

Tennessee Academy of Science

TAS

Program

of the

113th Meeting

in conjunction with the

Tennessee Science Teachers Association

**Franklin Marriott Hotel
Cool Springs Conference Center
Franklin, Tennessee
November 13-15, 2003**

Institutional Sustaining Members of the Tennessee Academy of Science

Austin Peay State University

East Tennessee State University

Middle Tennessee State University

Tennessee Technological University

The University of Tennessee at Chattanooga

The University of Tennessee at Martin

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 Junior Science and Humanities Symposium

Tennessee Psychological Association

Tennessee Science Teachers Association

TAS Home Page Information

For information about TAS, including information for the annual meeting, the Tennessee Visiting Scientist Program, the membership database, and winners of the student paper and poster competitions, visit the TAS website at: <http://www.tnacadsci.org/>

TAS Future meeting Sites

2004 Columbia State Community College (Columbia)

2005 University of Tennessee at Martin (Martin)

TABLE OF CONTENTS

| | |
|---|--------------------|
| TAS Institutional Sustaining Members | Inside front cover |
| TAS Affiliated Societies | Inside front cover |
| Table of Contents and Announcements | p. 1 |
| Meeting Schedule and Social Events | p. 2 |
| Business and Plenary Sessions | p. 3 |
| TAS Workshops | p. 4 |
| Technical Sessions in Cool Springs Conference Center | |
| 1. Botany (Friday) | p. 5 |
| 2. Cell and Molecular Biology (Saturday) | p. 6 |
| 3. Chemistry (Friday) | p. 7 |
| 4. Engineering & Engineering Technology (Saturday) | p. 8 |
| 5. Ethics of Science and Technology (Saturday) | p. 9 |
| 6. Geology and Geography (Friday) | p.10 |
| 7. Health and Medical Sciences (Saturday) | p.11 |
| 8. History of Science (Saturday) | p.12 |
| 9. Mathematics and Computer Science (Friday) | p.13 |
| 10. Microbiology (Saturday) | p.14 |
| 11. Physics and Astronomy (TBA) | p.15 |
| 12. Science and Math Teaching (Friday) | p.16 |
| 13. Zoology (Friday) | p.17-18 |
| 14. Symposium on Reelfoot Lake (Thursday) | p.19 |
| Poster Session (Conference Center Lobby) | p.20-22 |
| <i>Map and Directions to Conference Center</i> | p.23 |
| Standing Committees | p.24 |
| Executive Committee | Inside back cover |
| Local Arrangement Committee | Inside back cover |

ANNOUNCEMENTS

Registration: Meeting attendees may register in the Lobby of the Conference Center Nov.13 (8:00-5:00 PM), Nov. 14 (7:00AM–5:00PM), and Nov. 15 (7:00-9:00AM)

Tickets for the Awards Breakfast on Saturday may be purchased for \$20.00 at the Registration Desk.

Membership: Application forms for membership in the Tennessee Academy of Science are available at the Registration Desk. A completed application accompanied by first year dues may be left with the TAS Treasurer at the Registration Desk or mailed to: Dr. Steven Murphree, Dept. Biology, Belmont University, 1900 Belmont Blvd., Nashville, TN 37212. Annual dues, which include a subscription to the Journal, are by category: Regular \$20; Sustaining, \$25; Supporting, \$30; Life, \$200; Student, \$10; Emeritus, \$10.

MEETING SCHEDULE

Thursday, November 13, 2003

| | |
|-----------------------|--|
| 8:00 p.m.-5:00 p.m. | Registration Conference Center Lobby |
| 1:00 p.m. - 4:00 p.m. | TAS Workshop - Teaching Biotechnology Conference Center - Room TBA |
| 1:00 p.m. - 4:00 p.m. | TAS Workshop - Evolutionary Thought Conference Center - Room TBA |
| 1:00 p.m. - 5:00 p.m. | TAS Symposium on Reelfoot Lake Conference Center - Room TBA |
| 5:00 p.m. – 9:00 p.m. | TSTA/TAS Reception Salons 6-10 |

Friday, November 14, 2003

| | |
|-----------------------|---|
| 7:00 a.m.-5:00 p.m. | Registration Conference Center Lobby |
| 8:30 a.m.-4:00 p.m. | Posters Session (attended 11-12AM) Conference Center Lobby |
| 9:00 a.m.-11:00 a.m. | Business and Plenary Session Mustang Room |
| 11:00 a.m.-12:00 a.m. | Annual Science Chairs Meeting Thoroughbred Boardroom |
| 11:00 a.m.-12:00 p.m. | Poster Viewing and Evaluation Conference Center Lobby |
| 12:00 p.m.-1:25 p.m. | Lunch Break |
| 1:25 p.m.- | Section Business and Technical Sessions I Conference Center |
| 5:30 p.m.-7:30 p.m. | TSTA/TAS Open House Adventure Science Center, Nashville |
| 8:00 p.m.- | Executive Committee Meeting Thoroughbred Boardroom |

Saturday, November 15, 2003

| | |
|----------------------|--|
| 7:00 a.m.- 9:00 a.m. | Registration Conference Center Lobby |
| 7:00 a.m.- 9:00 a.m. | TSTA/TAS Awards Breakfast Conference Center Salons 1 and 2 |
| 8:55 a.m. - | Section Business and Technical Sessions II Conference Center |

