



121st Meeting

Tennessee Academy of Science

Program

October 28, 2011

Union University
Jackson, Tennessee

TAS - 99 Years and Counting . . .

Tennessee Academy of Science Institutional Sustaining Members

Austin Peay State University
Rhodes College University of the South
East Tennessee State University Motlow State Community College
Walters State Community College Volunteer State Community College
Middle Tennessee State University The University of Tennessee–Martin
Tennessee Technological University The University of Tennessee–Memphis
University of Tennessee Space Institute The University of Tennessee–Knoxville

Tennessee Academy of Science Affiliated Societies

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

www.tennacadofsci.org

Visit our home page for news and information about

TAS Collegiate Divisions TAS Junior Academy
Tennessee Visiting Scientist Program Membership and Leadership
Journal of the Tennessee Academy of Science Plans for 2012 Centennial Activities

TAS Future Annual Meeting Sites (Tentative)

2012—Vanderbilt University
2013—Motlow State Community College
2014—Walters State Community College

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Welcome . . .

. . . to the 2011 Annual Meeting of the Tennessee Academy of Science. We hope you enjoy and benefit from this opportunity to present your research, to learn of other research going on in Tennessee, to interact in a relaxed atmosphere with other R&D professionals, to hear and question an influential and dynamic keynote speaker, to learn about and dig for ancient marine fossils, and to participate in the business of the Academy. Please let our volunteers know if you have any needs or questions and if the meeting in any way does not meet (or if it exceeds!) your expectations. We are always striving to improve!

Announcements

If not already members, presenters and attendees may register by mail or at the Annual Meeting (in the lobby of Carl Grant Events Center). Application forms will be available on-site, and they are available for download from the TAS web site. Dues are collected at time of registration.

Student	\$10 annually
Emeritus	\$10 annually
Member	\$40 annually
Sustaining	\$50 annually
Supporting	\$100 annually
Life	\$400 single payment
<i>Journal</i> subscription for libraries	inquire with Treasurer

Registration and dues can be mailed to the TAS Treasurer, Dr. Steven Murphree, Department of Biology, Belmont University, 1900 Belmont Boulevard, Nashville, TN 37212-3758

Luncheon tickets will be available for purchase at the registration desk.

At the Business Meeting, we will consider a proposal to amend the TAS Constitution to expand the membership of the Executive Committee. Please plan to attend.

Please stop by the Oral History Project booth and share your memories—especially stories and other tidbits you remember from “the old days,” but about more recent times, as well. Don’t forget any interesting experiences with Visiting Scientists Program, the Collegiate Divisions or the Junior Academy. As part of our activities leading up to next year’s Bicentennial observances, we would like to capture and preserve as much institutional knowledge concerning the past 100 years as is possible. While you are there, please tell us why you participate. How does TAS benefit you? What needs fixing?

Industrial Display: Varshaw Scientific

Varshaw Scientific is the exclusive Leica dealer for educational and digital imaging microscope systems in the state of Tennessee. Please stop by their booth to see a live imaging demo and hands on demonstration of our Leica microscopes.

Schedule of Events

Friday, October 28

7:30 a.m. until 12:00 p.m.	Registration
7:30 a.m. until 8:45 a.m.	Poster Presentation Setup
7:45 a.m. until 8:45 a.m.	Meeting of Department Chairs
8:45 a.m. until 9:45 a.m.	Poster Judging
10:00 a.m. until 11:00 a.m.	Morning Technical Sessions
11:15 a.m. until 12:00 p.m.	Business Meeting Reports from Committees and Officers Vote on Proposed Constitutional Amendment Election of 2012 Officers Other Business
12:00 Noon until 1:00 p.m.	Lunch Break
1:00 p.m. until 2:00 p.m.	Plenary Session Welcome by Union University Leadership Announcements Keynote Address by Dr. Thomas A. Cellucci
2:15 p.m. until finished	Afternoon Technical Sessions

Saturday, October 29

7:45 a.m.	Depart Jackson Doubletree Hotel lobby for Field Trip at Coon Creek Science Center
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Meet our Keynote Speaker – Our plenary session features an address by Dr. Thomas A. Cellucci of the U.S. Department of Homeland Security's Science and Technology Directorate. Currently serving multiple roles (Director of Public-Private Partnerships, Acting Director of the R&D Partnerships Group, and Chief Commercialization Officer), he is responsible for DHS's Office of University Programs and National Laboratories. An enthusiastic and dynamic speaker, he will brief us on the S&T Directorates technology thrust areas and on new programs for moving innovative security-related technologies from concept through development, standardization, and production to deployment to first responders and law enforcement agencies.

