

Student Presentation Awards at the 126th Meeting of the Tennessee Academy of Science

Oral Presentations

Agriculture

- First Place—*Ravneet Kaur*. Detection of pharmaceuticals in East Fork Stones River in Rutherford County, Tennessee. *Tennessee State University, Nashville, Tennessee.*
- Second Place—*C. Cain*. Raccoons (*Procyon lotor*) as potential vectors for zoonotic disease in Martin, Tennessee. *University of Tennessee at Martin, Martin, Tennessee.*
- Third Place—*Md Niamul Kabir*. Controlling powdery mildew on flowering dogwood with different fungicides and biorational products. *Tennessee State University, Nashville, Tennessee.*

Cellular and Molecular Biology

- First Place—*Collins Khwatenge*. Growth and metabolic indices of furazolidone-induced cardiomyopathy in the pearl grey Guinea fowl. *Tennessee State University, Nashville, Tennessee.*
- Second Place—*Gabriel Akerele*. Expression and characterization of immune function genes and toll-like receptors (TLR) in the adult Guinea fowl using transcriptome analysis. *Tennessee State University, Nashville, Tennessee.*

Chemistry

- First Place—*Veronica C. Sublett*. Green synthesis of Dilantin. *Tennessee Technological University, Cookeville, Tennessee.*
- Second Place—*Krista Gardner*. The quantification of formaldehyde produced from E-cigarettes by different E-juices. *Cumberland University, Lebanon, Tennessee.*
- Third Place—*Samuel Hines*. Atmospheric spectroscopy: comparison of FTIR and Cavity-Ring Down Spectroscopic techniques in trace-greenhouse gas monitoring. *Tennessee Technological University, Cookeville, Tennessee.*

Computer Science

- First Place—*Oluwatito P. Ebivonjumi*. Mapping the unmapped of Nigeria. *Belmont University, Nashville, Tennessee.*

Ecology and Environmental Science

- First Place—*Brandy N. Schnettler*. Depressed, wet, and in the woods: macroinvertebrate community variation in

temporary woodland pools. *Austin Peay State University, Clarksville, Tennessee.*

- Second Place—*Lauren K. Schnorr*. Monitoring agriculturally impacted ponds using aquatic macroinvertebrates in West Tennessee: a ten-year study. *Austin Peay State University, Clarksville, Tennessee.*
- Third Place—*Man K. Giri*. Use of remote sensing data to model aboveground woody biomass in Tennessee. *Tennessee State University, Nashville, Tennessee.*
- Honorable Mention—*Jeronimo Gomes Da Silva Neto*. Microhabitat selection by the Eastern Hellbender salamander (*Cryptobranchus alleganiensis alleganiensis*) in Tennessee. *Tennessee State University, Nashville, Tennessee.*

Geology and Geography

- First Place—*Renas Barzanji*. Groundwater hydrology in a karst aquifer at Tennessee State University. *Tennessee State University, Nashville, Tennessee.*

Mathematics

- First Place—*Kindyl L. King*. Fractional calculus and its applications. *Austin Peay State University, Clarksville, Tennessee.*
- Second Place (tie)—*Brandon Stephens and Peter Eigel*. Vector representations of musical harmonic structures. *Belmont University, Nashville, Tennessee.*
- Second Place (tie)—*Kaitlyn J. McCollum*. Developing a new block method to solve Schrödinger's equation using mixed basis functions. *Austin Peay State University, Clarksville, Tennessee.*
- Third Place—*Allison B. Hardee*. Linearization and solution approximations for nonlinear differential equations. *Belmont University, Nashville, Tennessee.*

Microbiology

- First Place—*Anika Ahmed*. Impact of coaggregation in biofilm formation of early dental plaque streptococci. *Lincoln Memorial University, Harrogate, Tennessee.*

Physics and Astronomy

- First Place—*Jessie McGaha*. Examination of variability in BD+17°4708. *Austin Peay State University, Clarksville, Tennessee.*
- Second Place—*Jamin E. Welch*. A new cataclysmic variable: WDC_0234-455. *Austin Peay State University, Clarksville, Tennessee.*

Science and Mathematics Teaching

First Place—*Patrick Phoebus*. Exploring the impact of an arboretum curriculum designed for undergraduate biology students. *Middle Tennessee State University, Murfreesboro, Tennessee*.

Zoology

First Place—*Sarah E. Swing*. A comparison of biodiversity measures of small mammals at arboreal and ground levels in edge habitat of eastern deciduous forest. *The University of Memphis, Memphis, Tennessee*.

Second Place—*Kelsi Palmer*. Differential utilization of arboreal and ground level habitat by the North American deer mouse (*Peromyscus maniculatus*). *The University of Memphis, Memphis, Tennessee*.

Third Place—*William Kuenzinger*. Color preferences in foraging *Manduca sexta*: background color, illumination, and the use of achromatic and chromatic signals. *University of Tennessee at Martin, Martin, Tennessee*.

Poster Presentations

Agriculture

First Place—*Stephen Smith*. Day-length beans and corn in Tennessee. *Austin Peay State University, Clarksville, Tennessee*.

Second Place—*Danielle M. Gunter-Ward*. Inactivation of food-borne pathogens in milk using UV-C irradiation. *Tennessee State University, Nashville, Tennessee*.

Third Place—*Kumuditha D He Liyanage*. Why do Tennessee fruit and vegetable farmers hesitate for organic farming? *Tennessee State University, Nashville, Tennessee*.

