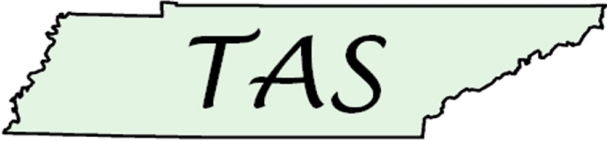
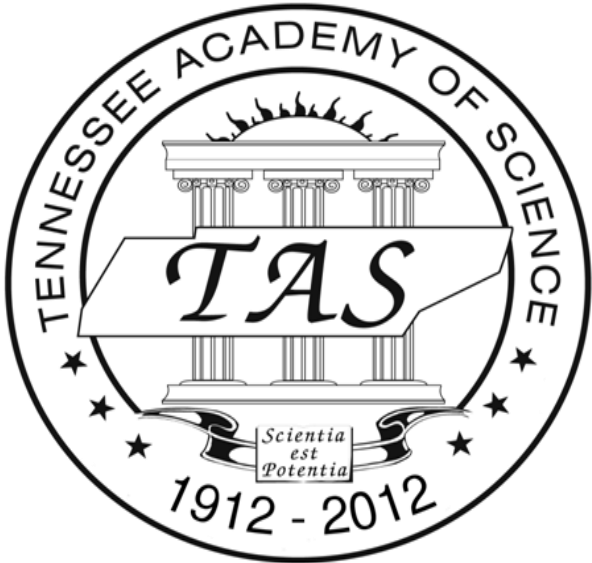


First Class Mail



122nd Meeting
**Tennessee
Academy of
Science
Program**



November 16, 2012

**Vanderbilt University
Nashville, Tennessee**

Celebrating 100 Years

Dr. C. Steven Murphree
Department of Biology
Belmont University
1900 Belmont Boulevard
Nashville, Tennessee 37212-3758

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Clarence T. Jones Memorial Observatory
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2013—Motlow State Community College
2014—Walters State Community College

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Mr. Roger D. Applegate, Tennessee Wildlife Resources Agency

Resolutions Committee

Ms. Betty Davis, East Tennessee State University
Dr. David Pitts, University of Tennessee--Martin

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Welcome . . .

. . . to the 2012 Annual Meeting of the Tennessee Academy of Science and the Centennial Celebration. 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 influential and dynamic keynote speakers, to attend an evening banquet, 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 Student Life 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

Journal 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.

Industrial Display: Vashaw Scientific, Inc

Vashaw 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.

Master of Science in Biomolecular Science - Lipscomb University

The mission of the graduate program in Biomolecular Science at Lipscomb University is to prepare competent scientists whose practice is informed by faith and who are well positioned for successful careers in biomedical science, basic research, genetic testing, cancer biology, developmental biology, and DNA forensics. Additionally persons may elect to pursue this graduate program to better position themselves for entry into graduate programs in medicine, dentistry, and other allied health professions.

The Tennessee Conservationist magazine

For more than seven decades, the award-winning *Tennessee Conservationist* has been dedicated to telling the stories of Tennessee's natural, cultural and historical distinctiveness. The magazine offers authentic Tennessee places, people and experiences through beautiful photography and engaging, informative articles and is dedicated to promoting the mission of the Tennessee Department of Environment and Conservation to preserve, protect and wisely use the state's natural and cultural resources.

Repellent properties of glade savory, *Clinopodium glabellum*, against the American dog tick, *Dermacentor variabilis*. **Gabrielle N. Hampton*** and **C. Steven Murphree**, Belmont University, Nashville, Tennessee.

Repellent properties of the invasive beefsteak plant, *Perilla frutescens*, against the American dog tick, *Dermacentor variabilis*. **Amber D. Hopkins*** and **C. Steven Murphree**, Belmont University, Nashville, Tennessee.

Repellent properties of mountain mint, *Pycnanthemum virginianum*, against the American dog tick, *Dermacentor variabilis*. **Anna Beth Jones*** and **C. Steven Murphree**, Belmont University, Nashville, Tennessee.

A comparison of bird and plant diversity in two middle Tennessee wetlands. **Erin Helen Pitts*** and **C. Steven Murphree**, Belmont University, Nashville, Tennessee.

Using GIS to identify important habitat types for amphibians and reptiles at Lake Isom National Wildlife Refuge in northwest Tennessee. **Kayla Key***, **Melody Sain***, and **Tom Blanchard**. University of Tennessee at Martin, Martin, Tennessee.

Repellent properties of wild peppermint, *Mentha piperita*, against the American dog tick, *Dermacentor variabilis*. **Rachel K. Hewlett*** and **C. Steven Murphree**, Belmont University, Nashville, Tennessee.

Zoology

Effects of Marine Hydrokinetic devices on benthic habitats in rivers. **Constantin C. Scherelis* and Mark Bevelhimer**, Oak Ridge National Laboratory, Oak Ridge, Tennessee.

Macroinvertebrate biodiversity in open canopy pools in the Little Harpeth River, Nashville, Tennessee. **Sylvia Alsup* and A. Darlene Panvini**, Belmont University, Nashville, Tennessee.

Biodiversity of macroinvertebrates in open canopy riffles in the Little Harpeth River, Nashville, Tennessee. **Lauren Land* and A. Darlene Panvini**, Belmont University, Nashville, Tennessee.

Biodiversity of macroinvertebrates in closed canopy riffles and pools in the Little Harpeth River, Nashville, Tennessee. **Lida Ghulam Jan* and A. Darlene Panvini**, Belmont University, Nashville, Tennessee.

Use of silent point counts and aural stimuli to detect Barred Owls in the area surrounding Reelfoot Lake, Tennessee. **Heather Meadors*, Sarah E. Redding, and H. Dawn Wilkins**, The University of Tennessee at Martin, Martin, Tennessee.

The resting metabolism of the eastern box turtle (*Terrapene carolina*). **Eva M. Grebe* and C.M. Gienger**, Austin Peay State University, Clarksville, Tennessee.

Influence of food availability on schooling preference in two cyprinid fish. **Helana Anderjack*, Josh Cherry*, Lindsay Davidson*, and J. Jeffrey Green**, Nashville State Community College, Nashville, Tennessee.

Survey of bird diversity and abundance along an urban greenway in Middle Tennessee. **Ben Hampson*, Erin Pitts*, and J. Jeffrey Green**, Nashville State Community College, Nashville, Tennessee.

Preliminary checklist of the spiders of Harpeth River State Park. **Joel Harp**, Vanderbilt University, Nashville, Tennessee.

Land snail ontogeny, preservation and size distribution. **Cassie Henegar*, Mackenzie Hodges*, Morgan Livingston*, and Michael L. McKinney**, University of Tennessee, Knoxville, Tennessee.

Land snails of Franklin County, Tennessee. **Mackenzie Hodges*, Gerry Dinkins, and Michael L. McKinney**, University of Tennessee, Knoxville, Tennessee.

