

## STUDENT PRESENTATION AWARDS AT THE 119<sup>th</sup> MEETING OF THE TENNESSEE ACADEMY OF SCIENCE

### ORAL PRESENTATIONS

#### Botany

First Place—*Kim Norton*. A Preliminary Evaluation of the Flora and Vegetation of Seasonally Wet Limestone Cedar Glades of the Southeastern United States. *Austin Peay State University, Clarksville, Tennessee.*

Second Place—*Gerald Woodworth*. Establishment of Permanent Plots and Analysis of Woody Vegetation in the Tennessee River Gorge, Marion and Hamilton County, Tennessee. *The University of Tennessee at Chattanooga, Chattanooga, Tennessee.*

Third Place—*Ian Cohen*. Testing the Utility of Three Noncoding Chloroplast DNA Regions for DNA Barcoding Using *Prunus* (Rosaceae). *The University of Tennessee at Chattanooga, Chattanooga, Tennessee.*

#### Chemistry

First Place—*Amanda J. Crook*. Metal Extraction from Aqueous Solutions using Thiosemicarbazone and Semicarbazone Chelating Resins. *Tennessee Technological University, Cookeville, Tennessee.*

Second Place—*Brian M. Agee*. The Preparation and Mass Spectra Studies of a Series of Trimethylsilyl and Trimethylgermyl Oxy and Thio Chloroalkanes. *Tennessee Technological University, Cookeville, Tennessee.*

Third Place—*Kevin Lavender, Gabrielle Clayton, M. Todd Garrett, Roy F. Jang, Alex W. Renfro, and Margarita N. Weatherman*. Microwave Assisted Enzymatic Hydrolysis and Peptide Mapping in the Undergraduate Biochemistry Laboratory. *Lipscomb University, Nashville, Tennessee.*

#### Engineering and Engineering Technology

First Place—*Grant Brewer*. Build a Remote Control Security Robot as a Capstone Project. *Austin Peay State University, Clarksville, Tennessee.*

Second Place—*John Ralston*. Prototyping a Digital Ottoscope. *Austin Peay State University, Clarksville, Tennessee.*

#### Geology and Geography

First Place—*Martin Kimbrell*. Drug-Related Crime Analysis for Crossville, Tennessee. *Tennessee Technological University, Cookeville, Tennessee.*

#### Health and Medical Science

First Place—*Karen Beasley*. Testosterone Required for Right Ventricular Hypertrophy in Load Stress.

*Vanderbilt University Medical Center, Nashville, Tennessee.*

Second Place—*Christina Russell*. Evaluating the Antimicrobial Activity of Melittin on *Staphylococcus aureus*. *Austin Peay State University, Clarksville, Tennessee.*

#### Mathematics and Computer Science

First Place—*Casey McKnight*. Spectral Theory of Mélé Graphs. *Austin Peay State University, Clarksville, Tennessee.*

Second Place—*Caleb Wherry*. Four Dimensional Julia Sets. *Austin Peay State University, Clarksville, Tennessee.*

Third Place—*Robert D. French*. Evolving a Blackjack Strategy with Genetic Programming. *East Tennessee State University, Johnson City, Tennessee.*

#### Science and Math Teaching

First Place—*Eugenie de Silva*. Comsol as a Tool for Teaching and Research in Physics and Chemistry. *Missouri University, Columbia, Missouri.*

#### Zoology

First Place—*Nathan Haislip*. Variation in Susceptibility to Ranavirus among Tadpole Developmental Stages. *University of Tennessee at Knoxville, Knoxville, Tennessee.*

Second Place—*Lacy Danikas*. Temperature Effects on Locomotor Performance in a Latitudinally Widespread Species, *Nerodia sipedon*. *Middle Tennessee State University, Murfreesboro, Tennessee.*

Third Place—*Erich Eichler and James Brinson*. New Records of the Nine-Banded Armadillo, *Dasypus novemcinctus* (Mammalia, Xenarthra, Dasypodidae), in Southeast Tennessee. *The University of Tennessee at Chattanooga, Chattanooga, Tennessee.*

### POSTER PRESENTATIONS

#### Botany

First Place—*Emily R. Blyveis*. The Vascular Flora of the Tennessee River Gorge, Hamilton and Marion Counties, Tennessee. *The University of Tennessee at Chattanooga, Chattanooga, Tennessee.*

#### Cell and Molecular Biology

First Place—*Anwesa Chakrabarti*. The Effect of 6-OHDA on Locomotion and Egg Laying in *C. elegans* under the Stimulation of a Chemical Attractant. *Belmont University, Nashville, Tennessee.*