TAS BUSINESS MEETING

Friday, November 14, 2003

9:00 a.m., Mustang Room

Welcome. Dr. Charles Baldwin, Union University, President, TSTA

Business Meeting. Karen Kendall-Fite, President TAS, Presiding

TAS PLENARY SESSION

9:30 a.m., Salon 5

Keynote Address

“New Ways of Thinking About Integrating Technology and Teaching Science”

Dr. Carl Owens

Professor of Curriculum and Instruction

Tennessee Technological University

Dr. Carl W. Owens joined the faculty of Tennessee Technological University in 1981. He teaches undergraduate, Master's and Doctoral level courses relating to various topics in educational technology. Dr. Owens is the Director of Technology for the TTU College of Education where he provides vision and leadership in technological advances related to teacher education. Dr. Owens has made presentations at numerous state, regional, and national conferences on topics related to improving instruction with technology. He received a B.S. from in Zoology and a M.S. in Library Media, both from Alabama A&M University, the Ed.S. in Instructional Design and Technology from the University of Memphis, and the Ed.D. from Tennessee State University.

TAS WORKSHOPS

HISTORY AND PROGRESS OF EVOLUTIONARY THOUGHT IN SCIENCE

**Thursday 1:00-4:00, Room TBA
Dr. Charles R. McGhee, Presiding
Middle Tennessee State University**

The workshop will consist of a panel of scientists, teachers, historians and authors who will give presentations in their respective fields of science and history followed by audience questions and discussion on the subject of teaching evolution in a 21st century classroom. The objective of the workshop is to offer teachers information on the history, research, current theories, techniques and applications of modern evolutionary science.

Teachers will be given the opportunity to ask questions and discuss ideas and issues related to the teaching of evolution. The primary emphasis will be on investigating the scientific evidences used to establish and support the hypotheses and theories of evolution for a 21st century student. Presentations and areas of discussion include:

Evolutionary Ideas Before And After Darwin.

Dr. Charles McGhee, Middle Tennessee State University

The Geological And Fossil Evidence For Earth's Evolution.

Dr. Larry Knox, Tennessee Technological University

Church, State, And The Science Classroom: History Of The Evolution-Creation Controversy.

Dr. George Webb, Tennessee Technological University

Why Creationism And Intelligent Design Are Not Science

Dr. Massimo Pigliucci, University of Tennessee at Knoxville

A Hands-on Approach to Teaching Biotechnology

**Thursday 1:00-4:00, Room TBA
Drs. Steven Wright, Rebecca Seipelt, Cindy Taylor
Middle Tennessee State University**

Attendees will learn how easy it can be to teach biotechnology in their classrooms--particularly since the MTSU Biotechnology Resource Group not only provides training but also all supplies and equipment. Teachers will carry out gel Electrophoresis, DNA fingerprinting and see other demonstrations.

Limit: 16 participants by pre-registration only.

BOTANY
Friday, Quarter Horse Room
Dr. Jeff Lebkuecher, presiding
Austin Peay State University

- 1:25 pm **Section Business Meeting: Election of Section Officers for 2004**
- 1:30 **Managing Table Mountain Pine (*Pinus pungens*) Forests With Prescribed Fire.**
Nicole Turril Welch, Middle Tennessee State University.
- 1:45 **Notes On The Distribution Of Rare Of Plant Species On Cedars Of Lebanon State Forest, Wilson County, Tennessee.** Claude Bailey Jr., Tennessee Department Of Environment And Conservation, Division Of Natural Heritage, Nashville, Tennessee.
- 2:00 **The Status Of *Castanea dentate* At Land Between The Lakes, Stewart County, Tennessee And Trigg County, Kentucky.** Joe Schibig and Michael Hill*#, Volunteer State Community College and Austin Peay State University.
- 2:15 **Four Decades Of Floristic Studies In Land Between The Lakes, Kentucky And Tennessee.** Edward W. Chester, Austin Peay State University..
- 2:30 **The Vascular Flora Of Fort Donelson National Battlefield And Cemetery, Stewart County, Tennessee.** Edward W. Chester, Austin Peay State University.
- 2:45 **Floristic Studies Within The Duck River Unit Of The Tennessee National Wildlife Refuge, Humphreys County, Tennessee.** Stephanie M. Gunn* and Edward W. Chester, Austin Peay State University.
- 3:00 **Break**
- 3:15 **Development Of A Computerized Herbarium Catalogue For The Henning Museum, Bryan College.** Colin Plank* and Todd C. Wood, Bryan College.
- 3:30 **Characterization Of A Novel Repetitive Element Bounded By Direct Tandem Repeats In The Rice (*Oryza Sativa* L.) Genome.** Matthew Croxton* and Todd C. Wood, Bryan College.
- 3:45 **The Evolution Of Terminal Inverted Repeats Of Rice (*Oryza sativa* ssp. *Indica*) Miniature Inverted-Repeat Transposable Elements (Mites).** Leah Lovoie* and Todd C. Wood, Bryan College.
- 4:00 **Sequence Alignments Reveal Two Classes Of Tourist Miniature Inverted-Repeat Transposable Elements On Rice (*Oryza sativa* L.) Chromosome10.** Todd C. Wood*, Bryan College
- 4:15 **The Riparian Flora Of Rock Creek In The Pickett State Forest.** Bethany Alley and S. K. Ballal, Tennessee Technological University
- 4:30 **Closing Remarks**