The effect of habitat type on bat activity and species richness monitored via acoustic survey at Reelfoot Lake in Northwest Tennessee. **Christine Hassell* and Nancy**

Schedule of Events

Thursday, November 15, 2012

5:30-10:00pm	Executive Committee Meeting and Dinner University Club
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Friday, November 16, 2012

7:30 a.m. until 1:30 p.m.	Registration Student Life Center Lobby
7:30 a.m. until 8:30 a.m.	Poster Presentation Setup Student Life Center - Ballroom C
7:45 a.m. until 8:15	Meeting of Section Chairs Student Life Center - Meeting Room 1 (lower level)
8:30 a.m. until 9:30 a.m.	Poster Judging Student Life Center - Ballroom C
9:30 a.m. until 11:20a.m.	Morning Technical Sessions/Section Business Meetings Student Life Center - Board of Trust Room and Meeting Room 1
9:30 a.m. until 10:15 a.m.	Business Meeting Student Life Center - Ballroom B
10:15a.m. until 11:15 a.m.	Plenary Session – Dr. Diane Nelson – “From Water Bears to Whale Sharks” Student Life Center - Ballroom B
11:20am	Group Photo Meet in Student Life Center Lobby for outdoor photo Contingency plan for weather – Ballroom C
12:00pm until 1:00 p.m.	Luncheon Student Life Center Ballroom A
1:00 p.m. until finished	Afternoon Technical Sessions/Section Business Meetings Student Life Center: Ballrooms, Board of Trust Room, Lower Level Meeting Rooms 1-3 University Club: Hermitage A and B, Wedgewood, Art Gallery
5:00pm – 8:30pm	Evening Banquet University Club Main Dining Room and Lobby Guest Speaker – Dr. Harry McSween - "Exploration of Asteroid Vesta by the Dawn Spacecraft"

Meet our Keynote Speakers

Dr. Diane R. Nelson

10:15-11:15 Student Life Center- Ballroom B

Dr. Diane R. Nelson is Professor Emerita at East Tennessee State University. In addition to her interest in invertebrates, especially “water bears” (tardigrades), Dr. Nelson is an internationally recognized marine biologist. She has studied whale sharks, sand tilefishes, triggerfish, venomous catfish, and many other species. She has conducted research on fish behaviors with Dr. Eugenie Clark. Dr. Nelson is well known for her award winning underwater photographs which have been published in textbooks and displayed in museums. Dr. Nelson will deliver our Plenary address entitled "From Water Bears to Whale Sharks."

Dr. Harry McSween

5:00 – 8:30 Evening Banquet- University Club

Dr. McSween is a Chancellor's Professor and Distinguished Professor of Science in the Department of Earth and Planetary Sciences at The University of Tennessee, Knoxville. For three decades, Dr. McSween has studied meteorites and their implications for understanding how the solar system formed and evolved. Dr. McSween has participated in NASA spacecraft missions including the Mars Pathfinder and Mars Global Surveyor. Dr. McSween is a co-investigator for the Mars Exploration Rovers which have been operating on the Martian surface since early 2004. Dr. McSween will deliver our evening address at the University Club Banquet.

Relating the Central Dogma of Molecular Biology to High School Students. **Corbett C. Ouellette***, **Adam Taylor**, **Mary C. Farone**, **Kim Cleary Sadler**, and **Anthony L. Farone**, *Middle Tennessee State University, Murfreesboro, Tennessee and John Overton High School, Nashville, Tennessee.*

The Next Generation Science Standards in Tennessee. **Linda Jordan**, **Richard Audet**, and **Kim Cleary Sadler**, *Tennessee Department of Education, Nashville, Tennessee, and Middle Tennessee State University, Murfreesboro, Tennessee.*

Microbiology

Designing multiplex PCR for the identification of selected microbes. **Ashley Roby***, **Eric Powers**, **Paige Walker**, **Barbara Johnson** and **Chad Brooks**, *Austin Peay State University, Clarksville, Tennessee.*

Characterization of CspZ – proposed primary virulence factor for *Borrelia burgdorferi* infecting dogs. **Megan J. Walker***, **Matthew T. Martin**, and **Chad S. Brooks**, *Austin Peay State University, Clarksville, Tennessee.*

A floating-type photobioreactor for algal growth and oil production. **Lynsey Beiermann *** and **Sergei A. Markov**, *Austin Peay State University, Clarksville, Tennessee.*

AIM2 protein levels in response to a Human Papillomavirus and the impact of infectious microbes in cervical cancer cell lines. **M. Shea Harrison*** and **Jennifer T. Thomas**, *Belmont University, Nashville, Tennessee.*

The impact of microbial infection on the expression of AP-1 in HeLa and C33A cervical cancer cell lines. **Shannon G. Rigell*** and **Jennifer T. Thomas**, *Belmont University, Nashville, Tennessee.*

Physics

Dynamical variables in idealized inertia experiment of Galileo. **Arjun Tan**, **Dontrell Reynolds***, and **Mostafa Dokhanian**, *Alabama A & M University, Normal, Alabama.*

Jerk, curvature and torsion in motion of charge particle under crossed electric and magnetic fields. **Arjun Tan**, **Angelicia Thomas***, and **Mostafa Dokhanian**, *Alabama A & M University, Normal, Alabama.*

Jerk vector in general motion of charged particle under electric and magnetic fields. **Arjun Tan** and **Mostafa Dokhanian**, *Alabama A & M University, Normal, Alabama.*

Analysis of IRF-3 levels in cervical cancer cell lines expressing Human Papillomavirus and the contribution of other microbial Infections. **Kathryn E. Rush*** and **Jennifer T. Thomas**, Belmont University, Nashville, Tennessee.

Detection of *Rickettsia* Species DNA in Birds and Ticks in Middle Tennessee. **Jennie A. Hamilton***, **Evan R. Scott***, **Steven W. Hamilton**, and **Stephen M. Wright**, Middle Tennessee State University, Murfreesboro, Tennessee (JH, ES, SW) and Austin Peay State University, Clarksville, Tennessee (SH).

Math and Computer Science

Predicted rising states in the music industry. **Angela R. Gaetano***, **Daniel Biles**, and **Barbara Ward**, Belmont University, Nashville, Tennessee.

An investigation of ipo secondary returns since 2004 and analysis of sector allocation on such returns. **Ayesha Ghaffar***, **Daniel Biles**, **John Gonas**, and **Barbara Ward**, Belmont University, Nashville, Tennessee.

Weeding out risky business ventures. **Daniel A. Hue-necke***, **Daniel Biles**, and **Barbara Ward**, Belmont University, Nashville, Tennessee.

When to get a fastpass: a prediction analysis of Disneyland theme park ride wait times. **Anne Brunelle***, **Wesley Whitson***, **Daniel Biles**, and **Barbara Ward**, Belmont University, Nashville, Tennessee.

Science and Math Teaching

Mentoring authentic research in the high school classroom. **Julie A. Folks***, **Mary B. Farone**, **Kim C. Sadler**, and **Anthony L. Farone**, Middle Tennessee State University, Murfreesboro, Tennessee.

APEX project at AAMU. **Mostafa Dokhanian**, **Barbara Cady**, **Marius Schamschula**, and **Arjun Tan**, Alabama A&M University, Huntsville, Alabama.

Sixteen years of Expanding Your Horizons across Tennessee. **Lauren LaBeff***, **Rachel Davies***, **Katrina Smith***, **Amity Sneed***, and **Judith Iriarte-Gross**, Middle Tennessee State University, Murfreesboro, Tennessee.

Karst and Cumberland for the Classroom: A Geoscience Survey of Eastern Middle Tennessee. **Jennifer Pollock**, Tullahoma High School, Tullahoma, Tennessee.

Oral Presentations

BOTANY

Chair: **Roger McCoy**
University Club - Art Gallery
1:00 p.m. – 3:40 p.m.