Science in the Field – On Saturday, past-president Dr. Michael Gibson leads an expedition to the nearby Coon Creek Science Center. He will provide a guided tour of this important paleontological site and then turn us loose with tools for excavating our own fossils. Take home a bag of superbly preserved 70-million-year-old Upper Cretaceous marine shells and vertebrate remains! Check at the registration desk to see if there are spaces available for additional adventurers. The \$35 fee (\$25 for student members) covers admission, a guide book, water, snacks, and a lunch served on site. Bring your camera, and come prepared to get dirty!

Oral Presentations

Botany
Chair: Claude Bailey, Jr.
(Room 205)

Morning Session

10:00 – 10:15

FLORISTIC STUDIES IN THE BIG SANDY UNIT OF THE TENNESSEE NATIONAL WILDLIFE REFUGE, BENTON AND HENRY COUNTIES, TENNESSEE. *Edward W. Chester, Austin Peay State University, Clarksville, Tennessee*

10:15 – 10:30

BIOTIC AND ABIOTIC FACTORS INFLUENCING THE QUALITY OF CUMBERLAND SEEPAGE FORESTS AND THE IMPLICATIONS FOR THE SURVIVAL OF *PLATANATHERA INTEGRILABIA*. *Todd Crabtree, Tennessee Natural Heritage Program, Nashville, Tennessee.*

10:30 – 10:45

FOSSIL FRUITS OF ICACINACEAE FROM THE EOCENE OF TENNESSEE AND MISSISSIPPI: A BIOGEOGRAPHIC LINK WITH MODERN SOUTHEAST ASIA. *Gregory W. Stull, B. Roger Moore, Steven R. Manchester, Florida Museum of Natural History, University of Florida, Gainesville, Florida.*

10:45 – 11:00

VASCULAR PLANTS OF FIVE MOUNTAIN FENS IN NORTHEASTERN TENNESSEE. *Christy T. Carter and Mark G. McIntosh, Tennessee Technological University, Cookeville, Tennessee.*

Afternoon Session

2:15 – 2:30

WATCH YOUR ASH: EMERGING INVASIVE FOREST PESTS IN TENNESSEE AND IMPLICATIONS FOR FIREWOOD UTILIZATION. *David A. Lincicome, Tennessee State Parks, Nashville, Tennessee*

2:30 – 2:45

PRELIMINARY RESULTS OF THE VASCULAR FLORA AND BROAD SCALE HABITAT TYPING OF THE CHEATHAM WILDLIFE MANAGEMENT AREA, CHEATHAM COUNTY, TN. *Clea F. Klagstad* and Dwayne Estes, Austin Peay State University, Clarksville, Tennessee.*

2:45 – 3:00

INVESTIGATING *CLEMATIS* L. SUBGENUS *VIORNA* A. GRAY : A CLOSER LOOK AT THE EASTERN NORTH AMERICAN VIRGIN'S BOWERS. **Kevin J. Minchew and Joey Shaw, The University of Tennessee at Chattanooga, Chattanooga, Tennessee.*

3:00 – 3:15

THE VASCULAR FLORA OF THE OCOEE RIVER GORGE, POLK COUNTY, TENNESSEE. **Sunny Hart, Dwayne Estes, Emily Blyveis, and Joey Shaw, The University of Tennessee at Chattanooga, Chattanooga, Tennessee (SH, EB, and JS) and Austin Peay State University, Clarksville, Tennessee (DE).*

3:15 – 3:30

IMPACTS OF LARGE ANIMAL HERBIVORY ON *SCUTALLARIA MONTANA* IN THE TENNESSEE ARMY NATIONAL GUARD VOLUNTEER TRAINING SITE, CATOOSA COUNTY, GA. **Andrea R. Benson***, **Joey Shaw**, and **Jennifer Boyd**, *The University of Tennessee at Chattanooga, Chattanooga, Tennessee.*

3:30 – 3:45

MAPPING THE VEGETATIONAL ECOLOGICAL SYSTEMS AND ASSOCIATIONS OF THE OCOEE RIVER GORGE, POLK COUNTY, TENNESSEE. **Joey Shaw**, **Sunny Hart**, **Emily Blyveis**, and **Dwayne Estes**, *The University of Tennessee at Chattanooga, Chattanooga, Tennessee (SH, EB, and JS) and Austin Peay State University, Clarksville, Tennessee (DE).*