* student author

presenting author, if not first author

CELL and MOLECULAR BIOLOGY
Saturday, Clydesdale Room
Dr. Matt Elrod-Erickson, presiding
Middle Tennessee State University

- 8:55 a.m. **Section Business Meeting: Election of Section Officers for 2004**
- 9:00 **Initial Protocol For Isolating Chicken Liver Phosphatase Involving A Prototype Gradient Maker.** M. Schilling* and R. Reed, Austin Peay State University.
- 9:15 **Protein Sorting Into Transport Vesicles At The Endoplasmic Reticulum.** M. Elrod-Erickson, Middle Tennessee State University.
- 9:30 **Protein Modeling Of Ribulose-1,5-Bisphosphate Carboxylase Oxygenase Using Razmol.** T. Justun Durham*, S.K. Ballal, and Scott H. Northrup, Tennessee Technological University.
- 9:45 **Closing Remarks**

* student author

presenting author, if not first author

CHEMISTRY
Friday, Palomino Room
Dr. Martin V. Stewart, presiding
Middle Tennessee State University

- 1:25 p.m. **Section Business Meeting: Election of Section Officers for 2004**
- 1:30 **Evaluating The Information Content Of A Newly Developed Molecular Descriptor.** Donald P. Visco, Jr., Tennessee Technological University.
- 1:45 **Thermodynamic Modeling Of Aqueous-Hydrogen Fluoride Systems.** Barath Baburao* and Donald P. Visco, Jr., Tennessee Technological University.
- 2:00 **Building Macromolecules From Pseudoatoms.** Tibor Koritsanszky, Middle Tennessee State University.
- 2:15 **A Computational Look At Selected Organosilylmagnesium Compounds.** William H. Ilsley, Middle Tennessee State University.
- 2:30 **Quicksilver: Lead's Toxic And Environmental Twin.** Todd Kuiken* and Hong Zhang, Tennessee Technological University.
- 2:45 **Driving Force For Diel Change Of Dissolved Gaseous Mercury Levels In Surface Freshwaters.** Hong Zhang, Chris Dill*, Todd Kuiken*, Jerome Nriagu, and Steve Lindberg, Tennessee Technological University (HZ,CD,TK), University of Michigan, Ann Arbor, Michigan (JN), and Environmental Sciences Division, Oak Ridge National Laboratory (SL).
- 3:00 **Break**
- 3:15 **Use Of The GLEAMS Model To Predict The Fate Of Herbicides Used In Pine Plantations On The Cumberland Plateau.** Rong Jiang* and John Harwood, Tennessee Technological University.
- 3:30 **Synthesis Of Novel Analogs Of *epi*-Podophyllotoxin.** Ian Romaine* and Norma K. Dunlap, Middle Tennessee State University.
- 3:45 **Metallogels: Artificial Glutamate Lipids With Lewis-Basic Sites And Their Metal Complexes.** Anthony J. Zucchero* and Robert E. Bachman, University of the South.
- 4:00 **Proposed Synthesis And Analysis Of Selenium Alkoxides.** Judith M. Iriarte-Gross and Sorawit Timothy Decha-Umphai*[#], Middle Tennessee State University.
- 4:15 **Using Water Flow Through A Plastic Model To Demonstrate Thermal And Ionic/Molecular Diffusion.** Harvey F. Blanck, Austin Peay State University.
- 4:30 **A Portable Demonstration Of Vat Dyeing Simulated With Indigo Carmine.** Martin V. Stewart and David G. Figueredo*, Middle Tennessee State University.
- 4:45 **Closing Remarks**

* student author

presenting author, if not first author

ENGINEERING and ENGINEERING TECHNOLOGY
Saturday, Mustang Room
Dr. Adel Salama, presiding
Austin Peay State University

- 8:55 a.m. **Section Business Meeting: Election of Section Officers for 2004**
- 9:00 **Modeling Intracranial Pressure Dynamics.** Michael L. Daley, Imtiyaz Barmare*, The University of Memphis.
- 9:15 **Changes in Cerebrovascular Pressure Transmission During Intracranial Pressure Monitoring.** Michael L. Daley, Premkumar Balasubramanian*, The University of Memphis.
- 9:30 **Automated Arteriolar Diameter Measurements from Video Recording.** Michael L. Daley, Vikram Kolluru*, The University of Memphis.
- 9:45 **Adaptive Modeling of Intracranial Pressure Dynamics.** Michael L. Daley, Sandeep Ramakrishnan*, Sarath Yalamanchilli*, The University of Memphis.
- 10:00 **Affordable Part Development Stages For The Student Built Race Cars.** Adam McGough, Ismail Fidan, Tennessee Technological University.
- 10:15 **Developing Novel Hydrofluoroethers Using The Inverse-QSR Technique With Signature.** Donald P. Visco, Derick Weis*, Tennessee Technological University.
- 10:30 **Using X-ray Diffraction To Measure Applied Strains In Cement-Based Materials.** Joseph J. Biernacki, Carl Parnham*, Tennessee Technological University.
- 10:45 **PLC Control of a Dual Pneumatic Robot System.** Chen, Chin-Zue, Austin Peay State University.
- 11:00 **Using Simple Mobile Robots To Teach Digital Logic Design.** Adel Salama, Ashraf Saad, Austin Peay State University (Adel), Georgia Institute of Technology, Savannah, Georgia (Ashraf).
- 11:15 **Closing Remarks**