1:00 – 1:05 Business Meeting

1:05 – 1:20 Ecological variation and the population dynamics of *Astragalus bibullatus*. **Matthew A. Albrecht**, **Andrea Bishop**, and **David Lincicome**, Conservation and Sustainable Development, Missouri Botanical Garden, St. Louis, Missouri (MA), Division of Natural Areas, Tennessee Department of Environment & Conservation, Nashville, Tennessee (AB, DL).

1:20 – 1:35 Impacts of large mammal herbivory on *Scutellaria montana* Chapm. at 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.

1:35 – 1:50 Current Status of *Boechea perstellata* (E.L. Braun) Al-Shehbaz, Braun's rock-cress, in Tennessee. **Roger McCoy** and **Todd Crabtree**, Tennessee Division of Natural Areas, Nashville, Tennessee.

1:50 – 2:05 Population genetics of *Boechea perstellata* (Brassicaceae), an endangered plant with a disjunct distribution. **Carol J. Baskauf**, **Jennifer R. Mandel**, and **David E. McCauley**, Austin Peay State University, Clarksville, Tennessee (CJB), University of Georgia, Athens, Georgia (JPM), and Vanderbilt University, Nashville, Tennessee (DEM).

2:05 – 2:20 Analysis and mapping of soils in the Bryan College Arboretum. **Michael R. Bautista*** and **Roger W. Sanders**, Bryan College, Dayton, Tennessee.

2:20 – 2:35 - Break

2:35 – 2:50 The distribution and status of *Ribes aureum* var. *villosum*, Golden or Buffalo Currant, in Tennessee. **Edward W. Chester**, Austin Peay State University, Clarksville, Tennessee.

2:50 – 3:05 Winter warm spell effects on seed germination among native and non-native plants in a riparian community. **Noah P. Flanigan***, **Jeffrey L. Walck**, and **Siti N. Hidayati**, Middle Tennessee State University, Tennessee.

* student author

presenting author, if not first author

3:05 – 3:25 Rare Plants and Habitat Delineation of the Ocoee River Gorge, Polk County, Tennessee. **Sunny Hart***, **Dwayne Estes**, **B. Eugene Wofford**, **Aaron Floden***, **Rob Sheppard***, **Mason Brock*** and **Joey Shaw**, *The University of Tennessee at Chattanooga, Chattanooga, Tennessee (JS,SH), Austin Peay State University, Clarksville, Tennessee (DE,RS,MB), and The University of Tennessee at Knoxville, Knoxville, Tennessee(BW,AF).*

3:25 – 3:40 Seed viability and vitality in *Clematis fremontii* (S. Watson) W.A. Weber, **Joseph R. Turk***, **Joey Shaw**, and **Jose Barbosa**, University of Tennessee Chattanooga, Chattanooga, Tennessee.

* student author

presenting author, if not first author

Geology and Geography

The effects of stream flow alteration produced by dams in the southeast United States. **Richard H. Kittrell***, *Tennessee Technological University, Cookeville, Tennessee.*

Effects of scavenging on avian bone preservation potential. **Eleanor E. Gardner and Sally E. Walker**, *The University of Tennessee at Martin, Martin, Tennessee, and The University of Georgia, Athens, Georgia.*

Modeling the Rate of Sedimentation for Reelfoot Lake, Tennessee, using Remote Sensing and GIS Techniques. **Johanna S. van Zyl***, **Terri Keel ***, and **Stan Dunagen**. *The University of Tennessee at Martin. Martin, Tennessee.*

To Zone or Not to Zone? **Travis L. Smith* and Peter Li**. *Tennessee Technological University, Cookeville, Tennessee.*

Health and Medical Science

Implementing a point-of-purchase messaging program at an urban university food court. **Sarah L. Bursi**, **Terra L. Smith**, **Beth M. Egan**, and **Robin R. Roach**, *The University of Memphis, Memphis, Tennessee.*

ECE-1 and CD10 protein expression in invasive breast cancer. **Mary E. Belles***, **Amanda D. Williams**, and **Rebecca E. Conway**, *Lipscomb University, Nashville, Tennessee.*

CD-10 function on human breast cancer cell invasion. **Brenna Cosminsky***, **Amanda D. Williams**, and **Beth Conway**, *Lipscomb University, Nashville, Tennessee.*

Correlation of health indicators to pulmonary parameters in college students singing in a choir or playing a wind instrument verses those who do not. **Joseph Gray***, **William Taylor***, and **Donald Shaw**, *The University of Tennessee Martin, Martin, Tennessee.*

Correlation of health indicators to heart rate recovery time in college students. **Hyeontae Kim***, **Kyeongmee Kim***, and **Donald Shaw**, *The University of Tennessee Martin, Martin, Tennessee.*

Gardnerella vaginalis causes cytokine release in human monocyte-like cells. **Eric Vick***, **Krista Huff**, **Mary B. Farone**, and **Anthony Farone**. *Middle Tennessee State University, Murfreesboro, Tennessee.*

Impact of infectious agents on the expression of IFI-16 interferon-inducible protein in cervical cancer cell lines. **JoAnna B. Adkisson*** and **Jennifer T. Thomas**. *Belmont University, Nashville, Tennessee.*

Design Your Dream Game Room. **Thomas Tatum, Drew Berta, Tiffany Brewer, Kenan Hatipoglu*, Julie Baker, and Ismail Fidan**, Stone Memorial High School, Crossville, Tennessee (TT, DB), Cumberland County High School, Crossville, Tennessee (TB), Tennessee Technological University, Cookeville, Tennessee (KH, JB, IF).

Improving Accuracy for MIMO and SISO Underlay Schemes. **Aaron Henderson and S. Keith Hargrove**, Tennessee State University, Nashville, Tennessee.

Re-designing the drain near the dump station at Mammoth Cave National Park to reduce contaminant runoff. **Sean McMillan*, Thomas Byl, Lonnie Sharpe, and Rick Toomey**. Tennessee State University, Nashville, Tennessee (SM, TB, LS), U.S. Geological Survey (TB), Mammoth Cave International Center for Science and Learning, Mammoth Cave National Park, Kentucky (RT).

Sorption isotherm of copper and quaternary ammonia compounds to zeolite-perlite-granular activated carbon in a storm-water filter. **Hung-Wai Ho*, Rick Toomey, and Thomas Byl**. Tennessee State University, Nashville, Tennessee (WH, TB), Mammoth Cave International Center for Science and Learning, Mammoth Cave National Park, Kentucky (RT), U.S. Geological Survey, Nashville, Tennessee (TB).

Nanosensors for explosive detection **Jonathan Mallard*, Terrence Thompson*, Jonathan Reynolds*, Charles Davis Jr.*, Hazzan Mafuz, Mohan Malkani, Lizhi Ouyang, and S.K. Hargrove**, Tennessee State University, Nashville, Tennessee (JM, TM, JR, MM, LO, SH), Florida Atlantic University, Boca Raton, Florida (CD, HM).

Cell and Molecular Biology
Chair: Greg A Johansen
Student Life Center Meeting Room 2 –
Lower Level
1:00 p.m. – 1:35 p.m.

1:00 – 1:05 Business Meeting

1:05 – 1:20 Matrix Metalloproteinase-2 (MMP-2) and Prostate Specific Membrane Antigen (PSMA) generate small laminin peptides that activate endothelial cells through focal adhesion kinase (FAK). **Kyle Joiner*, Amanda Williams and Beth Conway**. Lipscomb University, Nashville, Tennessee.