3:45 – 4:00

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

4:00 – 4:15

A SURVEY OF THE NATURALLY OCCURRING *CASTANEA DENTATA* (MARSH) BORKH. (FAGACEAE, AMERICAN CHESTNUT) AND FLORA AT BENDBAOUT FARM, BRADLEY COUNTY, TENNESSEE ***Amelia Harris, J. Hill Craddock, and Joey Shaw**. *The University of Tennessee at Chattanooga, Chattanooga, Tennessee.*

4:15 – 4:30

A NEW SPECIES OF *PENSTEMON* (PLANTAGINACEAE) FROM TENNESSEE AND ALABAMA. **Dwayne Estes**, *Austin Peay State University, Clarksville, Tennessee.*

4:30 – 4:45

THE STATUS OF *RUDBECKIA FULGIDA* VAR. *UMBROSA* (ASTERACEAE) IN TENNESSEE. **Dwayne Estes and Julian Campbell**, *Austin Peay State University, Clarksville, Tennessee (DE) and Lexington, Kentucky.*

Cell and Molecular Biology
Chair: Greg Johansen
(Room 202)

Morning Session

10:00 – 10:15

PROSTATE SPECIFIC MEMBRANE ANTIGEN GENERATES LAMININ PEPTIDES DOWNSTREAM OF MATRIX METALLOPROTEINASES THAT ACTIVATE *IN VIVO* ANGIOGENESIS. **Ben Hannah***, **David Bourgeois**, **Beth Conway**. *Department of Biology, Lipscomb University.*

10:15 – 10:30

THERAPEUTIC INTRAOCULAR ERYTHROPOIETIN GENE THERAPY IN A MOUSE MODEL OF RETINAL DEGENERATION. *Robert S. Parker II**, *Cody Richardson*, *Rachel Haag*, *Siddharth N. Desai*, *Jessica Hines-Beard*, *Tonia S. Rex*, *Christian Brothers University, Memphis, Tennessee, and University of Tennessee Health Science Center, Memphis, Tennessee.*

10:30 – 10:45

A TIME COURSE STUDY OF NEUROFILIN-2 EXPRESSION IN THE POST-NATAL BRAIN OF RATS. *Tierney S. Jordan** and *Brenda S. McAdory*, *Tennessee State University, Nashville, TN.*

Chemistry
Chair: Daniel J. Swartling, Ph.D.
(Room 318)

Morning Session

10:00 – 10:15

FUNCTIONAL STUDIES OF HUMAN DNA POLYMERASE ϵ . *Xiaohua Jiang*, *Department of Chemistry, Tennessee Tech University, Cookeville, Tennessee.*

Engineering and Engineering Technology
Chair: Ismail Fidden Ph.D.
(Room 102)

Morning Session

10:00 – 10:15

THE DEVELOPMENT OF A 3D PRINTING KNOWLEDGE BASE. *Ismail Fidan*, *Tennessee Technological University, Cookeville, Tennessee.*

10:15 – 10:30

AN EXPERIMENTAL REAL-TIME PLATFORM FOR SMART GRID INFORMATION AND COMMUNICATION NETWORKS. **Rami Amiri***, and **Omar Elkeelany**, *Tennessee Technological University, Cookeville, Tennessee.*

10:30 – 10:45

ASSESSING SOFTWARE AND PROTOCOL VULNERABILITIES IN ROUTERS FOR SECURE CLOUD COMPUTING. *Nicholas Luna**, *Hellen Maziku**, *Sachin Shetty*, *S. Keith Hargrove*. *Tennessee State University, Nashville, Tennessee.*

10:45 – 11:00

DEVELOPMENT OF VIRTUAL ASSEMBLY DESIGN SYSTEM. *Stephanie M. Starling** and *Asia Williams**, *Tennessee State University, Nashville, Tennessee.*

2:15 – 2:30

ROBOTIC SEARCH AND RESCUE IS A CAPSTONE PROJECT EXPERIENCES FOR ELECTRICAL ENGINEERING TECHNOLOGY. *Adel Salama**, *Carl Eisemann*, *Corey Griffin*, *James Hendrick*, *Chad Schroeder*, *Austin Peay State University, Clarksville, TN*

2:30 – 3:00

THE EFFECT OF ADVANCED APPLICATION TECHNOLOGY ON CONSTRUCTION PROJECT MANAGEMENT. *Ihab Habib**, *Abu Sarwar*, *Austin Peay State University, Clarksville, TN*

Geology and Geography
Chair: Robert Mark Simpson Ph.D.
(Room 318)

