 FEARS INDUCE BETTER HEALTH. *Kenny Kennedy**, *Trenton Gaasch**, and *Chad Brooks*. *Austin Peay State University*. Clarksville, TN.

PROLIFERATIVE EFFECTS OF ESTRADIOL, BISPHENOL A, AND TATRAZINE ON MCF-7 CELLS IN A SOFT AGAR ASSAY. *Samantha J. White* and Sarah Lundin-Schiller, Department of Biology, Austin Peay State University, Clarksville, TN*

MICROBIOLOGY

HUMULUS LUPUS ALPHA ACID ISO-DERIVATIVES AS A NOVEL ANTIMICROBIAL APPROACH AGAINST STAPHYLOCOCCUS AUREUS. *Marc Smith, Kathryn White, and Chad Brooks. Austin Peay State University. Clarksville, TN.*

CORRELATING BORRELIA BURGDORFERI PLASMID CONTENT WITH SURVIVAL IN DIFFERENT ANIMAL SERA. *Jillian Kay, Krystle Irizary, and Chad Brooks. Austin Peay State University. Clarksville, TN.*

BIODIESEL, HYDROGEN AND ETHANOL GENERATION FROM CARBON DIOXIDE AND WATER BY SEQUENTIAL USE OF MICROORGANISMS IN BIOREACTORS. *Luke Holliday, Dawn Danielson, Nimit Patel, Tracy Bisquera, Matt Murphy, Ryan Willingham, and Sergei A. Markov. Austin Peay State University, Clarksville, Tennessee.*

ANTIBACTERIAL, ANTIFUNGAL, ANTIVIRAL, AND ALLELOPATHIC EFFECTS OF *ERIODICTYON CALIFORNICUM*. *Nicole Y. Foster and John M. Zamora, Middle Tennessee State University, Murfreesboro, Tennessee*

ISOLATION AND IDENTIFICATION OF CELLULOSE-DEGRADING MICROORGANISMS. *Robert S. Richardson* and John M. Zamora, Middle Tennessee State University, Murfreesboro, Tennessee*

ANTI-BACTERIOPHAGE ACTIVITY OF HERBAL TEAS. *Justin M. Sadd* and John M. Zamora, Middle Tennessee State University, Murfreesboro, Tennessee*

CHARACTERIZATION OF METHICILLIN-RESISTANT *STAPHYLOCOCCUS AUREUS* ISOLATES FROM COMMUNITY DORMITORY SHOWERS AT BELMONT UNIVERSITY. *Amanda M. Castro* and Jennifer T. Thomas. Belmont University, Nashville, Tennessee*

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