1:20 – 1:35 The Presence of Caffeine in the Growth Medium Increases the Survival of Yeast Cells Under Oxidative Stress Conditions. **Daniel Sims, Jose F. Barbosa, Colleen Mikelson, and Navia Stevenson** University of Tennessee at Chattanooga, Chattanooga, Tennessee

* student author

presenting author, if not first author

Chemistry
Chair: Daniel J. Swartling, Ph.D.
Student Life Center Meeting Room 2 –
Lower Level
1:35 p.m. – 3:05 p.m.

1:35 – 1:40 Business Meeting

1:40 – 1:55 Potassium Organotrifluoroborates and Their Use in Microwave Irradiated Pd-catalyzed Cross-Coupling Chemistry for New C-C, C-N, C-O Bond Forming Products. **Mohammad Al-Masum[#], Nabil Saleh, Kwei Liu, Shahrina Alam, Maya Wei, and Eunice Ng.** Department of Chemistry, Tennessee State University, Nashville, Tennessee.

1:55 – 2:10 Theoretical Investigation of *p*-Benzoquinone reactivity with N-containing Nucleophiles. **Lasantha Rathnayake* Scott Northrup, and Titus Albu,** Tennessee Technological University, Cookeville, Tennessee.

2:10 – 2:25 A QAIM investigation of the generalized anomeric effect. **Jordan G. Dodson* and Preston J. MacDougall,** Middle Tennessee State University, Murfreesboro, Tennessee.

2:25 – 2:35 Paper-Based Microfluidic Devices for Simultaneous Determination of Nitrate and Nitrite. **Jyothir Ganesh Ummadi Reddy* and Andrew F. Callender,** Department of Chemistry, Tennessee Technological University, Cookeville, Tennessee.

2:50 – 3:05 Comparative proteomic study of triclosan toxicity to green microalga *Chlamydomonas reinhardtii*. **Halambage U. Deepthike and Jeffrey O. Boles,** Tennessee Technological University, Cookeville, Tennessee.

* student author

presenting author, if not first author

An ab initio study of XNO^y and XPO^y (X = H, F, Cl, Br and y = +1, 0, -1) interstellar species. **Uttam Sharma* and Sujata Guha,** Tennessee State University, Nashville, Tennessee.

Design, Synthesis and Evaluation of Some Trifluoromethylated Cyclic Enaminones As Anticonvulsant Agents. **John Apraku* and Cosmas O. Okoro,** Department of Chemistry, Tennessee State University, Nashville, Tennessee.

Chiral Separation of Clandestine Amphetamine Type Stimulants and Cathinone Derivatives by HPLC-MS/MS. **Sravan Kumar Mansani* and Jeffrey O. Boles.** Tennessee Technological University, Cookeville, Tennessee.

Study of differential protein expression profiles in non-intersex and intersex male smallmouth bass. **Durga Sainath Talupuri*, and Jeffrey O. Boles.** Tennessee Technological University, Cookeville, Tennessee.

Differential proteomic approach to determine sub-lethal effects of gold-nanoparticles on *Tetrahymena* sp. **Vana-ja Reddy Bodeddula*, Sri Bharat Madireddy, Sharron G Berk and Jeffrey O. Boles,** Tennessee Technological University, Cookeville, Tennessee (VRB, SBM, JOB), and Center for the Management, Utilization and Protection of Water Resources, Tennessee Technological University, Cookeville, Tennessee (SGB).

Progress towards the enantioselective total synthesis of hamigeromycin b. **John W. Kirby*, Michael S. Probasco*, and Jesse D. Carrick,** Tennessee Technological University, Cookeville, Tennessee.

Deep Eutectic Solvent: A novel medium for pretreatment and hydrolysis of biomass. **Henry Abougor*, Joe Brazil*, and Jeffrey O. Boles,** Tennessee Technological University, Cookeville, Tennessee.

Analysis of differentially expressed proteins in *escherichia coli* when exposed to L-telluromethionine. **Kathleen M. Broderick*, Savannah Taylor* and Jeffrey O. Boles,** Tennessee Technological University, Cookeville, Tennessee.

Engineering and Engineering Technology
Golden Ratio. **David Haines and Emily Howard,** Mount Juliet High School, Mount Juliet, Tennessee, **Kenan Hatipoglu*, Julie Baker, and Ismail Fidan,** Tennessee Technological University, Cookeville, Tennessee.

The associative learning paradigm of *Caenorhabditis elegans* in olfactory chemotaxis response to isoamyl alcohol. **Lacey R. Dunkley*** and **Robert Grammer**, Belmont University, Nashville, Tennessee.

Chemotaxis in *Caenorhabditis elegans*. **Fatin Jweinat*** and **Robert Grammer**. Belmont University. Nashville, Tennessee.

Chemistry

Nitrocyclopropanation of amino acid derived enones. **Norma Dunlap, Jacob Basham***, **Will Shelton***, and **Matthew Wright***, Middle Tennessee State University, Murfreesboro, Tennessee.

Synthesis and Anti-HIV Evaluation Of Tris (CycloSaligenyl) Pronucleotides. **Yousef Beni***, **Rakesh Tiwari**, and **Keykavous Parang**, Tennessee State University, Nashville, Tennessee (YA), and University of Rhode Island, Kingston, Rhode Island (RT, KP).

Site-Directed Mutagenesis, Expression, Purification and TLS Analysis of Human DNA Polymerase η Mutations found in XP-V and Melanoma Patients. **Mukesh Kumar***, **Adali J. Valdez***, and **Xiaohua Jiang**. Tennessee Technological University, Cookeville, Tennessee.

Functional studies of XPV mutation--G295R in human DNA polymerase η catalytic core. **Adali J. Valdez***, **Mukesh Kumar***, and **Xiaohua Jiang**. Tennessee Tech University, Cookeville, Tennessee.

Extraction of iron from basalt and scoria and quantification by redox titration. **Jeff McDonald*** and **Jerry Burns**, University of Tennessee, Chattanooga, Tennessee (JM) and Pellissippi State Community College, Knoxville, Tennessee (JM, JB).

Optimization of Tyrosol, Tryptophol and Phenylethanol Yields in Fermentation by *Saccharomyces cerevisiae* strain 96581. **Adam A. Banach*** and **Beng Guat Ooi**, Department of Chemistry, Middle Tennessee State University, Murfreesboro, Tennessee

The Biocidal Effect of Chlorine Dioxide Fumigation on Microbes. **Basal Hassan*** and **Beng Guat Ooi**. Department of Chemistry, Middle Tennessee State University, Murfreesboro, Tennessee

Solar Friedel-Crafts acylation of benzene with isobutyryl chloride. **Brian M. Agee*** and **Daniel J. Swartling**, Tennessee Technological University, Cookeville, Tennessee.

Engineering and Engineering Technology Chair: Ismail Fidan, Ph.D. Student Life Center - Board of Trust Room 9:30 a.m. – 11:20 a.m. and 1:00 p.m. - 4:15 p.m.

9:30 – 9:35 Business Meeting

9:35 – 9:50 Blind sound separation using source localization method. **Na Zhu and Sean Wu**, Austin Peay State University, Clarksville, Tennessee, and Wayne State University, Detroit, Michigan.

9:50 – 10:05 The Development of Superinsulations for Buildings and Industrial Use. **David W. Yarbrough**, R&D Services, Inc., Cookeville, Tennessee.

10:05 – 10:20 The Engineering Technology curriculum faces challenges of instructional diversity and delivery methods that will lead to effectively using online and blended course delivery. **Sue C. Evans and Ihab Habib**, Austin Peay State University, Clarksville, Tennessee.

