

## Student Presentation Awards at the 127<sup>th</sup> Meeting of the Tennessee Academy of Science

### Oral Presentations

#### Agriculture

- First Place (tie)—*Margaret Nagai*. Effects of post-weaning mat-feeding frequency on piglet health and performance. *The University of Tennessee at Martin, Martin, Tennessee.*
- First Place (tie)—*William Singer*. Soybean plant development and soil conditions affected by planting date and maturity group. *The University of Tennessee at Martin, Martin, Tennessee.*
- Second Place—*Aron Felts*. Gossypol profile's based selection of cotton lines for transcriptional analyses. *Tennessee State University, Nashville, Tennessee.*
- Third Place—*Sarah Anderson*. Developing probabilities for enhanced student success on the national licensing exam for veterinary technologist. *The University of Tennessee at Martin, Martin, Tennessee.*

#### Botany

- First Place—*Elizabeth Jackson*. Assessing functional reproductive biology among floral morphs in *P. incarnata* in Putnam Co., Tennessee. *Middle Tennessee State University, Murfreesboro, Tennessee.*
- Second Place—*Caleb Powell*. A story map of the remaining collections of Augustin Gattinger. *University of Tennessee at Chattanooga, Chattanooga, Tennessee.*
- Third Place—*John Shelton*. A preliminary vascular plant flora of the bare zone of the Copper Hill Basin, Polk County, Tennessee. *University of Tennessee at Chattanooga, Chattanooga, Tennessee.*

#### Cell and Molecular Biology

- First Place—*Shohana Huq*. DNA-protein binding specificities of PRMT1 (histone methylase enzyme) to their potential target genes in the modal bioenergy crop species of *Panicum hallii*. *Tennessee State University, Nashville, Tennessee.*

#### Chemistry

- First Place—*Benjamin Ide*. Microwave-assisted acetylation of terminal alkynes. *The University of Tennessee at Martin, Martin, Tennessee.*
- Second Place—*Lahiru Gamage*. Direct estimation of methane emissions from beef cattle in a feedlot using continuous wave cavity ring-down spectroscopic technique. *Tennessee Technological University, Cookeville, Tennessee.*

Third Place (tie)—*Amber Ansari*. Lipid extraction of wet algal biomass via osmotic shock. *Belmont University, Nashville, Tennessee.*

Third Place (tie)—*William Qualls*. Infrared spectroscopic studies of propane and ethane as the main methane tracers in the atmosphere. *Tennessee Technological University, Cookeville, Tennessee.*

#### Ecology and Environmental Science

- First Place—*Nicole Witzel*. Detecting the presence and abundance of streamside salamanders (*Ambystoma barbouri*) in Middle Tennessee using environmental DNA. *Tennessee State University, Nashville, Tennessee.*
- Second Place—*Jeronimo Gomes Da Silva Neto*. The use of environmental DNA and occupancy modeling to evaluate the distribution of the Eastern Hellbender (*Cryptobranchus alleganiensis alleganiensis*) in Tennessee, U.S.A. *Tennessee State University, Nashville, Tennessee.*
- Third Place—*Shawn D. Snyder*. Distribution and status of the Western Pygmy Rattlesnake (*Sistrurus miliarius streckeri*) in Tennessee. *Tennessee State University, Nashville, Tennessee.*

#### Engineering & Engineering Technology

- First Place (tie)—*Samuel Cafferty*. Production of biodiesel using a solar powered thermally-efficient high-yield ultrasonic processor. *Tennessee Technological University, Cookeville, Tennessee.*
- First Place (tie)—*James Rust*. Production of biodiesel using a solar powered thermally-efficient high-yield ultrasonic processor. *Tennessee Technological University, Cookeville, Tennessee.*
- Second Place—*Omari Paul*. The coupling of light with piezoelectric properties in graphene oxide (GO) doped polyvinylidene fluoride (PVDF). *Tennessee State University, Nashville, Tennessee.*
- Third Place (tie)—*Michael Dill*. Enhancing the design of a solar powered mineral feeder, tracker and pesticide sprayer for livestock at Tennessee Tech farm. *Tennessee Technological University, Cookeville, Tennessee.*
- Third Place (tie)—*Adam Deatherage*. Enhancing the design of a solar powered mineral feeder, tracker and pesticide sprayer for livestock at Tennessee Tech farm. *Tennessee Technological University, Cookeville, Tennessee.*
- Third Place (tie)—*Jeremy Johnson*. Enhancing the design of a solar powered mineral feeder, tracker and pesticide sprayer for livestock at Tennessee Tech farm. *Tennessee Technological University, Cookeville, Tennessee.*
- Third Place (tie)—*Daniel McGee*. Enhancing the design of a solar powered mineral feeder, tracker and pesticide

sprayer for livestock at Tennessee Tech farm. *Tennessee Technological University, Cookeville, Tennessee.*

