127th Meeting
Tennessee Academy of Science
Program

November 17, 2017
The University of Tennessee at Martin,
Martin, Tennessee

Celebrating 105 Years
Tennessee Academy of Science
Institutional Sustaining Members

Austin Peay State University
East Tennessee State University
Middle Tennessee State University
Motlow State Community College
Rhodes College
Tennessee Technological University
Tennessee State University
The University of Tennessee–Martin
The University of the South
Volunteer State Community College

Tennessee Academy of Science Affiliated Societies

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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

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TAS Junior Academy
Tennessee Visiting Scientist Program
Membership and Leadership
Journal of the Tennessee Academy of Science

TAS Future Annual Meeting Sites
2018 - xxxxx
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TAS Executive Committee Members... inside back cover
Welcome . . .

... to the 2017 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 science professionals and to participate in the business of the Academy.

Please let members of the Executive Committee know if you have any needs or questions and if the meeting in any way does not meet (or if it exceeds) your expectations (e.g., the Saturday “experiment” for our Annual Meeting). We are always striving to improve our Academy and its impact upon scientists in Tennessee and beyond.

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Membership Committee Chair - Karen Kendall-Fite  
kendallfite@columbiastate.edu
Announcements

If they are not already TAS members, presenters and attendees may register/become members by mail or at the Annual Meeting.

Registration/Membership forms will be available on-site, and they are available for download from the TAS website:

www.tennacadofsci.org

Dues can be paid in advance of the Annual Meeting or at on-site registration.

- Student: $10 annually
- Emeritus: $10 annually
- Member: $40 annually
- Sustaining: $50 annually
- Supporting: $100 annually
- Life: $400 single payment

In advance of the Annual Meeting, registration/membership forms can be mailed to the TAS Treasurer (please postmark by November 14):

Dr. Steve Murphree,
Department of Biology, Belmont University, 1900 Belmont Boulevard, Nashville, TN 37212-3757

A limited number of luncheon tickets will be available for purchase at the registration tables.
**Meeting Schedule**  
Thursday, November 16, 2017

<table>
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<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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</thead>
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<tr>
<td>6:00 until 10:00pm</td>
<td>Executive Committee Meeting and Dinner</td>
<td>Room 206, University Center</td>
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**Friday, November 17, 2017**

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
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<tr>
<td>7:30 a.m. until 1:00 p.m.</td>
<td>Registration</td>
<td>Boling University Center Lobby</td>
</tr>
<tr>
<td>8:30 a.m. until 9:45 a.m.</td>
<td>Poster Presentation and Judging</td>
<td>University Center, 2nd Floor</td>
</tr>
<tr>
<td>10:00 a.m. until 10:30 a.m.</td>
<td>TAS Business Meeting</td>
<td>University Center, Watkins Auditorium</td>
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| 10:30 a.m. until 11:30 a.m. | Welcome                                    | Dr. Wes Totten, Chair, Dept. of Agriculture, Geosciences, and Natural Resources  
                                | University Center, Watkins Auditorium |
| 11:30 a.m. until 1:00 p.m. | Luncheon                                   | University Center Ballroom        |
| 1:00 p.m. until finished | Afternoon Technical Sessions/Section Business Meetings | University Center  
                                | UC 111, UC 206, UC 225, UC 229, UC 230, UC 231, Library 118, Library 120 |

**Notes**
Meet our Panelists Speakers
10:30 -11:30 University Center, Watkins Auditorium

Dr. Mary Kidd,
Tennessee Technological University
Dr. Mary Kidd completed her B.S. in physics at Tennessee Tech University in 2004. She earned her PhD in experimental nuclear physics at Duke University in 2010. After completing two years as a postdoctoral research associate at Los Alamos National Laboratory, she joined the faculty back at Tennessee Tech in 2012.

Dr. Don Sudbrink,
Austin Peay State University
Dr. Donald Sudbrink is Chair of the APSU Agriculture department and runs the Farm and Environmental Education Center. He received his B.S in Entomology-Plant Pathology from the Univ. of Delaware and M.S in Entomology-Plant Pathology from University of TN. His Ph.D. from Auburn University is in Entomology.

Ms. Mitzi Adams,
NASA-Marshall Space Flight Center
Mitzi Adams is a solar scientist for NASA’s Marshall Space Flight Center. Ms. Adams, earned a B.S. degree in physics with a mathematics minor from Georgia State University. In 1988 she earned a Master of Science degree in physics from the University of Alabama in Huntsville and began work at NASA/MSFC.