10:20 – 10:35 Network Traffic Analysis on Hadoop based Cloud Computing System. **Waled M. Tayib*** and **Sachin Shetty**, Tennessee State University, Nashville, Tennessee.

10:35 – 10:50 Measuring network vulnerabilities in cloud environments. **Swetha R. Lenkala***, **Sachin Shetty**, and **Samuel Keith Hargrove**, Tennessee State University, Nashville, Tennessee.

10:50 – 11:05 Functional degradation of regenerative hydraulic systems resulting from fluid flow frictional losses. **John L. Byrd**, Austin Peay State University, Clarksville, Tennessee.

11:05 – 11:20 Network Traffic Analysis on Hadoop based Cloud Computing System. **Waled M. Tayib*** and **Samuel K. Hargrove**, Tennessee State University, Nashville, Tennessee.

11:20 – 1:00 Break

* student author

presenting author, if not first author

1:00 – 1:15 Secure IP geolocation for cloud auditing. **Biswajit Biswal***, **Sachin Shetty**, and **Samuel Hargrove**, Tennessee State University, Nashville, Tennessee.

1:15 – 1:30 Secure Radio Resource Management in Cloud Computing Based Cognitive Radio Networks. **Khurram Raza***, **Samuel K. Hargrove**, **Dand B. Rawat**, and **Sachin Shetty**, Tennessee State University, Nashville, Tennessee, and Eastern Kentucky State University, Richmond, Kentucky.

1:30 – 1:45 Mining Concept Drifting Network in Cloud Computing Environments. **Sai Kiran Mukkavilli** and **Sachin Shetty**, Tennessee State University, Nashville, Tennessee.

1:45 – 2:00 Review of Incident Transportation Emergency Evacuation Systems for Populated Areas. **Heather Housel*** and **Samuel Hargrove**, Tennessee State University, Nashville, Tennessee.

2:00 – 2:15 Efficacy of stormwater filters at Mammoth Cave National Park. **David Solomon***, **Ashley West**, **Sean McMillan**, **Rick Toomey**, and **Thomas Byl**, Tennessee State University, Nashville, Tennessee, (DS, AW, SM, TB), Mammoth Cave International Center for Science and Learning, Mammoth Cave National Park, Kentucky (RT), U.S. Geological Survey, Nashville, Tennessee (TB).

2:15 – 2:30 Real-Time Wireless Video Transmission Using Software Defined Radio. **Cornel Zlibut***, **Liang Hong**, **Sachin Shetty**, and **Keith Hargrove**, Tennessee State University, Nashville, Tennessee.

2:30 – 2:45 Fate and transport of chemicals in stormwater runoff at Mammoth Cave National Park. **Ashley West***, **Rick Toomey**, **Thomas Byl**, **Roger Painter**, and **Dafeng Hui**. Tennessee State University, Nashville, Tennessee, (AW, TB, RP, DH), Mammoth Cave International Center for Science and Learning, Mammoth Cave National Park, Kentucky (RT), U.S. Geological Survey, Nashville, Tennessee (TB).

2:45 – 3:00 Effects of Machine Material Removal Rate limits on burr formation when machining face centered cubic crystalline structured metals. **John L. Byrd**, Austin Peay State University, Clarksville, Tennessee.

* student author

presenting author, if not first author

The correlation between photosynthesis and stomatal density in *Lonicera japonica* compared to native vines. **Anna Witherspoon*** and **A. Darlene Panvini**, Belmont University, Nashville, Tennessee.

Cell and Molecular Biology

Investigation of CED-1 receptor in bacterial pathogen recognition of *Caenorhabditis elegans* infected with *Acinetobacter baumannii*. **Anderson Webb***, and **Nick Ragsdale**, Belmont University, Nashville, Tennessee.

The affect of temperature on the mortality rate of *Caenorhabditis elegans* infect with *Staphylococcus aureus*. **Brad R. Gill***, **Nick Ragsdale**, Belmont University, Nashville, Tennessee.

Investigation of CED-1 receptor in bacterial pathogen recognition of *Caenorhabditis elegans* infected with *Staphylococcus aureus*. **Liberty Foye***, and **Nick Ragsdale**, Belmont University, Nashville, Tennessee.

Acinetobacter Baumannii does not infect *Caenorhabditis elegans* with normal immune function and inconsistently infects PMK-1 deficient *Caenorhabditis elegans*. **Scott Kim*** and **Nich Ragsdale**, Belmont University, Nashville, Tennessee.

Effects of superoxide dismutase knockout genes on chemotaxis in 6-OHDA -exposed *Caenorhabditis elegans*. **Rachel Garland*** and **Nick Ragsdale**, Belmont University, Nashville, Tennessee.

Calpain-6 Expression in cervical cancer cell lines that are both positive and negative for Human Papilloma Virus. **Kailee L. Hawkins *** and **Jennifer T. Thomas**, Belmont University, Nashville, Tennessee.

E-cadherin levels in cervical cancer cells influenced by interaction of Human Papillomavirus and microorganisms. **Haley F. Kinney*** and **Jennifer T. Thomas**, Belmont University Nashville, Tennessee.

Effects of liquid growth versus plate growth of *Caenorhabditis elegans* on chemoresponse to pathogenic bacteria. **Megan Rock*** and **Robert Grammer**, Belmont University, Nashville, Tennessee.

Effect of angle of presentation on olfactory response in *Caenorhabditis elegans*. **Emma E. Reeves*** and **Robert Grammer**, Belmont University, Nashville, Tennessee.

Phototaxis in *Caenorhabditis elegans*. **Fahimeh Nazi*** and **Robert Grammer**, Belmont University, Nashville,

Poster Presentations

Ballroom C

Display: 7:30 – 9:30

Judging: 8:30 – 9:30

(Presenters should be near their displays during the judging to answer any questions.)

Botany

Tree Diversity of Gee Creek Recreation Area, Hiwassee/Ocoee State Park, Polk County, Tennessee. **Jordan Bean***, **Stephanie Breeden***, **Janelle Johnson***, **Bobbi Stone***, and **Allen D. Moore**. *Tennessee Wesleyan College, Athens, Tennessee.*

Stomatal density and photosynthesis rates in the exotic vines *Euonymus fortunei* and *Lonicera japonica*. **Emma Ghulam Jan*** and **A. Darlene Panvini**, *Belmont University, Nashville, Tennessee.*

Ridge-top forest comparison at Radnor Lake State Natural Area. **Samuel R King***, **James Helton***, and **Robert E Loeb**, *Lipscomb University, Nashville, Tennessee (SRK, JH)*, and *Pennsylvania State University Dubois Campus, Dubois, Pennsylvania (REL).*

Comparing a visual estimation method to the use of acorn traps to determine an appropriate method for correlating mast production to Red-headed Woodpecker abundance in a bottomland hardwood forest. **Judy Redden***, **Lisa Krueger**, and **H. Dawn Wilkins**, *The University of Tennessee at Martin, Martin, Tennessee.*

Comparison of stomatal densities and photosynthesis rates in two exotic and two native vine species. **Jessica Braden*** and **A. Darlene Panvini**, *Belmont University, Nashville, Tennessee.*

Impacts of Nonpoint-Source Pollution on the Diatom Assemblage, Periphyton Characteristics, and Algae Growth in the West Fork of the Red River in North-Central Tennessee. **Jefferson Lebkuecher**, **Kelly Anderson***, **Courtney Gorman***, **Anna Guyer***, **Alex Hall***, **Rebecca Johnson***, **Elizabeth Slade***, **Chelsea Williams***, and **Lyddia Wilson***. *Austin Peay State University, Clarksville, Tennessee.*