Morning Session

10:15 – 10:30

AN ASSESSMENT OF THE NEW CLIMATE NORMALS FOR TENNESSEE, 1981-2010. *Robert Mark Simpson**, *University of Tennessee at Martin, Martin, Tennessee.*

Health and Medical Science
Chair: Nick Ragsdale Ph.D.
(Room 312)

Morning Session

10:00 – 10:15

NEPRILYSIN NEGATIVELY REGULATES HUMAN BREAST CANCER CELL INVASION. *Marina Salama**, *Reem Sidani*, *Beth Conway*, *Lipscomb University, Nashville, Tennessee.*

10:15 – 10:30

ENDOTHELIN CONVERTING ENZYME-1 ISOFORMS ARE UP-REGULATED IN HIGHLY INVASIVE HUMAN BREAST CANCER CELLS. *Reem Sidani**, *Marina Salama*, *Beth Conwa.*, *Department of Biology, Lipscomb University.*

10:30 – 10:45

CLINICAL AND MOLECULAR CHARACTERIZATION OF CFTR MUTANTS $\Delta F508$ AND R347P. *Joseph W. Fong**, *Sunitha Yarlagadda*, *Dennis C. Stokes*, *and Anjaparavanda P. Naren*, *Christian Brothers University, Memphis, TN (JWF)*, *The University of Tennessee Health Science Center, Memphis, TN (SY, APN)*, *and Le Bonheur Children's Hospital, Memphis, TN*

10:45 – 11:00

EVALUATION OF THE EFFECT OF FOUR COMMON ANTACIDS ON LACTASE ENZYME ACTIVITY *IN VITRO*. *John F. Flanagan, Brad K. Rodell*, James R. Boone, Department of Chemistry, Lipscomb University, Nashville, Tennessee.*

History of Science
Chair: Brother Kevin Ryan
(Room 109)

Afternoon session

2:15 – 2:30

THE TENNESSEE ACADEMY OF SCIENCE AND THE SCOPES TRIAL *George E. Webb Tennessee Tech University, Cookeville, Tennessee*

2:30 – 2:45

AN ACCOUNT OF THE FIRST ANNUAL GEOCENTRIC CONFERENCE: 2010. *Kevin Ryan Christian Brothers University, Tennessee*

3:00 – 3:15

HISTORICAL TIMELINE FOR THE DEPARTMENT OF CHEMISTRY AND MIDDLES TENNESSEE STATE UNIVERSITY *Martin V. Stewart and Terrence A. Lee Middle Tennessee State University, Murfreesboro, Tennessee*

Microbiology
Chair: John M. Zamora, Ph.D.
(Room 312)

Afternoon Session

2:15 – 2:30

CHARACTERIZATION OF A BORRELIA BURGDORFERI VIRULENCE DETERMINANT IN DOGS; A PRIME VACCINE CANDIDATE. *Kathryn White*, Elisa Lund and Chad Brooks, Austin Peay State University, Clarksville, Tennessee*

Math and Computer Science
Chair: Ben Ntatin Ph.D.
(Room 101)

Morning Session

10:15 – 10:30

COMPUTATIONAL ANALYSIS OF THE BUGEY NEUTINO OSCILLATION EXPERIMENT. *Mason T. Yost*, Austin Peay State University, Clarksville, Tennessee.*

10:30 – 10:45

MAXIMUM CAPACITY OF BEADS FOR A GIVEN JAR. *Cortney L. Bramlett**, *Megan N. Alvarez**, *Austin Peay State University, Clarksville, Tennessee.*

10:45 – 11:00

SOME GENERALIZATIONS OF SCHLICHT FUNCTIONS DEFINED USING THE SALAGEAN OPERATOR. *James York-Winegar**, *Austin Peay State University, Clarksville, Tennessee.*

Afternoon Session

2:15 – 2:30

CREATING THE IDEAL MATHEMATICS EDIFICE. *Kelsey Phillips*, *Liliana Alvarez*, *Jonathan Clinard*, *Anne French*, *Austin Peay State University, Clarksville, Tennessee.*

2:30 – 2:45

MATHEMATICAL MODEL OF A PROSTHETIC HAND FROM THE MANUFACTURING POINT OF VIEW. *Lisa Elliott**, *Tia Guarino**, *Stephanie Jessie**, and *James Winegar**, *Austin Peay State University, Clarksville, Tennessee.*

2:45 – 3:00

ANALYZING MATHEMATICAL BELIEFS USING GEOMETRIC PICTURES. *Stephanie J. Jessie**, *Austin Peay State University, Clarksville, Tennessee.*