Ms. Angela Adams,
Austin Peay State University
Angela Adams is a veteran of the U.S. Navy and is pursuing a B.S. in Healthcare Management with a minor in Astronomy.

Presentation Title:
Highlights of the August 2017 Solar Eclipse
The panel will discuss activities during the total solar eclipse, highlighting public education and outreach, insect behavior experiments, citizen science activities, and the NASA effort to study the eclipse. We will also include a short discussion of plans for the 2019 and 2020 eclipses.
Oral Presentations
Agriculture-I
Chair: Joey E. Mehlhorn
Library 118
1:00 p.m.– 3:20 p.m.

1:00-1:05 Business Meeting

1:05-1:20 Bioenergy Crop Production: Investigating various plant characteristics of winter canola varieties in response to different rates of nitrogen fertilizer. Priya Saini* and Jason P. de koff, Tennessee State University, Nashville, Tennessee.


1:35-1:50 Effects of post-weaning mat-feeding frequency on piglet health and performance. Margaret A. Nagai* and Emalee K. Buttrey, The University of Tennessee at Martin, Martin, Tennessee.


2:20-2:35 Gossypol profile’s based selection of cotton lines for transcriptional analyses. Aron Felts*, Deependra Bhatta*, Sarabjit Bhatti and Ahmad Aziz, Department of Agricultural Environmental Sciences, Tennessee State University, Nashville, TN.

2:35-2:50 Promoting veterinary careers to high school students through hands-on experiences. Clint Ary and Jason Roberts, University of Tennessee at Martin, Martin, Tennessee.

* student author
# presenting author, if not first author
12-4 Is the salience of a sensory modality fixed or determined by the environment in a crepuscular-nocturnal hawkmoth? William L. Kuenzinger*, Seré C. Jackson*, and Joaquín Goyret, The University of Tennessee at Martin, Martin, Tennessee.

12-5 Mechanosensory sensitivity in Manduca sexta. Amanda Mayo*, Jonathan Travis*, and Joaquín Goyret, The University of Tennessee at Martin, Martin Tennessee.

12-6 A survey of ticks (Acari: Ixodida) parasitizing reptiles from managed pine-hardwood forests of northwestern Alabama, USA. Brent C. Newman, William B. Sutton, T.J. Haltigan*, and Yong Wang, Tennessee State University, Nashville, Tennessee (BN, WS), and Alabama A&M University, Normal, Alabama (TH, YW).

12-7 Is the winter abundance of Red-headed Woodpeckers related to acorn production in a bottomland hardwood forest in northwest Tennessee? Bailey C. Kelso* and H. Dawn Wilkins, The University of Tennessee at Martin, Martin, Tennessee.

* student author
# presenting author, if not first author

2:50-3:05 Effects of winter wheat grazing on subsequent crop yield. Jordan M. Curtis* and Emalee K. Buttrey, The University of Tennessee at Martin, Martin, Tennessee.


Agriculture-II
Chair: Joey E. Mehlhorn
Library 120
1:00 p.m.– 3:20 p.m.

1:05-1:20 Utilizing virtual reality in a teaching methods course: Initial student perceptions. OP McCubbins and Rachael Blackwell*, Tennessee Technological University, Cookeville, Tennessee.

1:20-1:35 Allelopathic effect of Arundo donax L. aqueous extract on Lens culinaris Medik. Kenneth W. Pierce and Barbara A. Darroch, Tennessee Technological University, Cookeville, Tennessee and University of Tennessee at Martin, Martin, Tennessee.

1:35-1:50 Developing probabilities for enhanced student success on the national licensing exam for veterinary technologist. Sarah Anderson, Scott Parrott, Jason Roberts, and Joey Mehlhorn, University of Tennessee at Martin, Martin, TN.

1:50-2:05 Best practices of middle Tennessee agriculture science programs. Ashlyn Fussell* and Will Bird, Montgomery Central High School, Clarksville, Tennessee and University of Tennessee-Martin, Martin, Tennessee.

2:05-2:20 Soybean Plant Development and Soil Conditions Affected by Planting Date and Maturity Group. William Singer* and Barbara Darroch, University of Tennessee at Martin, Martin, Tennessee.


* student author
# presenting author, if not first author
2:35-2:50 Promoting veterinary careers to high school students through hands-on experiences. **Clint Ary and Jason Roberts**, University of Tennessee at Martin, Martin, Tennessee.

2:50-3:05 Improving skills in computer technology and data analysis. **Blessing C. Ajumobi**, **Harry Felder***, **Enefiock Ekanem**, and **Mary Mafuyai**. Tennessee State University, Nashville, Tennessee.