Root Development in Relation to Time of Harvest, Scion Maturity, and Diameter in Cuttings of *Vitis aestivalis* ‘Cynthiana / Norton’. **Tori Newton***, **Warren Anderson**, and **Nathan C. Phillips**, *Middle Tennessee State University, Murfreesboro, Tennessee.*

3:00 – 3:15 Assessment and Development of a Virtual and Augmented Reality Based Assembly Design System. **Stephanie Starling*** and **S. Keith Hargrove**, *Tennessee State University, Nashville, Tennessee.*

3:15 – 3:30 Motorized Christmas Carousel. **Amy Cranfield*** and **Chin-Zue Che**, *Austin Peay State University, Clarksville, Tennessee.*

3:30 – 3:45 Design of Motorized Bi-directional Rotation function for a Christmas Carousel. **Lindsay D’Albani*** and **Chin-Zue Chen**, *Austin Peay State University, Clarksville, Tennessee.*

3:45 – 4:00 Hydraulic connections between the Cumberland River and groundwater in nearby wells at Tennessee State University. **Aras Barzanji***, **Mike Bradley**, and **Thomas Byl**, *Tennessee State University, Nashville, Tennessee (AB, TB)*, *U.S. Geological Survey, Nashville, Tennessee (MB, TB).*

4:00 – 4:15 As mobile technology advances so does the desire to integrate the tool into daily life. **Adel Salama**, **Travis Broyles**, **John Jackson***, **Adam Wilson**, and **Michael Wright**, *Austin Peay State University, Clarksville, Tennessee.*

4:15 – 4:30 Capstone project to design a robot for electrical engineering technology, **Adel Salama**, **Lindsay D’Albani***, and **Enrique Perez**, *Austin Peay State University, Clarksville, Tennessee.*

4:30 – 4:45 Xylitol-daptomycin bone cement. **Ali Salehi*** *University of Memphis, Memphis, Tennessee.*

4:45 – 5:00 Application of a Gamma-derived Residence Time Distribution Function for Karst Aquifers. **I. Embry***, **V. Roland***, **A. Kalyanapu**, **T. Byl**, **R. Painter**, **R. Toomey**, and **L. Shar**, *Tennessee State University, Nashville, Tennessee (IE, VR, TB, RP)*, *Tennessee Technological University, Cookeville, Tennessee (IE, AK)*, *United States Geological Survey, Nashville, Tennessee (TB)*, *Mammoth Cave International Center for Science and Learning, Mammoth Cave, Kentucky (RT)*, and *Massie Chair of Excellence, Tennessee State University, Nashville, Tennessee (LS).*

* student author

presenting author, if not first author

Geology and Geography
Chair: Robert Mark Simpson, Ph.D.
University Club - Wedgewood
1: 35 p. m. – 3:40 p.m.

1: 35 – 1:40 Business Meeting

1:40 – 1:55 Geologic controls on contaminant transport at the Velsicol dump, Hardeman County, Tennessee
Michael W. Bradley and Thomas D. Byl, U.S. Geological Survey, Nashville, Tennessee.

1:55 – 2:10 Distinguishing the Millbrig bentonite from the Deicke bentonite along the Kingston thrust sheet in Eastern Tennessee, **David M. Buhl* and H. Wayne Leimer**, Tennessee Technological University, Cookeville, Tennessee

2:10 – 2:25 Background trace metal concentrations in east Tennessee red clay soil samples. **Randy M. Curtis**, Gresham, Smith and Partners, Nashville, Tennessee.

2:25 – 2:40 Trials and Tribulations of Teaching Introductory Geology Online: Insights and Questions to Ponder. **Thomas A. DePriest and Michael A. Gibson**, University of Tennessee at Martin, Martin, Tennessee.

2:40 – 2:55 Online Geoscience Education and Teacher Earth Science Literacy in Tennessee. **Michael A. Gibson and Thomas A. DePriest**, University of Tennessee at Martin, Martin, Tennessee.

2:55 – 3:10 Sedimentation rates in the Upper Blue Basin (Reelfoot Lake) using Cesium-137, Northwest Tennessee **Terri L. Keel*, Johanna Van Zyl*, Stan P. Dunagan, and Viktor Polyakov**, The University of Tennessee at Martin, Martin, Tennessee (TK, JVZ, SD) and USDA-ARS Southwest Watershed Research Center, Tucson, Arizona (VP).

3:10 – 3:25 Shifts in microbial community function associated with the flow path of groundwater recharge at Mammoth Cave, Kentucky. **Petra K. Byl*, Shannon Trimboli, Rickard Toomey, David Solomon*, and Thomas D. Byl**, U.S. Geological Survey, Nashville, Tennessee (PKB intern, TDB), Hume-Fogg Academic HS, Nashville, Tennessee (PKB), Mammoth Cave International Center for Science and Learning, Mammoth Cave National Park, Kentucky (ST, RT), Tennessee State University, Nashville, Tennessee (DS, TDB).

* student author

presenting author, if not first author

2:35 – 2:50 Habitat selection of *Agkistrodon piscivorus* in Cheatham County, Tennessee. **Michael C. Fulbright* and C. M. Gienger**, Austin Peay State University, Clarksville, Tennessee.

2:50 – 3:05 Geographic distribution of the herpetofauna of Southern Middle Tennessee. **Nicole Y. Foster, Colleen Conway* and Michael Williams***. Columbia State Community College, Columbia, Tennessee.

3:05 – 3:20 An assessment of interspecific associations of the Virginia opossum and raccoon in western Tennessee. **Rebecca M. Bingham*, Lauren A. Madeira*, Edward O. Zahed*, Steve W. Stephenson, and Michael L. Kennedy**, The University of Memphis, Memphis, Tennessee (RMB, LAM, EOZ, MLK), and American Ordnance, LLC/Milan Army Ammunition Plant, Milan, Tennessee (SWS).

3:20 – 3:35 Population demographics and site-fidelity among cave-dwelling bats of Dunbar Cave, Montgomery County, Tennessee. **Veronica B. Mullen* and Andrew N. Barrass**, Austin Peay State University, Clarksville, Tennessee.

* student author

presenting author, if not first author

Zoology

Chair: **Michael Kennedy, Ph.D.**

Student Life Center Ballroom A

1:00 p.m. – 3:35 p.m.

1:00 – 1:05 Business Meeting

1:05 – 1:20 A genetic assessment of the southern short-tailed shrew (*Blarina carolinensis*) in the southeastern United States. **A. Christopher Grow***, **Juliann L. Waits**, **Melvin L. Beck**, and **Michael L. Kennedy**, *The University of Memphis, Memphis, Tennessee (ACG, MLB, MLK)*, and *Southwest Tennessee Community College, Memphis, Tennessee (JLW)*.

1:20 – 1:35 Response of soil arthropods to controlled burning at Haynes Bottom Wildlife Management Area, Montgomery County, Tennessee. **Brittney M. Jones***, **Willodean D.S. Burton**, and **Don L. Sudbrink**, *Austin Peay State University, Clarksville, Tennessee*.

1:35 – 1:50 Phylogeography of short-tailed shrews (genus *Blarina*) of southeast Tennessee. **Casey Carpenter***, **Tim Gaudin**, **Thomas Wilson**, and **Joey Shaw**, *University of Tennessee – Chattanooga, Chattanooga, Tennessee*.