* student author

presenting author, if not first author

ETHICS in SCIENCE and TECHNOLOGY
Saturday, Thoroughbred Board Room
Dr. Rubye Prigmore-Torrey, presiding
Tennessee Technological University

9:00 a.m.

Responsible Research in the Academy: Why Is It Important?

A panel discussion. Participants to be arranged.

GEOLOGY and GEOGRAPHY
Friday, Thoroughbred Board Room
Dr. Michael A. Gibson, presiding
The University of Tennessee at Martin

- 1:25 pm **Section Business Meeting: Election of Section Officers for 2004**
- 1:30 **Student-Centered Group Activities As An Alternative To Teacher-Centered Introductory Earth Science Lectures At Middle Tennessee State University.** Mark Abolins, Middle Tennessee State University.
- 1:45 **“How Did It Get That Way?” Helping Students Infer Geomorphic Processes From Form And Structure.** Hugh H. Mills, Tennessee Technological University.
- 2:00 **Tennmaps For The Future: An Enquiry-Driven, Minds-On, Approach To Earth Science Teaching-Learning Activities Using Maps, Remote-Sensing Imagery, And Experimental Activities.** G. Michael Clark, Michael A. Gibson, Hugh H. Mills. University of Tennessee, Knoxville, (GMC), University of Tennessee, Martin, (MAG), Tennessee Technological University (HHM).
- 2:15 **An Analysis Of A Climate Transition Zone: The Case Of The Mid-Mississippi River Valley.** Robert M. Simpson and Cahit Erkal, The University of Tennessee at Martin.
- 2:45 **The Clarksville-Hopkinsville MSA, As An Ozone Non-Attainment Area: Is A Regulatory Mistake Being Made,** Robert A. Sirk, Austin Peay State University.
- 3:00 **Geochemical Investigation Of The Mechanisms Of Magma Formation Beneath The Northern Oregon Cascades.** B. Cosky, Crombie, J. Baxter, B. Buchanan, and W. Cribb, Middle Tennessee State University.
- 3:15 **Invertebrate Taphonomy In A Paleo-Marsh Ecosystem Site (Late Mississippian), Black Warrior Basin, Alabama.** Michael A. Gibson, Robert A. Gastaldo, and Allyn Blanton-Hooks, University of Tennessee at Martin, Martin (MAG), Colby College, Waterville, Maine (RAG), Auburn University, Auburn, Alabama (ABH).
- 3:30 **Closing Remarks**

* student author

presenting author, if not first author

HEALTH and MEDICAL SCIENCES
Saturday, Quarter Horse Room
Dr. Gore Ervin, presiding
Middle Tennessee State University

- 8:55 a.m. **Section Business Meeting: Election of Section Officers for 2004**
- 9:00 **Vasopressin Receptors And The Ovine Fetal Cardiovascular Responses To Acute Hypotension.** M. G. Ervin, K. A. Terry, and G. C. Calvario, Middle Tennessee State University (MGE), and University of California Los Angeles, School of Medicine, Harbor Medical Center (KAT, GCC).
- 9:15 **Total Knee Replacement Infected With *Mycobacterium tuberculosis*.** Halim Aboufaycal, J. P. Moorman, and J. W. Myers, East Tennessee State University
- 9:30 **The Presence Of *Borrelia* Species Among Ticks Collected From Selected Eastern States.** Sarah L. Collins*, Stephen M. Wright#, and Melissa K. Miller, Middle Tennessee State University (SLC, SMW), and US Army Center for Health Promotion and Preventative Medicine (MKM)
- 9:45 **Probe-DNA Hybridization: How Many Mismatches Will A Probe Tolerate?** Kip Phillips* and Stephen M. Wright, Middle Tennessee State University
- 10:00 **Fluorescence Based Detection Of Biomolecules Bound To Glass Substrate.** Adam F. Farmer*, Adrienne C. Friedli, and Stephen M. Wright, Middle Tennessee State University
- 10:15 **Closing Remarks**

* student author

presenting author, if not first author

HISTORY of SCIENCE
Saturday, Arabian Room
Dr. C. Steven Murphree, presiding
Belmont University

- 8:55 a.m. **Section Business Meeting: Election of Section Officers for 2004**
- 9:00 **The “Genesis Act” in Historical Perspective** George E. Webb, Tennessee
Technological University
- 9:15 **Ontogeny: A Look at Past, Present, and Future Paradigms** David A. Wollert
Northeast State Community College
- 9:30 **Oak Ridge Science/Engineering: 1942-1988.** Ted. S. Lundy, Retired Oak Ridge
National Laboratory and Tennessee Technological University
- 9:45 **Selected Historical Springs in Tennessee** Laurina I. Lyle, Austin Peay State University
- 10:00 **Kentuckian Luke Pryor Blackburn’s Yellow Fever Plot: 1865** C. Steven Murphree,
Belmont University
- 10:15 **Closing Remarks**