**Botany & Cell and Molecular Biology**

Chair: Carol Baskauf  
**UC 111**  
1:00 p.m. – 4:05 p.m.

1:00-1:05 Business Meeting

1:05-1:20 A Preliminary Vascular Plant Flora of the Bare Zone of the Copper Hill Basin, Polk County, Tennessee. **John Shelton**, **Joey Shaw** University of Tennessee at Chattanooga, Chattanooga, Tennessee.

1:05-1:20 Status update of *Smilax walteri* Pursh (Coral greenbrier) in southwest Tennessee. **Claude J. Bailey, Jr.**, Jackson State Community College, Jackson, Tennessee.

1:20-1:35 A floristic inventory of Orchard Knob Reservation. **Alaina Krakowiak**, **Andi Kur***, and **Joey Shaw** University of Tennessee at Chattanooga, Chattanooga, Tennessee.


* student author  
# presenting author, if not first author


10-7 Genesis of the Gabbard diagram in the fragmentation of a satellite in a circular orbit. **Arjun Tan**, **Robert C. Reynolds**, and **Marius Schamschula**, Alabama A & M University, Normal, Alabama (AT, MS), and STAR Dynamics, Hilliard, Ohio (RCR).

**Science and Math Teaching Posters**


11-2 The effects of self-regulated learning on the exam grades of college science classes. **Morgan A. Robertson***, and **Donald Shaw**, The University of Tennessee at Martin, Martin, Tennessee.

**Zoology Posters**

12-1 The effect of urban green roof size on the diversity and abundance of arthropods and mollusks. **Courtney L. Ankrapp***, and **Darlene Panvini**, Belmont University, Nashville, Tennessee.


12-3 Bright-field and electron microscopy use in the identification of tardigrades, **Hope Johnson***, **LaRoy Brandt**, and **Stan Kunigelis**, Lincoln Memorial University, Harrogate, Tennessee.

* student author  
# presenting author, if not first author

**Physics and Astronomy Posters**


10-2 Searching for variable stars in the field of Dolidze 35. **Jamin Welch**, **J. Allyn Smith** Austin Peay State University, Clarksville, Tennessee (JW, JAS).


* student author
# presenting author, if not first author


2:20-2:35 Modernizing field collection methods. **Caleb Powell**, **Jacob Motley**, **Stewart Chunn**, **Joey Shaw and Hong Qin**, University of Tennessee at Chattanooga, Chattanooga, Tennessee.


3:35-3:50 Digitizing one million herbarium specimens in Tennessee. **Joey Shaw**, **Caleb Powell**, **Dwayne Estes**, and **Ashley Morris**, University of Tennessee at Chattanooga, Chattanooga, Tennessee, University of Tennessee at Chattanooga, Chattanooga, Tennessee, Austin Peay State University, Clarksville, Tennessee, Middle Tennessee State University, Murfreesboro, Tennessee.

3:50-4:05 DNA-Protein binding specificities of PRMT1 (histone methylase enzyme) to their potential target genes in the model bioenergy crop species of *Panicum hallii*. **Shohana Huq**, and **Suping Zhou**, Tennessee State University, Nashville, Tennessee.

* student author
# presenting author, if not first author
Chemistry
Chair: Stephen Everly
UC 225B
1:00 p.m. – 2:05 p.m.

1:00-1:05 Business Meeting

1:05-1:20 Microwave-assisted acetylation of terminal alkynes. Benjamin Ide*, Phillip Shelton, University of Tennessee at Martin, Martin, Tennessee.

1:20-1:35 A Direct Estimation of Methane Emissions from Beef Cattle in a Feedlot Using Continuous Wave Cavity Ring-down Spectroscopic Technique. ¹Lahiru Gamage*, and ²Wilson K. Gichuhi, ¹School of Environmental studies, ²Department of Chemistry, Tennessee Technological University, Cookeville, TN.


Ecology and Environmental Science
Chair: Joe Schiller
UC 229
1:00 p.m. - 2:05 p.m.

1:00-1:05 Business Meeting

1:05-1:20 Two factors affecting retreat site selection in Vaejovis carolinianus populations from Tennessee’s Upper Cumberland region. Bob A. Baggett*, Tennessee Technological University, Cookeville, Tennessee.


* student author
# presenting author, if not first author

Microbiology Posters

9-01 Kinetics of progression of pathogenicity of Caenorhabditis elegans in response to Bacillus thuringiensis. Dana L. Cornwell* and Dr. Robert Grammer, Belmont University, Nashville, Tennessee.