1:50 – 2:05 Summer movement and activity of the timber rattlesnake (*Crotalus horridus*) in Middle Tennessee. **Eric J. Nordberg*** and **Vincent A. Cobb**, *Tennessee State University, Murfreesboro, Tennessee*.

2:05 – 2:20 Scavenging of internal organs 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)*.

2:20 – 2:35 Interspecific relationships of white-tailed deer and eastern wild turkey in western Tennessee. **Lauren A. Madeira***, **Allan E. Houston**, **Steve W. Stephenson**, and **Michael L. Kennedy**, *The University of Memphis, Memphis, Tennessee (LAM, MLK)*, *Ames Plantation and University of Tennessee AgResearch, Grand Junction, Tennessee (AEH)*, and *American Ordnance LLC/Milan Army Ammunition Plant, Milan, Tennessee (SWS)*.

* student author

presenting author, if not first author

3:25 – 3:40 One hundred years of tornadoes in Tennessee: An overview of tornado climatology research in the state. **Robert M. Simpson**, *The University of Tennessee at Martin, Martin, Tennessee*.

* student author

presenting author, if not first author

Health and Medical Sciences
Chair: Nick Ragsdale, Ph.D.
University Club - Wedgewood
1:00 p.m. - 1:35p.m.

1:00 – 1:05 Business Meeting

1:05 – 1: 20 Screening four putative anti-androgenic compounds, Tartrazine, Bisphenol A, Allantoin and Di-n-butyl phthalate, using MDA-kb2 cells. **Amelia K. Rinehart*** and **Sarah Lundin-Schiller**, *Austin Peay State University, Clarksville, Tennessee.*

1: 20 – 1:35 Anti-tumor activity of a novel HS-mimetic-vascular endothelial growth factor binding small molecule. **Kuntebommanahalli N. Thimmaiah***, **J. L. Sylvester**, **Mark Montgomery**, **T. Padma**, **P. Adris**, **P. Grisham**, **Sarah Mattox**, **Ray Cox**, and **Darrell Barnes**, *Northwest MS Community College, DeSoto Center, Southaven, Mississippi*, and **P. J. Houghton**, *Center for Childhood Cancer, Nationwide Children's Hospital, Columbus, Ohio.*

3:20 – 3:35 Using non-fiction to achieve learning goals in undergraduate biology courses. **Jennifer T. Thomas**, *Belmont University, Nashville, Tennessee.*

3:35 – 3:50 Collaboration is critical for the success of Tennessee girls in STEM. **Judith Iriarte-Gross**, *Middle Tennessee State University, Murfreesboro, Tennessee.*

* student author

presenting author, if not first author

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presenting author, if not first author

Science and Math Teaching
Chair: Kim C. Sadler, Ph.D.
University Club - Hermitage A& B
1:00 p.m. – 3:50 p.m.

History of Science
Chair: Brother Kevin Ryan, FSC
Student Life Center Meeting Room 3
1:35 p.m. – 3:25 p.m.

- 1:00 – 1:05 Business Meeting
- 1:05 – 1:20 Tennessee Junior Academy of Science: A look at present day activities and how the program has evolved over time, **Jack Rhoton**, *East Tennessee State University, Johnson City, Tennessee.*
- 1:20 – 1:35 Assessing science literacy skills in an undergraduate biology course for non-majors. **D. Michelle Rogers**, *Austin Peay State University, Clarksville, Tennessee.*
- 1:35 – 1:50 A learning style hierarchy for teaching physics to Audio Engineering students. **Scott H. Hawley**, *Belmont University, Nashville Tennessee.*
- 1:50 – 2:05 Community College Undergraduate Research Initiative (CCURI), **Parris Powers, Phil Clifford, Christopher Beals, James Neilan, Joe Dolan, Clark Cropper, Nancy Morris, and Mariah Hughes***, *Volunteer State Community College, Gallatin, Tennessee.*
- 2:05 – 2:20 Impact of the Inverted Curriculum and Modeling Instruction on Student Performance in Science. **Jennifer Dye, Ginger Rowell, Angela Barlow, and Tom Cheatham**, *Pope John Paul II High School, Hendersonville, Tennessee and Middle Tennessee State University (GR, AB, TC), Murfreesboro, Tennessee.*
- 2:20 – 2:35 Reflections on research in an undergraduate program: Lessons Learned. **Terra L. Smith**, *The University of Memphis, Memphis, Tennessee.*
- 2:35 – 2:50 Arboretum project exemplifies biology undergraduate education reform. **A. Darlene Panvini**, *Belmont University, Nashville, Tennessee.*
- 2:50 – 3:05 Correlation of students' careless test-taking behavior to their grades. **Donald Shaw**, *The University of Tennessee Martin, Martin, Tennessee.*
- 3:05 – 3:20 The effect of time on academic success in a content-intensive course. **Amy E. Jetton and Jeffery W. Bonner**, *Middle Tennessee State University, Murfreesboro, Tennessee.*

* student author
 # presenting author, if not first author

- 1:35 – 1:40 Business Meeting
- 1:40 – 1:55 The Fusion of HUMINT Operations and the Scientific Method. **Eugenie de Silva* and Eugene de Silva**, *American Military University, Charles Town, West Virginia. (EDS) and Walters State Community College, Morristown, Tennessee (EDS).*
- 1:55 – 2:10 History of the Collegiate Division – Reminiscences. **Richard J. Raridon**, *Oak Ridge, Tennessee*
- 2:10 – 2:25 Science and the State in the 18th Century: Venus Transits in War and Peace. **George Webb**, *Tennessee Tech University, Cookeville, Tennessee*
- 2:25 – 2:40 The Tennessee Academy of Science in 1912. **George Webb**, *Tennessee Tech University, Cookeville, Tennessee*
- 2:40 – 2:55 Using a Transit of Venus to obtain Earth to Sun distance. **Brother Kevin Ryan, FSC**, *Christian Brothers University, Memphis, Tennessee*
- 2:55 – 3:10 Frances Ranney Bottum, President of the Tennessee Academy of Science 1949. **Teresa Lane Fulcher**, *Pellissippi State Community College, Knoxville, Tennessee.*
- 3:10 – 3:25 The Education of Archibald Belcher: First Science Professor at MTSU. **Martin V. Stewart**, *Middle Tennessee State University, Murfreesboro, Tennessee*
- 3:25 – 3:40 Tennessee women in science: the bio project. **Marleyna Daughters*, Rachel Davies*, Elizabeth Sharp*, Angel Talamantes*, and Judith Iriarte-Gross**, *Middle Tennessee State University, Murfreesboro, Tennessee*

* student author
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Math and Computer Science
Chair: Ben Ntatin, Ph.D.
Student Life Center Meeting Room 1 –
Lower Level
9:30 a.m. – 11:20 a.m.
and
Student Life Center Ballroom C
1:00 p.m. – 3:15 p.m.

9:30 – 9:35 Business Meeting

9:35 – 9:50 Colossal Corn, Colossal Consequences. *Al-ice E. Curtis**, *Daniel Biles*, *Barbara Ward*, and *Keeley White*, Belmont University, Nashville, Tennessee.

9:50 – 10:05 Flying between trains. *Zaklina Cetic**, *Janica Bolden*, *Dusty Adkins*, *Reneice Glasper*, *Michael Kuwonu*, and *Murphy Rogers*, Austin Peay State University, Clarksville, Tennessee.