* student author

presenting author, if not first author

MATH and COMPUTER SCIENCE
Friday, Arabian Room
Dr. Yung-Way Liu, presiding
Tennessee Technological University

- 1:25 pm **Section Business Meeting: Election of Section Officers for 2004**
- 1:30 **Parameter Estimation In ARMA Processes Through The Use Of Robust Distributions --- A Brief History**, Michael R. Allen, Tennessee Technological University.
- 1:45 **Factoring Finite Geometric Series**, Dennis Walsh, Middle Tennessee State University.
- 2:00 **Robust Estimation For The Generalized Extreme Value Distribution**, Jun Ye*, David Smith, Tennessee Technological University.
- 2:15 **Are Pure Component Parameterization Procedures Important In Mixture Property Prediction?**, Saravanan Swaminathan*, Donald P. Visco, Jr., Tennessee Technological University.
- 2:30 **Relationship Of Convergence Amongst Some Special Distributions To Normal**. Lynda Buck*, Michael R. Allen, Tennessee Technological University
- 2:45 **Bound States In Two Quantum Waveguides Coupled Laterally Through Boundary Windows With Different Channel Widths**, Ping Ye*, Yung-Way Liu, Tennessee Technological University.
- 3:00 **Matrix Operators On Some l_p Spaces**, Qiang Zhang*, Ramesh Garimella, Tennessee Technological University.
- 3:15 **Closing Remarks**

* student author

presenting author, if not first author

MICROBIOLOGY
Saturday, Palomino Room
Dr. Jeff Leblond, presiding
Middle Tennessee State University

- 8:55 a.m. **Section Business Meeting: Election of Section Officers for 2004**
- 9:00 **Antimicrobial And Allelopathic Properties Of *Ludwigia sp.*** R.D. McWhirter*# and J.M. Zamora, Middle Tennessee State University
- 9:15 **Isolation And Identification Of Diazanone-Degrading Bacteria.** J.L. Trageser*# and J.M. Zamora, Middle Tennessee State University
- 9:30 **Comparison Of *Legionella pneumophila* Patterns In Two Human Macrophage Cell Lines.** J.K. Alexander*#, M. Farone, and A. Farone, Middle Tennessee State University
- 9:45 **Reovirus Serotype-Dependent Replication In A Human Monocyte Cell Line**
T. Guess*#, A. Farone, and M. Farone, Middle Tennessee State University
- 10:00 **Lipid Composition Of Members Of The Algal Class *Chlorarachniophyceae***
J.L. Dahmen*# and J.D. Leblond, Middle Tennessee State University
- 3:15 **Closing Remarks**

* student author

presenting author, if not first author

PHYSIC AND ASTRONOMY
To Be Arranged
Dr. Robert Marlowe, presiding
The University of Tennessee at Chattanooga

SCIENCE and MATH TEACHING
Friday, Clydesdale Room
Dr. Michael J. Sanger, presiding
Middle Tennessee State University

- 1:25 p.m. **Section Business Meeting: Election of Section Officers for 2004**
- 1:30 **A History And Overview Of The Tennessee Science Olympiad.** David A. Stanislawski and Pat Patterson, Chattanooga State, Chattanooga, Tennessee (DAS), and Middle Tennessee State University, Murfreesboro, Tennessee (PP).
- 1:45 **Collaboration In The Science Classroom.** Sarah F. Barlow, Middle Tennessee State University, Murfreesboro, Tennessee.
- 2:00 **Integration Of Inquiry-Based Field Investigations Using Student Groups In Introductory College-Level Science Laboratories: Is It Effective?** Dawn M. Ford, Sean Richards, and Karen Adsit, University of Tennessee at Chattanooga, Chattanooga, Tennessee.
- 2:30 **Raising Ecological Awareness In Preservice Educators And Elementary Students Through A Cedar Glade Curriculum Study.** Kim Cleary Sadler, Middle Tennessee State University, Murfreesboro, Tennessee.
- 2:45 **Depth Versus Breadth: Do Students Learn Chemistry Concepts As Well With Inquiry-Based Methods As Traditional Lecture Methods?** Michael J. Sanger, Middle Tennessee State University, Murfreesboro, Tennessee.
- 3:00 **BREAK**
- 3:15 **Chemistry Misconceptions Of Preservice Teachers: What They Think They Know Just Before They Teach.** Amy J. Phelps, Middle Tennessee State University, Murfreesboro, Tennessee.
- 3:30 **Innovative Introductory Physics: A Blended Science Course For Teachers.** Aimee L. Govett and John W. Farley, East Tennessee State University, Johnson City, Tennessee (ALG), and University of Nevada, Las Vegas, Nevada (JWF).
- 3:45 **Some Construction Problems To Challenge Geometry Students.** M. Y. Melnikov, Middle Tennessee State University.
- 4:00 **Closing Remarks**

* student author

presenting author, if not first author

ZOOLOGY
Friday, Mustang Room
Dr. Joseph R. Schiller, presiding
Austin Peay State University