9-02 Synchronization of the life cycle of Caenorhabditis elegans and the correlation of worm age and worm death from the pathogen Bacillus thuringiensis. Haley Hatfield*, Robert Grammer, Belmont University Nashville, Tennessee.


9-04 Cloning and sequencing of bacteriophage WL2 isolated from Reelfoot Lake. Caroline E. Williams* and Michael J. Kempf, The University of Tennessee at Martin, Martin, Tennessee.

9-05 Investigating the use of quorum sensing molecules in the pathogenic pathway of Bacillus thuringiensis in Caenorhabditis elegans. Brooke A. Pugsley* and Robert Grammer, Belmont University, Nashville, Tennessee.

9-06 Abiotic factors affecting the migration rate of cyanobacterial cells through sediment columns. Cody Rasner*, J.S. Metcalf, K. Rasner, R. Richer, and Darlene Panvini, Belmont University, Nashville, Tennessee (CR, DP), and Institute for Ethnomedicine, Jackson, Wyoming (JSM), and University of Wisconsin Marinette, Marinette, Wisconsin (KR, RR).

9-07 Effect of ECIG-generated aerosol and conventional cigarette smoke on the survival of commensal oral bacteria. Maxwell Smith*, John Nelson, Giancarlo Cuadra and Dominic Palazzolo, Lincoln Memorial University, Harrogate, Tennessee (MS, JN, DP) and Muhlenberg College (GC).

* student author
# presenting author, if not first author
Health and Medical Science Posters

7-01 The role of DYRK1A inhibitor on tau phosphorylation. Emily Rice*, Hyonson Hwang, and H. Dawn Wilkins, University of Tennessee at Martin, Martin, Tennessee.

7-02 Amodiaquine, an anti-malarial compound, inhibits the growth of epithelial cancer cells in culture. Bailey Bergmann*, Chris Barton, Belmont University, Nashville, Tennessee.

7-03 Lycorine hydrochloride induces a proliferative arrest in colorectal cancer cells. McKenzie Roberts* and Christopher Barton, Belmont University, Nashville, Tennessee.

7-04 Biofilm formation and decontamination of wild-type and pressure-stressed Cronobacter sakazakii and Salmonella serovars. Abimbola Allison*, Shahid Chowdhury, Aliyar Fouladkhah, Tennessee State University, Nashville, Tennessee.

7-05 Students, faculty, and staff feedback concerning campus dining for vegetarians. Marcy Kaufman* and Terra L. Smith, The University of Memphis, Memphis, Tennessee.


History of Science

8-01 Role of Archibald Belcher in establishing the Tennessee Academy of Science. Hunter D. Hudson* and Martin V. Stewart, Middle Tennessee State University, Murfreesboro, Tennessee.

Math and Computer Science

No poster presentations

* student author
# presenting author, if not first author

1:35-1:50 The Use of Environmental DNA and Occupancy Modeling to Evaluate the Distribution of the Eastern Hellbender (Cryptobranchus alleganiensis) in Tennessee. U.S.A. Jeronimo Da Silva Neto*, William Sutton, Stephen Spear, and Michael Freake, Tennessee State University, Nashville, Tennessee (JDSN, WS), The Wilds, Cumberland, Ohio (SS), and Lee University, Cleveland, Tennessee (MF).

1:50-2:05 Fish and coral species richness across different levels of protection along the Meso-American Barrier Reef. Dedra E. Irwin*, LaRoy S. E. Brandt, Lincoln Memorial University, Harrogate, Tennessee.

Engineering & Engineering Technology

Chair: Khalid Tantawi

UC 206C
1:00 p.m. - 3:20 p.m.

1:00-1:05 Business Meeting

1:05-1:20 Production of biodiesel using a solar powered thermally-efficient high-yield ultrasonic processor. Mary Seelam, Ivaylo Hardalov*, Ian Doss, Joseph Hodge, Jamal Cannon, Samuel Cafferty, James Rust, and Darien Jackson, Tennessee Tech University, Cookeville, Tennessee.


* student author
# presenting author, if not first author

2:20-2:35 An investigation into the use of biomass gasification in electric power generation. Corbin Catlett*, Mark Cato, Chase Cline, Cody Dorris, Caleb Hale and Andrew Shoemaker, Tennessee Tech University, Cookeville, Tennessee.


2:50-3:05 Programming by robots. S. Tigrek and T. Tigrek, University of Tennessee at Martin, Martin, Tennessee.

3:05-3:20 Design labs for electromechanical devices and instrumentation. Russ Longhurst, Austin Peay State University, Clarksville, TN.

Geology and Geography
Chair: Michael Gibson & Mark Simpson
UC 206B
1: 00 p.m. – 3:00 p.m.