3:00 – 3:15

KNOTS AND CHIRALITY. *Ramanjit K. Sahi*, *Austin Peay State University, Clarksville, Tennessee.*

3:15 – 3:30

HOW TO WIN AT BATTLESHIP. *Stephen J. Robinson*, *Belmont University, Nashville, Tennessee.*

3:30 – 3:45

APPLICATION OF OPTIMAL CONTROL TO THE EPIDEMIOLOGY OF MALARIA DISEASE. *Okosun, K. O. Augusto F. B.*, and *Nizar Marcus*, *Austin Peay State University, Clarksville, Tennessee (OAFB)*, and *University of the Western Cape, South Africa (OK, NM)*

3:45 – 4:00

FINDING THE VOLUME OF A FOOTBALL. *Ortiz Xavier**, *Joshua O. Bunger**, and *Kaci Robertson**, *Austin Peay State University, Clarksville, Tennessee.*

4:15 – 4:30

CLOUD AUDITING USING IP AND DNS TRAFFIC ANALYSIS. *Dwight D Nelson Jr**, and *Keith S. Hargrove*, *Tennessee State University, Nashville, Tennessee.*

4:30 – 4:45

THE CANTOR SET – A PATHOLOGICAL SUBSET OF THE REALS. *Ben Ntatin*, *Austin Peay State University, Clarksville, Tennessee.*

Physics and Astronomy
Chair: Eugene de Silva Ph.D., FRSA
(Room 202)

Morning Session

10:45 – 11:00

AN ANALYSIS OF THE PHYSICS PRINCIPLES BEHIND BREAKING TILES *Eugenie de Silva* and Eugene de Silva*, University of Harvard, Massachusetts Hall, Cambridge, MA, and *Walters State Community College, Morristown, TN*

Science and Math Teaching
Chair: Kim C. Sadler Ph.D.
(Room 109)

Morning Session

10:00 – 10:15

THINKING INSIDE AND OUTSIDE OF THE BOX: CLUB NEUTRON AFTER SCHOOL SCIENCE CLUB. *Kim C. Sadler, Leigh Gostowski, Linda Gilbert, Emily Newton*, David Green**, Middle Tennessee State University, Murfreesboro, Tennessee.

10:15 – 10:30

SEMINAR IN BIOLOGY: AN INTRODUCTION TO THE DEPARTMENT FOR NEW MAJORS. *Jennifer T. Thomas*, Belmont University, Nashville, Tennessee

10:30 – 10:45

DEVELOPMENT AND FACILITATION OF TWO INQUIRY-BASED ENVIRONMENTAL SCIENCE CASE STUDIES FOR HIGH SCHOOL OUTREACH. *Darlene Panvini*. Belmont University, Nashville, Tennessee.

10:45 – 11:00

AN UNDERGRADUATE RESEARCH PROGRAM ON CHEMOTAXIS IN *C. ELEGANS*. *Robert Grammer*, Belmont University, Nashville, Tennessee.

Zoology
Chair: Vincent A. Cobb, Ph.D.
(Room 215)

Morning Session

10:00 – 10:15

AN ASSESSMENT OF MITOCHONDRIAL DNA VARIATION IN THE SOUTHERN SHORT-TAILED SHREW (*BLARINA CAROLINENSIS*). *Anthony C. Grow*, Juliann L. Waits, Melvin L. Beck, and Michael L. Kennedy*, The University of Memphis, Memphis, Tennessee (AG, MB, MK), and Southwestern Community College, Memphis, Tennessee (JW).

10:15 – 10:30

AVIAN COMMUNITY RESPONSE TO TIMBER HARVEST ADJACENT TO RIPARIAN ZONES AT CATOOSA WMA. *Christine F. Peterson* and Dr. Thomas H. Roberts, Tennessee Technological University, Cookeville, Tennessee.*

10:30 – 10:45

AN ASSESSMENT OF BIODIVERSITY MEASUREMENTS OF SMALL MAMMALS IN WESTERN TENNESSEE. *Lauren A. Madeira*, Rackella Johnson, and Michael L. Kennedy, The University of Memphis, Memphis, Tennessee.*

10:45 – 11:00

IS TRAP PLACEMENT A FACTOR IN CAPTURE OF SMALL MAMMALS? *Madison R. Taylor*, Daniel M. Wolcott, A. Christopher Grow, and Michael L. Kennedy, The University of Memphis, Memphis, Tennessee.*