- 1:25 p.m. **Section Business Meeting: Election of Section Officers for 2004**
- 1:30 **Ixodid Ticks Of Rutherford County.** Tracey A Ludyjan-Ybarra*, Middle Tennessee State University.
- 1:45 **Champion Of Progress: A Brief Introduction To The Endangered Nashville Crayfish (*Orconectes shoupi*) And The Mill Creek Watershed.** David Ian Withers, Division of Natural Heritage.
- 2:00 **Effect Of Water Temperature On The Growth Of Barrens Topminnow (*Fundulus julisia*) And Western Mosquitofish (*Gambusia affinis*).** Malbika Laha * and Haden T. Mattingly, Tennessee Technological University.
- 2:30 **Using Scanning Electron Microscopy To Study The Development Of Teleost Fish.** Judith D. Shardo, Middle Tennessee State University.
- 2:45 **Demography Of Hellbenders In Middle Tennessee: Cause For Concern?** Brian T. Miller and Joyce L. Miller, Middle Tennessee State University.
- 3:00 **Breeding Season Suppression Of The Stress Response In Male Fence Lizards, *Sceloporus undulates*.** Matthew Klukowski, Middle Tennessee State University.
- 3:15 **The Influence Of Habitat Complexity On The Foraging Success Of The Eastern Gartersnake (*Thamnophis sirtalis sirtalis*).** J. Jeffrey Green, John S. Placyk, Jr., Gordon M. Burghardt, Middle Tennessee State University.
- 3:30 **Preliminary Investigation Of Timber Rattlesnake Thermoregulation In Middle Tennessee.** Timothy Worrall* and Vincent A. Cobb, Middle Tennessee State University.
- 3:45 **BREAK**
- 4:00 **Proximity To Edge And Predation Risk On Artificial Nests Of Northern Bobwhites.** Jason B. Jennings*, Michael L. Kennedy, and Allan E. Houston, University of Memphis (MES & MLK), Ames Plantation, Grand Junction, Tennessee (AEH).
- 4:15 **Estimating Population Density Of White-Tailed Deer On Milan Army Ammunition Plant.** Philip L. Johnson* and Michael L. Kennedy, University of Memphis.
- 4:30 **Predation On Internal Organs Of Field-Dressed White-Tailed Deer.** Joshua K. Bright*, Philip L. Johnson*, Allan E. Houston, and Michael L. Kennedy, University of Memphis (JKB, PLJ, & MLK), Ames Plantation, Grand Junction, Tennessee (AEH).
- 4:45 **Measures Of Biodiversity Of Small Mammals In Three Habitat Types.** Heidi L. LaMountain* and Michael L. Kennedy, University of Memphis.
- 5:00 **Movement Patterns In The Raccoon, *Procyon lotor*, In Southwestern Tennessee.** John R. Hisey, Michael L. Kennedy, Troy A. Ladine, Shannon A. Maris-Danley, and Lacey D. Loudermilk, University of Memphis (JRH, MLK, TAL, SAMD), Lee University (LDL).

ZOOLOGY (Continued)

- 5:15 **An Assessment Of Species Richness In Mammals Using Scent-Station Procedures In Three Habitat Types.** James B. Aikens *, Brian D. Carver, and Michael L. Kennedy, University of Memphis
- 5:30 **An Assessment Of Mammalian Biodiversity In Three Habitat Types Using Pitfall Traps.** Melita E. Smith*, Michael L. Kennedy, and James A. Huggins, University of Memphis (MES & MLK), Union University (JAH).
- 5:45 **Testing The Hypothesis That Ambient Temperature During Egg-Laying Explain Within Season Clutch-Size Decline In Birds.** T. David Pitts, University of Tennessee at Martin.
- 6:00 **Closing Remarks**

* student author

presenting author, if not first author

REELFOOT LAKE SYMPOSIUM
Thursday, Mustang Room
Wintfred L. Smith, Presiding
The University of Tennessee at Martin

- 12:55 p.m. **Opening Remarks.** Wintfred L. Smith, University of Tennessee at Martin.
- 1:00 **The Geography Of Reelfoot Lake.** M. Simpson, University of Tennessee at Martin.
- 1:15 **Geologic History Of Reelfoot Lake.** M. Gibson, University of Tennessee at Martin.
- 1:30 **Paleoseismology Of The New Madrid Seismic Zone From Tree Rings.** M. Cleaveland and D. Stahle, University of Arkansas, Fayetteville.
- 1:45 **Archaeological Research At Reelfoot: The Last 20 Years.** W. Lawrence, Natural and Cultural Resource Management Section, TDEC, Nashville.
- 2:00 **Application Of Satellite Images In The Study Of Water Quality In Reelfoot Lake, Tennessee.** F. Wang*, L. Han, and H. Kung, University of Memphis (FW, HK) University of Alabama, Tuscaloosa (LH).
- 2:15 **BREAK**
- 2:30 **Seventy-Five Years Of Plant Community Changes At Reelfoot Lake.** N. Winstead* and S. King, University of Tennessee at Knoxville and Louisiana State University, Baton Rouge.
- 2:45 **First Record Of *Cordylophora lacustris* (Cnidaria) From Reelfoot Lake In Northwest Tennessee.** W. Smith and J. Hamilton, Jr., University of Tennessee at Martin.
- 3:00 **Ornithology At Reelfoot Lake.** D. Pitts, University of Tennessee at Martin.
- 3:15 **Seasonal Changes In Fish Assemblages Of Flooded Forests Surrounding Reelfoot Lake, Tennessee.** T. Blanchard, University of Tennessee at Martin.
- 3:30 **Greetings From Reelfoot Lake: Postcards And The Evolution Of A Fisherman's Paradise.** J. Rogers, University of Tennessee at Martin.
- 3:45 **Closing remarks**