1:00-1:15 Business Meeting


* student author
# presenting author, if not first author

Geology and Geography Posters


6-02 Soil climate analysis network (SCAN) in Middle Tennessee. April D. Jones*, Dr. Mark Simpson, and Dr. Paula Gale, The University of Tennessee at Martin, Martin, Tennessee.


6-04 Observations about Tremichinus sclerobiont borings from the Bond Formation (Pennsylvanian), Charleston Stone Quarry, Charleston, IL. Michael A. Gibson, Amy McLemore*, and Orana Paullus*, The University of Tennessee at Martin, Martin, Tennessee (MAG, AM) and Weber State University, Ogden, Utah (OP).

6-05 An unusual teleost from the Coon Creek Formation (Late Cretaceous), Western Tennessee. Michael A. Gibson and Randall Seagraves, The University of Tennessee at Martin, Martin.


6-07 Layer-parallel-shortening strain: a key to the Sevier-Laramide deformational sequence in the Tendoy Range, southwestern Montana. Christopher D. Loyacano*, University of Memphis, Memphis, Tennessee.

* student author
# presenting author, if not first author
5-10  Bat guild composition and habitat fragmentation in Costa Rica. **Justine Jusack** and **LaRoy Brandt**, Lincoln Memorial University, Harrogate Tennessee.

5-11  The potential of farm ponds as breeding habitat for amphibians. **Darrell W. England** and **LaRoy Brandt**, Lincoln Memorial University, Harrogate, TN.


5-13  Effects of rearing density on the growth of larval madtom catfish, *Noturus flavipinnis*, raised in captivity. **Maggie Singleton**, **Agnes M. Vanderpool** and **LaRoy Brandt**, Lincoln Memorial University, Harrogate, Tennessee.


5-16  Detecting the presence and abundance of streamside salamanders (*Ambystoma barbouri*) in Middle Tennessee using environmental DNA. **Nicole Witzel**, **Dr. William Sutton**, and **Dr. Ali Taheri**, Tennessee State University, Nashville, Tennessee.

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**Engineering and Engineering Technology Posters**

**No poster presentations**

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1:45-2:00 Preliminary observations of organism-substrate relationships of *Astraeospongia, Astylospongia, Hindia*, and *Palaeomanon* from the Brownsport Formation (Middle Silurian), Western Tennessee. **Nathaniel Newlin** and **Michael A. Gibson**, The University of Tennessee at Martin, Martin, Tennessee.

2:00-2:15 Preliminary results regarding the influence of urban expansion on surface water runoff in the Jackson, Tennessee area. **Thomas (Lan) DePriest**, The University of Tennessee at Martin, Martin, Tennessee.


2:45-3:00 Climate change science education and research potential in rural areas of western Kentucky and Tennessee. **Robert M. Simpson, Rachna Tewari, Joey Mehlhorn, Brian Parr and Naveen Musunuru**, The University of Tennessee at Martin, Martin, TN (RS, RT, JM) and Murray State University, Murray, Kentucky (BP, NM).

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**Health and Medical Sciences**

Chair: D. Nicholas Ragsdale

UC 225A

1:00 p.m. - 1:20 p.m.

1:00-1:05 Business Meeting

1:05-1:20 Elucidating the role of dysregulated manganese homeostasis in DNA damage response signaling in Huntington’s Disease. **Ilyana R Ilieva, Piyush Joshi, and Dr. Aaron Bowman**, Vanderbilt University Medical Center, Nashville, Tennessee.

* student author

# presenting author, if not first author

History of Science
Chair: Brother Kevin Ryan
Co-Chair: Martin V. Stewart
UC 225C
1:00 p.m. – 1:35 p.m.

1:00-1:05 Business Meeting

1:05-1:20 The Archimedes Palimpsest. John J. Schommer, University of Tennessee at Martin, Martin, Tennessee.

1:20-1:35 Contributions of MTSU in establishing the Tennessee Academy of Science. Martin V. Stewart and Hunter D. Hudson, Middle Tennessee State University, Murfreesboro, TN.

Mathematics and Computer Science
Chair: Nicholas Kirby
UC 230A
1:00 p.m. - 2:35 p.m.

1:00-1:05 Business Meeting

1:05-1:20 Neighborhood-prime labelings of tree graphs. Malori E. Cloys* and N. Bradley Fox, Austin Peay State University, Clarksville, TN.


* student author
# presenting author, if not first author

5-02 Examining the presence of Escherichia coli and fecal coliforms at Percy Priest Lake in Nashville, Tennessee. Hannah Forgani *, Chris Barton, and Matt Heard, Belmont University, Nashville, Tennessee.