Second Place—*Andrew Hall*. Brain-Derived Neurotrophic Factor (BDNF) Expression in MD-MBA-231 Cancer Cells. *Lipscomb University, Nashville, Tennessee.*

#### Chemistry

First Place (Tie)—*Derek B. Allison and Jordan A. Gault*. A Computational Study of the Heterolytic Bond Dissociation Energy of Water in Metalloenzyme Active Center Mimics. *Lipscomb University, Nashville, Tennessee.*

First Place (Tie)—*Casey J. McCormick*. An Improved Method for Synthesizing 5-Alkylidenemalonate Derivatives of Medrum's Acid via Knoevenagel Condensation. *Tennessee Technological University, Cookeville, Tennessee.*

Second Place—*Jessika Pinto*. Pretreatment of Switchgrass for Glycosyl Bioconversion to Cellulosic Ethanol. *Tennessee Technological University, Cookeville, Tennessee.*

Third Place—*Molly E. Broderick and Kathleen M. Broderick*. Enzymatic and Mass Spectral Analysis of Mutant and Wild Type Selenomethionyl Dihydrofolate Reductase. *Tennessee Technological University, Cookeville, Tennessee.*

#### Geology and Geography

First Place—*Matt Jones, Miller Wyllie, Jennifer Pickering, and Caitlin Shannon*. Geochemical Investigation of Potential Toxic Metal Releases from TVA Coal Ash Surface Impoundments into Nearby River Waters and Sediments. *Middle Tennessee State University, Murfreesboro, Tennessee.*

Second Place—*Austin Rutledge*. Agglomeration Effects in the Automobile Industry: A Look at Supplier and Assembly Plant Locations in the South. *The University of Tennessee at Knoxville, Knoxville, Tennessee.*

Third Place—*Jennifer Pickering, Jessica Tonish, and James Cares*. Optimization of X-Ray Fluorescence Spectrometry for Environmental Analysis of Arsenic at Low Concentrations in Sediment and Soil Materials. *Middle Tennessee State University, Murfreesboro, Tennessee.*

#### Health and Medical Science

First Place—*Matt Anderson, Alex Baldrige, and Roy Jang*. Effects of ECE-1 Isoforms and Nephrylsin Expression on Breast Cancer Cell Invasion. *Lipscomb University, Nashville, Tennessee.*

Second Place—*Shannon Murphy*. A Label-Free Method for Detection and Differentiation of *Bacillus* spp.

Endospores. *Middle Tennessee State University, Murfreesboro, Tennessee.*

Third Place—*Robert Burress*. Small Collagen Peptides Increase Angiogenesis. *Lipscomb University, Nashville, Tennessee.*

#### Microbiology

First Place—*Jay Pannell*. The Effects of Bio-One on the Nitrogen Fixation Process. *Lipscomb University, Nashville, Tennessee.*

Second Place—*Amanda M. Castro*. Characterization of Methicillin-Resistant *Staphylococcus aureus* Isolates from Community Dormitory Showers at Belmont University. *Belmont University, Nashville, Tennessee.*

Third Place—*Robert S. Richardson*. Isolation and Identification of Cellulose-Degrading Microorganisms. *Middle Tennessee State University, Murfreesboro, Tennessee.*

#### Physics and Astronomy

First Place—*Beth Mattie*. Using a Laser to Measure the Speed of Light in Jello. *Lincoln Memorial University, Harrogate, Tennessee.*

Second Place—*Naquita Ahern*. Evaluating the Relationship Between Age/Gender and Lumbar Strength using Torque and Angle Analysis. *Lincoln Memorial University, Harrogate, Tennessee.*

Third Place—*Samantha Christian*. Application of Physics for a Homerun. *Lincoln Memorial University, Harrogate, Tennessee.*

#### Science and Math Teaching

First Place—*Jennifer Ilsley and Autumn Tanner*. A Quantitative Analysis of Pre- and Post-Survey Data from Middle School Girls Attending the MTSU EYH. *Middle Tennessee State University, Murfreesboro, Tennessee.*

#### Zoology

First Place—*Stephen Gragg*. Demographics of the Red-Eared Slider Population at Radnor Lake Natural Area, Nashville, Tennessee. *Lipscomb University, Nashville, Tennessee.*

Second Place—*Laura Farmer*. Community Diversity Study of Macroinvertebrates in a Pond Ecosystem Utilizing Two Sampling Techniques. *Austin Peay State University, Clarksville, Tennessee.*

Third Place—*Elizabeth Schriener*. The Effect of Predation on Intraspecific Competition in the Streamside Salamander, *Ambystoma barbouri*. *Belmont University, Nashville, Tennessee.*