Afternoon Session

2:15 – 2:30

PREDATION ON VISCERA OF HUNTER-HARVESTED WHITE-TAILED DEER (*ODOCOILEUS VIRGINIANUS*). *Edward O. Zahed*, Steve W. Stephenson, and Michael L. Kennedy, The University of Memphis, Memphis, Tennessee (EOZ, MLK), and American Ordnance LLC/Milan Army Ammunition Plant, Milan, Tennessee (SWS).*

2:30 – 2:45

BIODIVERSITY OF BATS IN WESTERN TENNESSEE. *Jeremy S. Dennison*, Daniel Stanfield, and Michael L. Kennedy, The University of Memphis, Memphis, Tennessee.*

2:45 – 3:00

EFFECTS OF TEMPERATURE AND PRECIPITATION ON THE ORIENTATION AND SUMMER MOVEMENTS OF *TERRAPENE CAROLINA*. *Joshua Smith*, James Kerfoot, Jr., and James Huggins, Southern Illinois University, Carbondale, Illinois (JS), and Union University, Jackson, Tennessee (JK, JH).*

3:00 – 3:15

COMPARING METABOLIC RATES OF FOSSORIAL AND TERRESTRIAL SNAKES. *Jacob Campbell* and Vincent Cobb, Middle Tennessee State University, Murfreesboro, Tennessee.*

3:15 – 3:30

THE STRESS RESPONSE OF COTTONMOUTHS. *Matthew Klukowski, Frank Bailey, Thomas Rainwater, Timothy Worrall, Jake Pruett, and Vincent Cobb, Middle Tennessee State University, Murfreesboro, Tennessee (MK, FB, TW, VC), Texas Tech University, Lubbock, Texas (TR), and University of Texas at Tyler, Tyler, Texas (JP).*

3:30 – 3:45

MATERNAL TRANSFER OF METHYLMERCURY CHLORIDE IN *NERODIA SIPEDON*. **J. Patrick W. Cusaac***, **Raymond C. Wright**, **Cassandra Henry**, and **Frank C. Bailey**, Middle Tennessee State University, Murfreesboro, Tennessee.

3:45 – 4:00

THE EFFECTS OF MATERNALLY TRANSFERRED METHYL MERCURY CHLORIDE ON THE LOCOMOTOR AND FEEDING PERFORMANCE OF NEONATE NORTHERN WATER SNAKES, *NERODIA SIPEDON*. **Raymond C. Wright***, **J. Patrick W. Cusaac**, **Cassandra L. Henry**, and **Frank C. Bailey**, Middle Tennessee State University, Murfreesboro, Tennessee.

4:00 – 4:15

DETECTION OF CHYTRIDIOMYCOSIS IN PENNSYLVANIA AMPHIBIANS. **Rachel Lewis***, **Kurt Regester**, and **Chad Brooks**, Austin Peay State University, Clarksville, Tennessee (RL, CB), and Clarion University, Clarion, Pennsylvania (KR).

4:15 – 4:30

SCALING THE FEEDING MECHANISM OF PIKE KILLIFISH (*BELONESOX BELIZANUS*). **James Kerfoot, Jr.** and **Thomas Duncan**, Union University, Jackson, Tennessee.

4:30 – 4:45

CRANIAL AND PECTORAL OSTEOLOGY OF THE COMMON CARP, *CYPRINUS CARPIO* LINNAEUS, 1758: A LABORATORY APPROACH. **Michael A. Anderson***, **Eric R. Salmon**, and **George W. Benz**, Middle Tennessee State University, Murfreesboro, Tennessee.

4:45 – 5:00

CHANGES IN THE FISH ASSEMBLAGE IN RESPONSE TO RESTORATION OF A CHANNELIZED STREAM IN WEST TENNESSEE. **Tom Blanchard** and **Brad Ray**, University of Tennessee at Martin, Martin, Tennessee.

5:00 – 5:15

LONG-TERM BIOASSESSMENT OF MINED VS. UNMINED STREAMS IN THE CUMBERLAND MOUNTAINS OF EAST TENNESSEE BASED ON THIRTY YEARS OF COLLECTED DATA. **Elizabeth D. Slade*** and **Joseph R. Schiller**, Austin Peay State University, Clarksville, Tennessee.

5:15 – 5:30

DIVERSITY AND CONSERVATION STATUS OF THE CRAYFISHES OF THE APPALACHIAN PLATEAU. **John W. Johansen*** and **Hayden T. Mattingly**, Tennessee Technological University, Cookeville, Tennessee.

Poster Presentations

(Judging will take place between 8:45 am – 9:45 am. Please be present near your poster.)