5-03 Variations in arthropod diversity across green roofs differing in age and types of plant coverage. Taryn G. Anderson* and Darlene Panvini, Belmont University, Nashville, Tennessee.


5-05 Fertilization of green sea urchin, Lytechinus variegatus, negatively impacted by increasing temperature and acidity. Cady L. Sliger*, Virginia Fleer, James Wetzel, and Darlene Panvini, Belmont University, Nashville, Tennessee (CS, DP), and Gulf Coast Research Laboratory, Ocean Springs, Mississippi (VF, JW).

5-06 Decomposition of leaf litter on urban green roofs of different ages compared to decomposition in a community garden. Latiara Jarvis * and Darlene Panvini, Belmont University, Nashville, Tennessee.

5-07 The effects of exotic plant species on insect biodiversity within an urban temperate deciduous forest. Christien Jackson* and Darlene Panvini, Belmont University, Nashville, Tennessee.

5-08 The diversity of microbial communities on urban campus green roofs. Terra'Lexus Roberts* and Darlene Panvini, Belmont University, Nashville, Tennessee.

5-09 The effects of exotic invasive plant species on pollinator diversity in an urban temperate deciduous forest. Kylie C. Lawrence* and Darlene Panvini, Belmont University, Nashville, Tennessee.

* student author
# presenting author, if not first author

The use of polarimetry and spectroscopic methods for the identification of an unknown terpenoid. **Victoria Lansdale** and **Genessa M. Smith**, The University of Tennessee at Martin, Martin, Tennessee.

A comparison of antioxidant content in supplements and common fruits. **Kaitlen Kisiloski** and **Sarah S. Pierce**, Cumberland University, Lebanon, Tennessee.

Blood alcohol and arson investigation using SPME fibers. **Chelsea Parker** and **Robbie Montgomery**, The University of Tennessee, Martin, Tennessee.

Analysis of chemical and physical properties of regional honeys. **Bailee Barrett** and **Abigail H. Shelton**, The University of Tennessee at Martin, Martin, Tennessee.

Multistep organic synthesis in introductory undergraduate organic chemistry laboratory. **Lane Brown** and **Jozsef Devenyi**, The University of Tennessee at Martin, Martin, Tennessee.

Three component separation of an unknown sample. **James Crews**, **Shannon Belton**, **Phillip Shelton**, The University of Tennessee at Martin, Martin, Tennessee.

**Ecology and Environmental Science**


Diagnosing cirrhosis: A fractional calculus perspective. **Kindyl L. King**, **Samuel N. Jator**, Austin Peay State University, Clarksville, Tennessee.


**Microbiology**

Chair: Chris Barton

UC 231

1:00-1:05 Business Meeting

Decontamination of raw milk from *Listeria monocytogenes* using high pressure pasteurization. **Abimbola Allison**, **Shahid Chowdhury**, **Aliyar Fouladkhah**, Public Health Microbiology Laboratory, Tennessee State University, Nashville, Tennessee.

Heme-like gallium protoporphyrin IX inhibits catalase activity in *Acinetobacter baumannii*. **Brock Arivett**, Middle Tennessee State University, Murfreesboro, Tennessee.

Re-evaluation of CspZ, a complement regulator-acquiring surface protein of *Borrelia burgdorferi*, as a possible vaccine target for Lyme disease in a canine host. **Nerina Jusufovic** and **Chad S. Brooks**, Austin Peay State University, Clarksville, Tennessee.

Mining microbial genomes of biotechnological significance through metagenomic screening in goat rumen. **Santosh Thapa**, **Hui Li**, **Sarabjit Bhatti**, and **Suping Zhou**, Tennessee State University, Nashville, Tennessee.

* student author
# presenting author, if not first author


Chemistry Posters

4-01 The effects of weak reducing agents in the seed-mediated synthesis of gold nanorods. Benjamin Ide*, Joshua Hinman, Catherine J. Murphy, University of Illinois at Urbana-Champaign, Urbana, Illinois.

4-02 Susceptibility of aromatic amino acids and peptides to chlorine dioxide and ozone. Heather Deal* and Beng Ooi, Department of Chemistry, Middle Tennessee State University, Murfreesboro, Tennessee.


4-04 Silicon microspheres. Savannah Metheny*, Bailee Barrett*, Benjamin Ide*, John Overcash, and Jen Esbenshade, The University of Tennessee at Martin, Martin, Tennessee.

4-05 Effects of chlorine dioxide on microorganisms. Roderick Moore* and Beng Guat Ooi, Department of Chemistry, Middle Tennessee State University, Murfreesboro, Tennessee.