### Geology and Geography

First Place—*Ashley Parkans*. Unusual deposits of pyrite with glauconite in Waulsortian mudmound-like carbonates near Celina, TN. *Tennessee Technological University, Cookeville, Tennessee.*

Second Place—*Nathaniel Newlin*. Preliminary observations of organism-substrate relationships of *Astraeospongia*, *Astylospongia*, *Hindia*, and *Palaeomanon* from the Brownsport Formation (Middle Silurian), Western Tennessee. *The University of Tennessee at Martin, Martin, Tennessee.*

Third Place—*Jennifer Nailon*. Ozone and climate analysis of two same-latitude cities from June to October during 2005–2015: Hanford, California and Nashville, Tennessee. *The University of Tennessee at Martin, Martin, Tennessee.*

### Health and Medical Sciences

First Place—*Kayla Sampson*. Fate and biofilm formation of wild-type and rifampicin-resistant *Cronobacter sakazakii* in biotic and abiotic environments. *Tennessee State University, Nashville, Tennessee.*

### Mathematics & Computer Science

First Place—*Kindyl King*. Diagnosing cirrhosis: a fractional calculus perspective. *Austin Peay State University, Clarksville, Tennessee.*

Second Place—*Malori Cloys*. Neighborhood-prime labelings of tree graphs. *Austin Peay State University, Clarksville, Tennessee.*

Third Place—*Menique Brewer*. Population projections for Clarksville—Montgomery County Tennessee. *Austin Peay State University, Clarksville, Tennessee.*

### Microbiology

First Place—*Brock Arivett*. Heme-like gallium protoporphyrin IX inhibits catalase activity in *Acinetobacter baumannii*. *Tennessee State University, Nashville, Tennessee.*

Second Place—*Nerina Jusufovic*. 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. *Austin Peay State University, Clarksville, Tennessee.*

Third Place—*Abimbola Allison*. Decontamination of raw milk from *Listeria monocytogenes* using high pressure pasteurization. *Tennessee State University, Nashville, Tennessee.*

### Physics & Astronomy

First Place—*William Kuenzinger*. Development of an open source, LED based, tunable light source. *The University of Tennessee at Martin, Martin, Tennessee.*

Second Place—*Benton Fagan*. APSU's participation in the citizen CATE experiment. *Austin Peay State University, Clarksville, Tennessee.*

### Zoology

First Place—*Erik Velazquez*. Differences in habitat use among species of aquatic snakes in the Reelfoot Lake area of northwestern Tennessee. *The University of Tennessee at Martin, Martin, Tennessee.*

Second Place—*Sarah E. Swing*. An assessment of biodiversity of small mammals in anthropogenic edge habitat: is there an edge effect? *The University of Memphis, Memphis, Tennessee.*

Third Place—*Logan Campbell*. Comparisons of physiological limitations and genomic synteny in populations of *Mnemiopsis leidyi* (Ctenophora). *The University of Tennessee at Martin, Martin, Tennessee.*

### Poster Presentations

#### Agriculture

First Place—*Kyle McGeary*. Effects of nitrogen fertilizer rates and cultivar on yield and seed characteristics of winter canola in Nashville, Tennessee. *Tennessee State University, Nashville, Tennessee.*

Second Place—*Matthew Brown*. Fungicidal management of ambrosia beetles in ornamental nurseries. *Tennessee State University, Nashville, Tennessee.*

Third Place—*Jeremy Young*. Assessing the demand of locally grown hops in Tennessee. *Tennessee State University, Nashville, Tennessee.*

#### Botany

First Place—*Caroline Glover*. A quantitative analysis of a kale hybrid, *Tronchuda beira*, grown on a green roof, in a garden and in EarthBox® containers. *Belmont University, Nashville, Tennessee.*

Second Place—*Joshua Kraft*. The hidden language of plants: making sense of VOCs and plant defense. *Austin Peay State University, Clarksville, Tennessee.*

Third Place—*Darya Klyuyenko*. Growth of a common pioneer species (*Salix nigra*) in a hypereutrophic environment. *Bethel University, McKenzie, Tennessee.*

#### Cellular and Molecular Biology

First Place—*Brandi Duke*. Insight on aversive learning in *Caenorhabditis elegans* when introduced to *Bacillus thuringiensis* during reproduction and growth. *Belmont University, Nashville, Tennessee.*