Botany

HUMAN IMPACT ON BEAVER FORAGING IN AN URBAN FOREST. *Samuel R King**, *James Helton**, and *Robert E Loeb*, Lipscomb University, Nashville, Tennessee (SRK, JH), and Pennsylvania State University, Dubois Campus, Dubois, Pennsylvania (REL).

CALLUS PRODUCTION FROM LEAF TISSUES OF AFRICAN MAHOGANY (*KHAYA SENEGALENSIS*). *Danielle Blackstone**, *David Koh**, *Jordann Staples**, and *Mark Bolyard*, Union University, Jackson, TN.

EFFECTS OF ALLELOPATHIC INTRASPECIFIC COMPETITION ON GROWTH OF PRIVET, *LIGUSTRUM SINENSE*. *Kelly Casarez** and *Darlene Panvini*. Belmont University, Nashville, Tennessee.

Cell and Molecular Biology

THE EFFECTS OF METHYL MERCURY ON OLIG2 AND NKX2.2A EXPRESSING CELLS DURING ZEBRAFISH DEVELOPMENT OF THE CENTRAL NERVOUS SYSTEM. *Melissa Guest**, *Marina Zaky** and *Karen Meisch*
Austin Peay State University, Clarksville, TN 37027

“TREATING *SALMONELLA TYPHIMURIUM* INFECTED *DANIO RERIO* WITH ANTIBIOTICS AND HOMEOPATHIC REMEDIES.” *Ashley Newsome*, *Jennifer T. Thomas* and *Lori L McGrew*, Belmont University, Nashville, Tennessee.

SPECTROPHOTOMETRIC DETERMINATION OF RESPIRATION RATES IN *C. ELEGANS*. *Monique Parrish** and *Robert Grammer*, Belmont University, Nashville, Tennessee

Chemistry

SYNTHESIS OF CYCLOPROPYL PEPTIDOMIMETICS AS POTENTIAL BACE AND HCV NS3-4A PROTEASE INHIBITORS *Norma K. Dunlap*, *Daniel H. Gouger**, *Jessica A. Taylor**, and *Jacob H. Basham** Middle Tennessee State University Department of Chemistry, Murfreesboro, Tennessee

SYNTHESIS AND APPLICATION OF BORON-CONTAINING PYRROLE SPECIES. *Rachael S. Hall** and *Scott T. Handy*, Middle Tennessee State University Department of Chemistry, Murfreesboro, Tennessee.

CONVERSION OF LIGNOCELLULOSIC MATERIAL TO VALUABLE CHEMICALS FOR THE PRODUCTION OF BIOETHANOL. *Miguel A. Hurtado** and *Beng G. Ooi*, Middle Tennessee State University Department of Chemistry, Murfreesboro, Tennessee.

SYNTHESIS OF LABELED MEVALONOLACTONE. *Norma K. Dunlap* and *David G. Antonelli**, Middle Tennessee State University Department of Chemistry, Murfreesboro, Tennessee.

COMPARISON OF TAGGED PROTEIN-ANTIBODY BINDING IN MESOPOROUS AND POROUS SILICA VIA FLOURESCENCE MICROSCOPY. *Samuel T. Mitchell**, *Adrienne C. Friedli*, *Stephen M. Wright*, Middle Tennessee State University Department of Chemistry and Biology, Murfreesboro, Tennessee.

EXON EXPRESSION OF BRAIN-DERIVED NEUROTROPHIC FACTOR IN CANCER CELL LINES, HB-8501 AND PC-3. *Ann Hanna** and *Jon H. Lowrance*, Biology Department, Lipscomb University, Nashville, TN.

*BRAIN-DERIVED NEUROTROPHIC FACTOR PROTEIN EXPRESSION IN CANCER CELL LINES. *Chelsi Cassilly** *Ashley Guinn*, and *Jon H. Lowrance*, Biology Department, Lipscomb University, Nashville, TN.

Geology and Geography

THE BEN E. CLEMENT MINERAL MUSEUM'S FOSSIL AND GEOLOGIC CURIOSITIES COLLECTION. *Michael A. Gibson*, *Elaina Gibson**, *Mary Stinson**, *Nikki Tucker**, and *Lawanda Virgous**, University of Tennessee at Martin, Tennessee.