* student author
# presenting author, if not first author
Cell and Molecular Biology Posters

3-01 Novel etoposide drugs inhibit the growth of cancer cells in culture. Priyanka Kumar*, Joseph Dewees, Chris Barton, Belmont University, Nashville, Tennessee (PK and CB) and Lipscomb University College of Pharmacy, Nashville, Tennessee (JD).

3-02 The role of a1- adrenergic receptor antagonists in the treatment of colorectal cancer. Colin Cardwell* and Chris Barton, Belmont University College of Science & Mathematics, Nashville, TN. Effect of inorganic vs. organic selenium compounds as a pre-treatment to oxidative stress caused by 6-Hydroxydopamine treatment in C. elegans. AC Dowd* and Nick Ragsdale, Belmont University, Nashville, TN.

3-03 The Effects of bromocriptine on the mobility of Caenorhabditis elegans worms induced with Parkinson's-like disease. Midya Yarwis* and Nick Ragsdale, Belmont University, Nashville, Tennessee.

3-04 Investigating the potential role of nsy-1 in response to an oxidative stressor. Taylor Hodge* and Nick Ragsdale, Belmont University, Nashville, Tennessee.

3-05 Investigating the effect of the NMDA-type neurotransmitter glutamate on habituation in Caenorhabditis elegans. Yasmine Telwar* and Dr. Robert Grammer Belmont University Nashville, Tennessee.

3-06 Insight on aversive learning in Caenorhabditis elegans when introduced to Bacillus thuringiensis during reproduction and growth. Brandi Duke* and Dr. Robert Grammer Belmont University Nashville, Tennessee.


Boling University Center is designated #39 on the map. Park in the Yellow lot to the west of the University Center or the Purple lot across Mt. Pelia Road.

Address for the University Center is: 61 Mount Pelia Road, Martin, TN 38238 (36°20’26”, -88°51’55”)

* student author
# presenting author, if not first author
1:00-1:05 Business Meeting

1:05-1:20 Neutron inelastic scattering on $^{134}$Xe at $E_n = 5$ - 8 MeV. Mary Kidd, Werner Tornow, Sean Finch, FNU Krishichayan, Megha Bhike, Tennessee Tech University, Cookeville, Tennessee (MK), TUNL/Duke University, Durham, North Carolina (WT, SF, FNUK, MB).


2:05-2:20 How to find an exoplanet in a haystack of speckles. Elizabeth J. Young, Rhodes College, Memphis, Tennessee.

2:20-2:35 Searching for variables in the SDSS calibration fields. J. Allyn Smith, Melissa J. Butner, Douglas L. Tucker, Sahar S. Allam, Austin Peay State University, Clarksville, Tennessee (JAS), Stanford Linear Acceleratory Center, Stanford, California (MJB), and Fermi National Accelerator Lab, Batavia, Illinois (DLT, SSA).

1-10 Molecular and functional novelty of animal unconventional interferon-ω. Lauren E. Shields*, Yongming Sang, Tennessee State University, Nashville, Tennessee.

1-11 What impacts student success on the veterinary technician national examination? Jason Roberts, Scott Parrott, and Joey Mehlhorn, The University of Tennessee at Martin, Martin, TN.

1-12 Fungicidal management of ambrosia beetles in ornamental nurseries. Matthew Brown*, Jason Oliver, Karla Addesso, Fulya Baysal-Gurel, and Paul O’Neal. Tennessee State University, Nashville, TN.


Botany Posters


2-02 A quantitative analysis of a kale hybrid, Tronchuda beira, grown on a green roof, in a garden and in EarthBoxâ containers. Caroline Glover* and Darlene Panvini, Belmont University, Nashville, Tennessee.

2-03 Growth of a common pioneer species (Salix nigra) in a hypereutrophic environment. Darya Klyuyenko* and James McAllister, Bethel University, McKenzie, Tennessee.

2-04 The hidden language of plants: Making sense of VOCs and plant defense. Joshua C. Kraft* and Carol J. Baskauf, Austin Peay State University, Clarksville, Tennessee.

* student author
# presenting author, if not first author

1-03 Entrepreneurship and innovation in agriculture. Alyssa R. Counce*, Rachna Tewari, and Joey Mehlihorn, The University of Tennessee at Martin, Martin, Tennessee.


1-05 Food safety regulatory outreach and technical assistance for emerging entrepreneurs. Aliyar Fouladkhah, Public Health Microbiology Laboratory, Tennessee State University, Nashville, Tennessee.