Second Place—*A. C. Dowd*. Effect of inorganic vs. organic selenium compounds as a pretreatment to oxidative stress caused by 6-hydroxydopamine treatment in *C. elegans*. *Belmont University, Nashville, Tennessee.*

Third Place—*Priyanka Kumar*. Novel etoposide drugs inhibit the growth of cancer cells in culture. *Belmont University, Nashville, Tennessee.*

### Ecology and Environmental Science

- First Place—*Christien Jackson*. The effects of exotic plant species on insect biodiversity within an urban temperate deciduous forest. *Belmont University, Nashville, Tennessee*.
- Second Place—*Maria Gonzalez*. An analysis of the efficiency of a newly-designed grade-control structure in a first-order stream in northwest Tennessee. *The University of Tennessee at Martin, Martin, Tennessee*.
- Third Place—*Justine Jusack*. Bat guild composition and habitat fragmentation in Costa Rica. *Lincoln Memorial University, Harrogate, Tennessee*.

### Geology and Geography

- First Place—*Christopher Loyacano*. Layer-parallel-shortening strain: a key to the Sevier-Laramide deformational sequence in the Tendoy Range, southwestern Montana. *University of Memphis, Memphis, Tennessee*.
- Second Place—*April Jones*. Soil climate analysis network (SCAN) in Middle Tennessee. *University of Memphis, Memphis, Tennessee*.
- Third Place—*Renas Barzanji*. Groundwater flow in a karst aquifer at Tennessee State University. *Tennessee State University, Nashville, Tennessee*.

### Health and Medical Sciences

- First Place (tie)—*Bailey Bergmann*. Amodiaquine, an anti-malarial compound, inhibits the growth of epithelial cancer cells in culture. *Belmont University, Nashville, Tennessee*.
- First Place (tie)—*Sargoel Rezanejad*. The effects of an antidepressant, Bupropion, on the chemotaxis of nicotine-treated *Caenorhabditis elegans* towards an attractant. *Belmont University, Nashville, Tennessee*.
- Second Place—*McKenzie Roberts*. Lycorine hydrochlorine induces a proliferative arrest in colorectal cancer cells. *Belmont University, Nashville, Tennessee*.
- Third Place—*Emily Rice*. The role of DYRK1A inhibitor on tau phosphorylation. *The University of Tennessee at Martin, Martin, Tennessee*.

### History of Science

- First Place—*Hunter Hudson*. Role of Archibald Belcher in establishing the Tennessee Academy of Science. *Middle Tennessee State University, Murfreesboro, Tennessee*.

### Microbiology

- First Place—*Caroline Williams*. Cloning and sequencing of bacteriophage WL2 isolated from Reelfoot Lake. *The University of Tennessee at Martin, Martin, Tennessee*.
- Second Place—*Cody Rasner*. Abiotic factors affecting the migration rate of cyanobacterial cells through sediment columns. *Belmont University, Nashville, Tennessee*.
- Third Place—*Haley Hatfield*. Synchronization of the life cycle of *Caenorhabditis elegans* and the correlation of work age and worm death from the pathogen *Bacillus thuringiensis*. *Belmont University, Nashville, Tennessee*.

### Physics and Astronomy

- First Place—*Jamin Welch*. Searching for variable stars in the field of Dolidze 35. *Austen Peay State University, Clarksville, Tennessee*.
- Second Place—*Jesse McGaha*. Further investigation on white dwarf BD+17°4708 variability. *Austen Peay State University, Clarksville, Tennessee*.
- Third Place—*Deborah Gullede*. Modeling and analysis of CTIO 1.5 m white dwarf spectra. *Austen Peay State University, Clarksville, Tennessee*.

### Science and Math Teaching

- First Place—*Morgan Robertson*. The effects of self-regulated learning on the exam grades of college science classes. *The University of Tennessee at Martin, Martin, Tennessee*.

### Zoology

- First Place—*Amanda Mayo*. Mechanosensory sensitivity in *Manduca sexta*. *The University of Tennessee at Martin, Martin, Tennessee*.
- Second Place (tie)—*Bailey Kelso*. Is the winter abundance of Red-headed Woodpeckers related to acorn production in a bottomland hardwood forest in northwest Tennessee? *The University of Tennessee at Martin, Martin, Tennessee*.
- Second Place (tie)—*Arianna Howell*. An analysis of the efficiency of a newly-designed grade-control structure in a first-order stream in northwest Tennessee. *The University of Tennessee at Martin, Martin, Tennessee*.
- Third Place—*Brent Newman*. A survey of ticks (Acari: Ixodida) parasitizing reptiles from managed pine-hardwood forests of northwestern Alabama, USA. *Tennessee State University, Nashville, Tennessee*.