Health and Medical Science

ROLE OF PMK-1 AND PCD PATHWAYS IN *C. ELEGANS* INFECTED WITH *E. FAECIUM*. *Azad Karim** and *Nick Ragsdale*, Belmont University, Nashville, Tennessee

METABOLIC CHANGES IN *CEANRHABDITIS ELEGANS* INFECTED WITH *PSEUDOMONAS AERUGINOSA* OR *STAPHYLOCOCCUS AUREUS*. *Laura Muck** and *Nick Ragsdale*, Belmont University, Nashville, Tennessee.

ROLE OF DAF-2 INSULIN/IGF-I LIKE AND P38 MAP KINASE PATHWAYS IN *CEANORHABDITIS ELEGANS* INFECTED WITH *SALMONELLAE TYPHIMURIUM*. *Roxy Musharrafeia** and *Nick Ragsdale*, Belmont University, Nashville, Tennessee.

THE EFFECTS OF D₁ AND D₂-LIKE DOPAMINE RECEPTORS ON THE CHEMOTAXIS OF *CEANORHABDITIS ELEGANS*. *Sylvia Chac** and *Nick Ragsdale*, Belmont University, Nashville, Tennessee.

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Physics and Astronomy

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VALIDATION OF A TWO-DIMENSIONAL TSUNAMI MODEL ON A SPHERICAL SURFACE BY THE 2011 PACIFIC OCEAN TSUNAMI. *Arjun Tan, Sihon Crutcher, and Matthew E. Edwards, Alabama A & M University, Normal, Alabama (AT, MEE), and U.S. Army Research, Development, and Engineering Command (SC).*

Science and Math Education

TEACHING SCIENTIFIC RESEARCH THROUGH CEDAR GLADE ECOLOGY IN THE NSF GK-12 PROGRAM, *Alison N. Carey*, Christina Nicholas, Mary B. Farone, Kim C. Sadler, Anthony L. Farone, Middle Tennessee State University, Murfreesboro, Tennessee, and Siegel High School, Murfreesboro, Tennessee.*

Zoology

INFECTION RATES OF *TRYPANOSOMA CRUZI* IN WILDLIFE FROM RURAL AREAS OF MIDDLE TENNESSEE. *Rachel K. Serfass*, RaeAnne N. Lauffer, and C. Steven Murphree, Belmont University, Nashville, Tennessee.*

INFECTION RATES OF *TRYPANOSOMA CRUZI* IN WILDLIFE FROM SUBURBAN AREAS OF MIDDLE TENNESSEE. *RaeAnne N. Lauffer*, Rachel K. Serfass, and C. Steven Murphree, Belmont University, Nashville, Tennessee.*

THE INFLUENCE OF TEMPERATURE ON THE FEEDING RATES OF TWO INTRODUCED SPECIES, *ASTRONOTUS OCELLATUS* (OSCAR) AND *ARCHOCENTRUS NIGROFASCIATUS* (ONVICT CICHLID): IMPLICATIONS FOR THEIR SUCCESSFUL ESTABLISHMENT IN FLORIDA. *Chelsea Harden*, Mollie Carter, Jared Littlejohn, Dakota Tracy, Tara Tucker, and James Kerfoot, Jr., Union University, Jackson, Tennessee.*

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POPULATION SURVEY OF THE STREAMSIDE SALAMANDER, *AMBYSTOMA BARBOURI*, IN THE INNER AND OUTER NASHVILLE BASINS OF MIDDLE TENNESSEE. *Michael A. Anderson*, Joshua R. Campbell*, Alison N. Carey*, Derec R. Dodge*, Ryan A. Johnston*, Emily R. Mattison*, Ryan J. Seddon*, Nathan L. Singer*, and Brian T. Miller, Middle Tennessee State University, Murfreesboro, Tennessee.*

AN ONGOING SURVEY OF THE HERPETOFAUNA OF TWO NATIONAL WILDLIFE REFUGES WITHIN THE REELFOOT LAKE COMPLEX. *Keith Paluso, Steven Pitts, James Stewart, and Tom Blanchard, University of Tennessee at Martin, Martin, Tennessee.*

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USE OF SILENT POINT COUNTS AND AURAL STIMULI TO DETECT BARRED OWLS IN THE AREA SURROUNDING REELFOOT LAKE, TENNESSEE. *Sarah E. Redding* and H. Dawn Wilkins, University of Tennessee at Martin, Martin, Tennessee.*

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PHYLOGEOGRAPHIC COMPARISON OF *CENTRUROIDES VITTATUS* POPULATIONS IN MIDDLE TENNESSEE AND CENTRAL ARKANSAS. *Thomas A. Homonnay*, John H. Niedzwiecki and C. Steven Murphree, Belmont University, Nashville, Tennessee.*

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