POSTERS ON DISPLAY Conference Center Lobby

*student author # presenting author, if not first author

BOTANY

The Physiological Significance Of Nonphotochemical Dissipation Of Excess Light Energy By The Photosystem-II Core During The Development Of Photochemistry. Jefferson G. Lebkuecher, Mandi M. Coleman*, Stephanie M. Gunn*, James O. Harmon*, Rebecca A. Houtman*, Rhonda P. Johnston*, Tanya M. North*, and April S. Warren*, Austin Peay State University.

Comparative Ecophysiology Of *Astragalus bibullataus* And *A. Crassicornus* (Fabaceae). Carol J. Baskauf and Dustine Reppuhn*, Austin Peay State University and University of Tennessee, Knoxville.

The Effects Of Acid Rain On Sunflower Plant Growth. J. L. Mcelhiney*, S. J. Ramos*, and D. S. Burton, Austin Peay State University.

CELL AND MOLECULAR BIOLOGY

Cloning And Characterization Of Yeast Leukotriene-A4-Hydrolase. C. Romer*, D. Dorset, C. Meyer, M. Thompson, and R. Seipelt, Middle Tennessee State University and Vanderbilt University.

CHEMISTRY

Effect Of 4,4'-Bipyridin-1-ium Bromide Monohydrate On Glutathione Levels In Human Monocytic Progenitor (U937) Cells. Justin B. Anderson*, William Y. Boadi, Peter A. Iyere, Lonnie Sharpe, and Samuel E. Adunyah, Tennessee State University (WYB,JBA, PAI, LS) and Meharry Medical College (SEA).

A Study Of Bidi Cigarette Smoke On *Salmonella typhimurium* Strains TA97a And TA98. Stephen Brandon Naquin*, Zachary T. Frensley*, Ngee Sing Chong, and Beng Guat Ooi, Middle Tennessee State University.

GEOLOGY AND GEOGRAPHY

Pollution Loading And Land Use Patterns Modeling In GIS. Carl D. Alexander* and Peter Li, Tennessee Technological University.

Quantitative Crime Analysis With GIS. Claiborn L. Phillips* and Peter Li, Tennessee Technological University.

POSTERS ON DISPLAY

HEALTH SCIENCES

The Effects Of The Inflammatory Cytokine TNF- α On Transformed Rat Pancreatic Beta-Cells.

J. P. LeBoeuf* and A. E. Jetton, Middle Tennessee State University

Syndromic Surveillance In Two Rural Public Health Regions In Northeast Tennessee: Year One Experiences. Donna Garland Robbins and Mark McCalman, Northeast Tennessee Regional Public Health Office and Sullivan County Regional Health Department.

MATH AND COMPUTER SCIENCE

Insight To Phase Equilibrium Calculations Via Equations Of State. Sanjay Dube* and Donald P.

Visco, Jr., Tennessee technological University

MICROBIOLOGY

Antimicrobial Properties Of *Humulus lupulus*. N.S. Zeger* and J.M. Zamora, Middle Tennessee State University.

SCIENCE AND MATH TEACHING

Biotechnology Resource Group: Opportunities For Research And Teaching. Rebecca Siepelt, Middle Tennessee State University, Murfreesboro, Tennessee.

Grade School To Graduate School: Attracting And Retaining Women In Stem. Judith Iriarte-Gross, Simone Stennis*#, and Jill Roberson-Blatt*#, Middle Tennessee State University, Murfreesboro, Tennessee.

Pre- And Post-Testing As A Measurement Of Effectiveness In A General Education Physical Science Course. Judith Iriarte-Gross and Terrence A. Lee, Middle Tennessee State University, Murfreesboro, Tennessee.

Research And Development Of Physical Science Laboratories With Connections To Everyday Activities. Judith Iriarte-Gross and Linda Hendrickson*#. Middle Tennessee State University, Murfreesboro, Tennessee.

Tennessee Science Olympiad: Getting Your Students Involved In Science. David A. Stanislawski, Michael Daley, Pat Patterson, Bob Fabian, Chattanooga State Community College (DAS), University of Memphis (MD), Middle Tennessee State University (PP).

POSTERS ON DISPLAY

ZOOLOGY

Predation On Internal Organs Of Field-Dressed White-Tailed Deer. Joshua K. Bright*, Philip L. Johnson*, Allan E. Houston, and Michael L. Kennedy, University of Memphis (JKB, PLJ, & MLK), Ames Plantation, Grand Junction, Tennessee (AEH)

Bioassessment Of Trace Creek Water Quality Above And Below Discharge Of Waverly Sewage Treatment Plant, Humphreys County, Tennessee. Timothy D. Brown*, James O. Harmon, Jr.*, Laura D. Mills*, Rhonda Johnson*, Steven W. Hamilton, The Center for Field Biology, Austin Peay State University.