1-08 Impact of thermal treatments on the texture characteristics of cooked sweetpotatoes. Sochinwechi Nwosisi*, Ramasamy Ravi, and Dilip Nandwani, Tennessee State University, Nashville, Tennessee.

1-09 Changing strategies for dealing with large online class sizes. Jessica Crews-Garcia, Rachna Tewari, and Joey Mehlihorn, University of Tennessee at Martin, Martin, TN.

* student author
# presenting author, if not first author

Science and Math Teaching
Chair: Weston Dulaney
UC 230C
1:00 p.m. – 2:50 p.m.

1:00-1:05 Business Meeting

1:05-1:20 The STEM Center for Teaching and Learning. John W. Overcash and Steve Elliott The University of Tennessee at Martin, Martin, TN.


2:05-2:20 Take a shot: Using simple calculations to explore how immunization programs protect populations from disease. Darrell L. Ray, The University of Tennessee-Martin, Martin, TN.

2:20-2:35 Investigating the impacts of coal mining in a mountain-top removal watershed: an environmental case study for the college classroom. LaRoy Brandt and Agnes Vanderpool, Lincoln Memorial University, Harrogate, TN.

2:35-2:50 Using art to teach general and organic chemistry laboratories. Sarah S. Pierce, Cumberland University, Lebanon, Tennessee.

Zoology
Chair: Tom Blanchard
UC 206A
1:00 p.m. – 2:50 p.m.

1:00-1:05 Business Meeting

1:05-1:20 Differential occurrence of ticks on small mammals based on age and sex. Rebecca A. Butler*, Rebecca Trout-Fryxell, Allan E. Houston, David Paulsen, and Michael L. Kennedy. The University of Memphis (RAB, MLK), The University of Tennessee, Knoxville, Tennessee (RTF, DP), Ames Plantation, Grand Junction, Tennessee (AEH).

* student author
# presenting author, if not first author
Comparisons of physiological limitations and genomic synteny in populations of *Mnemiopsis leidyi* (Ctenophora). **Logan N. Campbell**, Alexandra M. Hernandez, and Joseph F. Ryan, Whitney Laboratory for Marine Bioscience, St. Augustine, Florida (LC, AH, JR) University of Florida, Gainesville, Florida (LC, AH, JR), and The University of Tennessee at Martin, Martin, TN (LC).

Seasonal-activity patterns of the eastern woodrat (*Neotoma floridana illinoensis*). **Jessica Davin** and Michael L. Kennedy. The University of Memphis, Memphis, Tennessee.

Using scent-station procedures to monitor medium and large mammals. **James W. Gaines** and Michael L. Kennedy. Edward J. Meeman Biological Station and The University of Memphis, Memphis, Tennessee.

An assessment of species richness of mammals at two urban sites in western Tennessee. **Felice A. Murden** and Michael L. Kennedy, Edward J. Meeman Biological Station and University of Memphis, Memphis, Tennessee.

Agricultural pest management yields new insight into movement of western pocket gophers (*Thomomys* sp.) **Brittany M. Pope**, Juliann L. Waits, Roger A. Baldwin, and Michael L. Kennedy, The University of Memphis, Memphis, Tennessee (BP, ML), Southwest Community College, Memphis, Tennessee (JW), and University of California, Davis, Davis, California (RB).

An assessment of biodiversity of small mammals in anthropogenic edge habitat: is there an edge effect? **Sarah E. Swing** and Michael L. Kennedy, The Univ. of Memphis, Memphis, TN.

Differences in habitat use among species of aquatic snakes in the Reelfoot Lake area of northwestern Tennessee. **Erik F. Velazquez** and Tom A. Blanchard, University of Tennessee at Martin, Martin, Tennessee.

Hibernation and hibernacula attributes associated with the timber rattlesnake (*Crotalus horridus*) at Centere Hill Lake in Dekalb County, Tennessee. **Danny L. Bryan**, Cumberland University, Lebanon, Tennessee.


Poster Presentations
University Center, Second Floor
Set Up: 7:30—8:30 (Poster board & easel are provided; posters are displayed by technical section name and number)
Display: 8:30 – 9:45
Judging: 8:30 – 9:45
(Presenters should be near their displays during the judging to answer questions.)

Agriculture Posters

Building capacity for climate change education (CCE) and expanding research and learning opportunities in rural communities of Tennessee and Kentucky. **Rachna Tewari**, Mark Simpson, Joey Mehlhorn, Naveen Musunuru and Brian Parr, The University of Tennessee Martin, Martin, Tennessee (RT, MS, JM), and Murray State University, Murray, Kentucky (NM, BP).