Cellular and Molecular Biology

First Place—*Haley St. John*. Effects of neprilysin expression on stromal and breast cancer cell invasion. *Lipscomb University, Nashville, Tennessee*.

Second Place (tie)—*Stacey Crockett*. Insight into the chemotaxis of *Caenorhabditis elegans* toward pathogenic *Bacillus thuringiensis* Strain 4A4 using chemosensory deficient nematodes. *Belmont University, Nashville, Tennessee*.

Second Place (tie)—*Hailey Ung*. Intrinsic characteristics of polyglutamine-containing htt protein determines proteotoxicity in *C. elegans*. *The University of the South, Sewanee, Tennessee*.

Third Place—*Sarayu Bhogaju*. A comparative analysis of microbial profile of chicken and Guinea fowl using metagenomic approach. *Tennessee State University, Nashville, Tennessee*.

Chemistry

First Place—*Kiran K. Donthula*. Machine learning predictions of carbonyl reactivity and spectroscopic properties

from a database of charge density descriptors. *Middle Tennessee State University, Murfreesboro, Tennessee*.

Second Place—*Lahiru Gamage*. Measurement of methane and carbon dioxide concentration levels in ambient air in Cookeville region using Cavity-Ring-Down Spectrometric Technique. *Tennessee Technological University, Cookeville, Tennessee*.

Third Place—*Dillon Burrow*. Fluorescence assay analyzing the oxidative properties of nicotine. *Austin Peay State University, Clarksville, Tennessee*.

Honorable Mention—*Allison N. Schmittou*. A simple assay for nicotine: electrochemical characterization of electronic cigarettes. *Austin Peay State University, Clarksville, Tennessee*.

Ecology and Environmental Science

First Place—*Gary W. Noel*. The effects of fertilizer on decomposition of native and invasive exotic plant species. *Belmont University, Nashville, Tennessee*.

Second Place—*Nicole Witzel*. Development of an eDNA sampling protocol to identify streamside salamander (*Ambystoma barbouri*) populations in Middle Tennessee. *Tennessee State University, Nashville, Tennessee*.

Third Place—*Alexis Harman and Natalie Ellis*. Conservation genetics of the endangered barrens topminnow. *Tennessee Technological University, Cookeville, Tennessee*.

Geology and Geography

First Place—*JeTara Brown*. Hydrology of an urban wetland at Tennessee State University. *Tennessee State University, Nashville, Tennessee*.

Second Place—*Taylor Binkley*. In the face of danger: applying fundamental meteorological concepts to an emergency management simulation. *The University of Tennessee at Martin, Martin, Tennessee*.

Third Place—*Alexander D. Nicely*. Radon gas present in karst areas. *Tennessee Technological University, Cookeville, Tennessee*.

Health and Medical Sciences

First Place—*Anna Margaret McDonnell*. Effects of epigallocatechin-gallate and enoxacin on HeLa cells. *Belmont University, Nashville, Tennessee*.

Second Place—*Zuri Hudson*. Nicotine in electronic cigarette refill solutions (E-liquids): a comparison of five brands of refill solutions purchased locally. *Lincoln Memorial University-DeBusk College of Osteopathic Medicine, Harrogate, Tennessee*.

Third Place—*Sarah Anderson*. Convallatoxin induces apoptosis in HCT116 colorectal cancer cells. *Belmont University, Nashville, Tennessee*.

Microbiology

First Place—*Hui Li*. Characterization of poly-3-hydroxybutyrate (PHB) produced by *Bacillus cereus* tsu1 using

rapeseed cake substrate. *Tennessee State University, Nashville, Tennessee.*

Second Place—*Santosh Thapa*. Cloning and characterization of multifunctional cellulolytic enzymes screened from metagenomics resources representing ruminal bacteria in the goat. *Tennessee State University, Nashville, Tennessee.*

Third Place—*Sarah Filfilan*. Identification of amidase negative strains of *Bacillus thuringiensis*, *Tennessee State University, Nashville, Tennessee.*

Physics and Astronomy

First Place—*Josh Allen*. Comparison of photo-response of thermally deposited and spin-coated arsenic sulphide thin films. *Austin Peay State University, Clarksville, Tennessee.*

Second Place—*Maria V. White*. Preparation and characterization of spin coated arsenic selenide thin films. *Austin Peay State University, Clarksville, Tennessee.*

Third Place—*Jonathan Bunton*. Fluorescence of Er-doped CsCl-Ga-Ge-S glasses for IR applications. *Austin Peay State University, Clarksville, Tennessee.*

Honorable Mention—*Richard Borges*. Developing a flat field system for Austin Peay State University's 20-inch telescope. *Austin Peay State University, Clarksville, Tennessee.*

Zoology

First Place—*Jonathan Travis*. Do flower naïve *Manduca sexta* sphinx moths forage using chromatic or achromatic vision to select a potential feeding source? *University of Tennessee at Martin, Martin, Tennessee.*

Second Place—*J. Rowdy Englert*. The correlation of bat activity and bat species richness with insect abundance and insect diversity at an urban pond vs. at a rural pond in Weakley County, Tennessee. *University of Tennessee at Martin, Martin, Tennessee.*

Third Place—*Russell Milam*. Wildlife use of livestock water troughs. *University of Tennessee at Martin, Martin, Tennessee.*