10:05 – 10:20 A road between two towns. *Rachel Balthrop**, *Elizabeth Dodds**, *Jessica Dotson**, *Michael McAllister**, *Derek Nobes**, and *Brandy Smith**, Austin Peay State University, Clarksville, Tennessee.

10:20 – 10:35 Friezing triangulated polygons. *Emarus D. Shay**, Austin Peay State University, Clarksville, Tennessee.

10:35 – 10:50 Graduate mathematics program admissions prediction. *Mary L. Yang**, *Daniel Biles*, and *Barbara Ward*, Belmont University, Nashville, Tennessee.

10:50 – 11:05 On The Gamma-Logistic Distribution. *Yuri Kim** and *Ayman Alzaatreh*; Austin Peay State University, Clarksville, Tennessee.

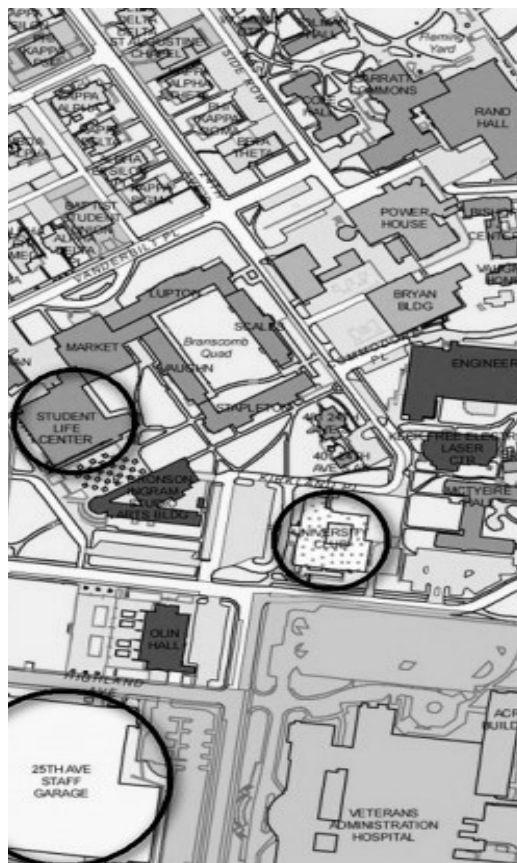
11:05 – 11:20 On the gamma-half normal distribution and its applications. *Knight Kristen** and *Alzaatreh Ayman*, Austin Peay State University, Clarksville, Tennessee.

Break

1:00 – 1:15 Students' mathematical beliefs – pictures tell the story better. *Stephanie Jessie*, Austin Peay State University, Tennessee.

* student author

presenting author, if not first author

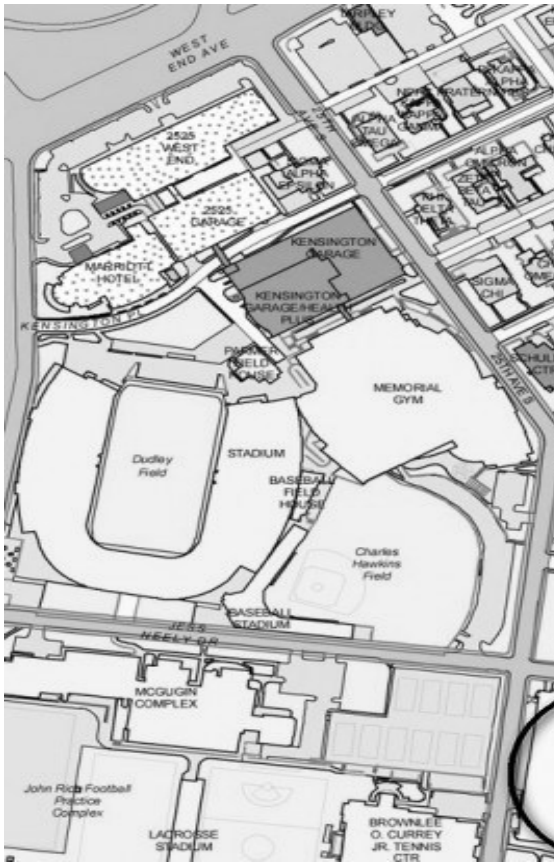


Look for I-40 east to exit 209B. Turn right onto Broadway, then left on 25th Avenue South. After passing the 25th Ave Staff Garage on your left after crossing Highway 70S.

A. Turn left on Broadway, which will turn into Highland Avenue. After passing Memorial Gym on the right park in the lot across from Highland Avenue.

B. Turn right on Broadway (US 70S). Broadway becomes 25th Avenue South. After passing Memorial Gym on the right, turn left on 25th Avenue South.

Maps are available along 25th Avenue.



From the north, take I-65 to I-40 west and then to Broadway, which will turn into West End Ave. Turn right on 25th Avenue South. Turn right on 25th Avenue Staff Garage on your left after crossing the road.

From the east or south, take I-40 west to exit 209 West End Ave. Turn left on 25th Avenue South. Turn right on 25th Avenue Staff Garage on your left after crossing the road.

From the west, take I-40 east to exit 209B. Turn right on West End Avenue. Turn left on 25th Avenue South. Turn right on 25th Avenue Staff Garage on your left after crossing the road.

N.B. Additional metered parking is available in the area.

1:15 – 1:30 The case of the smudged map. **Lucas Johnson, Justin Cook, Reed Curtis, Larry Nelson, Stephen Stone, Donny Peay, and Cory Medlin***, Austin Peay State University, Clarksville, Tennessee.

1:30 -1:45 Using twitter to forecast and track the perceived value in a company. **Andrew Trask*, Daniel Biles, and Barbara Ward**, Belmont University, Nashville, Tennessee.

1:45 – 2:00 The shortest crease. **Sean Cather*, Ashley Heinrich*, Preston Matthews*, Patrick Shelton*, Skylar Sullivan*, and Melissa Wickers***, Austin Peay State University, Clarksville, Tennessee.

2:00 – 2:15 Interplay of words with knots through Markov's chain. **Liliana M. Alvarez*, Anne M. French*, and Ramanjit K. Sahi**, Austin Peay State University, Clarksville, Tennessee.

2:15 – 2:30 A study of the gamma-pareto (IV) distribution and its applications. **Ayman Alzaatreh and Indranil Ghosh**, Austin Peay State University, Clarksville, Tennessee.

2:30 – 2:45 A new method for generating families of continuous distribution. **Ayman Alzaatreh, Felix Famoye, and Carl Lee**. Austin Peay State University, Clarksville, Tennessee.

2:45 – 3:00 Self-starting trigonometrically-fitted second derivative method for orbital problems. **Ramanjit K. Sahi**, Austin Peay State University, Clarksville, Tennessee.

3:00 – 3:15 Geometry of the finite element method for solving elliptic partial differential equations. **Ben Ntatin**, Austin Peay State University, Tennessee.

* student author

presenting author, if not first author

Microbiology

Chair: John M. Zamora, Ph.D.

No oral presentations. Check the list for poster presentations.

Physics and Astronomy

Chair: Eugene de Silva, Ph.D., FRSA
Student Life Center Meeting Room 3 –

Lower Level

1:00 p.m. – 1-35 p.m.

1:00 – 1:05 Business Meeting

1:05 – 1:20 Spin-spin dependence in large scale binary black hole simulations. **Scott H. Hawley**, *Belmont University, Nashville Tennessee.*

1:20 – 1:35 Fabrication and Characterization of Molybdenum Disulfide Monolayers. **Stephen J. Robinson**, *Belmont University, Nashville, Tennessee.*

* student author

presenting author, if not first author