A Survey Of The Herpetofauna Of The Duck River Watershed Within Coffee County, Tennessee. Matthew L Niemiller *, Middle Tennessee State University.

An Assessment Of Sex-Biased Response Of Raccoons (*Procyon lotor*) To Live Traps In Western Tennessee. Erica Hossen*, Michael L. Kennedy, Brian D. Carver, John A. Hisey, University of Memphis (EH, MLK, BDC), Lee University (JAH).

REELFOOT LAKE SYMPOSIUM

Nutrient And Metal Concentrations In Reelfoot Lake Sediments. P. Gale, University of Tennessee at Martin.

TAS Standing Committees 2003

Auditing Committee

Dr. Eugene Kline, Chair, Tennessee Technological University
Dr. Dave Yarbrough, Tennessee Technological University
Dr. Robert Martin, Tennessee Technological University (ret.)

Fellows Committee

Dr. Charles R. McGhee, Chair, Middle Tennessee State University
Brother Kevin Ryan, Christian Brothers College
Dr. Gladius Lewis, University of Memphis

Financial Oversight Committee

Dr. Andrew Sliger, Chair, University of Tennessee at Martin
Dr. John W. Harris, Tennessee Technological University
Dr. Floyd Scott, Austin Peay State University

Industry/Government Committee

Dr. David Wilson, Chair, Vanderbilt University (ret.)
Dr. Michael Daley, University of Memphis

Long Range Strategic Planning Committee

Dr. George Murphy, Chair, Middle Tennessee State University
Dr. Steven Murphree, Belmont University
Dr. Dave Yarbrough, Tennessee Technological University
Dr. Diane Nelson, East Tennessee State University
Dr. Andy Sliger, University of Tennessee at Martin

Education Committee

Dr. Cindi Smith-Walters, Chair, Middle Tennessee State University
Dr. Michael L. Daley, University of Memphis
Dr. Jack Rhoton, East Tennessee State University
Dr. Robert Marlowe, University of Tennessee at Chattanooga
Dr. Linda Jordan, Tennessee Department of Education
Dr. Robert L. Hartshorn, University of Tennessee at Martin

Membership Committee

Vacant, Chair
Dr. Gary Hall, David Lipscomb University
Dr. Jeffrey Lebkeucher, Austin Peay State University

Necrology Committee

Dr. Alexander Wells, Chair, Tennessee State University

Nominating Committee

Dr. Jack Rhoton, Chair, East Tennessee State University
Dr. Martin Stewart, Middle Tennessee State University
Dr. David Wilson, Vanderbilt University (ret.)

Publicity Committee

Ms. Mandy Carter-Lowe, Chair, Columbia State Community College
Ms. Kim Sadler, Middle Tennessee State University
Dr. Lewis Myles, Tennessee State University
Dr. Jeff Boles, Tennessee Technological University
Dr. Patricia Hull, Tennessee State University

Resolutions Committee

Ms. Sallie Noel, Chair, Austin Peay State University
Ms. Betty Davis, East Tennessee State University
Dr. David Pitts, University of Tennessee - Martin

TAS Executive Committee 2003

Ms. Karen Kendall-Fite, President

Columbia State Community College

Dr. Jack Rhoton, Past President

East Tennessee State University

Dr. J. Michael Redding, President-Elect

Tennessee Technological University

Ms. Sarah H. Swain, Secretary

Middle Tennessee State University

Dr. John Harris, Treasurer

Tennessee Technological University

Dr. M. Gore Ervin, Managing Editor

Middle Tennessee State University

Dr. Fred Matthews, Director -Collegiate Division

Austin Peay State University

Dr. James Howard, Director - Electronic Communications

Middle Tennessee State University

Dr. Jack Rhoton, Director - Junior Academy of Science

East Tennessee State University

Dr. Michael Daley, Director-Visiting Scientist Program

The University of Memphis

Dr. Cindi Smith-Walters, Education Committee

Middle Tennessee State University

Dr. Andy Sliger, Financial Oversight Committee

The University of Tennessee at Martin

Dr. David J. Wilson, Industry/Government Committee

Brown and Caldwell, Inc.

Dr. George Murphy, Long Range Planning Committee

Middle Tennessee State University

Ms. Mandy Carter-Lowe, Publicity Committee

Columbia State Community College

Dr. Linda Jordan, Science Consultant

Tennessee Department of Education

Dr. J. Michael Redding, Annual Meeting Coordinator

Tennessee Technological University

Dr. Stephen M. Wright, Member-at-large, 2001-2003

Middle Tennessee State University

Dr. Stewart Elston, Member-at-large, 2002-2004

University of Tennessee - Knoxville

Dr. Michael Gibson, Member-at-large, 2003-2005

The University of Tennessee at Martin

TAS 2003 Local Arrangements Committee

Dr. John Harris

Ms. Karen Kendall Fite

Dr. Steve Murphree

Dr. Jack Rhoton

Dr. J. Michael Redding