Sigma Xi 2017 Presentation Winners

# **Oral Presentations**

# Biology I

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Constructing Variants of Human Serum Albumin Reconstituted with Heme and Testing For Nitrite Reductase Activity** Alexandra Alfonso Castro (Dr. Mary Grace Galinato), Penn State Behrend |
| Runner Up | **Effects of inhaled CO2 on seizures in the febrile seizure mouse model *Mus musculus***  Daniel Daugherty (Lee Coates), Allegheny College |

# Biology II

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Green Frog (*Lithobates clamitans*) Tadpole: Ontogenetic Shifts of Food Preference, Foraging Behavior, and their Effect on Detritus Breakdown** Rachael Finigan (Scott Wissinger), Allegheny College |
| Runner Up | **Analysis of Genetic Diversity in the Pennsylvania State Population of white-tailed deer (*Odocoileus virginianus*) 110 years after Bottleneck and Translocation** Michael Arcieri (Dr. Kristen Webb), Allegheny College |

# Biology III

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Genetic Analysis of Cytochrome *b* and Cytochrome *c* Oxidase Subunit III Genes of *Cytauxzoon felis* in Domestic Cats (*Felis catus*) from Georgia** Megan Rodrigues (Kristen Webb), Allegheny College |
| Runner Up | **Targocil, a Wall Teichoic Acid Synthesis Inhibitor, Activates the DesK-DesR Two-Component System of *Bacillus anthracis*** Alex Metzger (Devin Stauff), Grove City College |

# Chemistry

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Electrochemical Investigation of Human Serum Albumin-Heme Enzyme with Proximal Tyrosine to Evaluate its Conversion of Nitrite to Nitric Oxide** Gary Fye (Jason Bennett, Mary Grace Galinato) Penn State Behrend |
| Runner Up | **Thermodynamic and Structural Impact of α,α-Dialkylated Residue Incorporation in a β-Hairpin Peptide** Shelby Schettler, Gabrielle Gette (George Lengyel), Slippery Rock University |

# Computer Science

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Monte Carlo Price Forecasting and Portfolio Optimization** Garrett Ashbaugh (David Shaffer), Westminster College |
| Runner Up | **A Comprehensive Security Assessment of the Westminster College Unix Lab** Jacob Shodd (David Shaffer), Westminster College |

# Computer Science, Economics, and Engineering

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Crime Rates and Income in Erie, PA** Natalie Szalajko (Ken Louie), Penn State Behrend |
| Runner Up | **Data Mining for Chronic Kidney Disease Prediction** Ryan Markle (Faisal Aqlan), Penn State Behrend |

# Engineering I

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Design and Development of a Battery Internal Short Circuit Test Machine** Mary Burbules and Scott DeLaney (Adam Hollinger), Penn State Behrend |
| Runner Up | **Effects of Polarity and Current Path in Electrically Assisted Single Point Incremental Forming of 2024-T3 Aluminum** Tyler Grimm (John Roth and Ihab Ragai), Penn State Behrend |

# Engineering II

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Experimental Investigation of Bend-Unbend Mechanics in the Tube Flaring Process** Bradley Pier (Chetan Nikhare), Penn State Behrend |
| Runner Up | **SEM Characterization of Carbides in Low Temperature Tempered (LTT) Advanced High-Strength Low- Alloy (HSLA) Steels** Tyler Rigby (Paul Lynch), Penn State Behrend |

# Environmental Science

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Presence of Agricultural Herbicide Atrazine in Water, Foods, and Human Urine Samples** Anthony Concilla (He Liu), Gannon University |
| Runner Up | **Varying Reflective Materials for Low Cost, Organic Light Concentrating in Flexible, Photovoltaic Devices** Melissa McCann (Ian Carbone), Allegheny College |

# Mathematics

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Improved Bounds on a Variation on the Classical Waring's Problem** Paul LeVan (David Prier), Gannon University |
| Runner Up | **Heroin Epidemic Modeling with PDE's** James Richardson and Allison Torsey (Saziye Bayram), Buffalo State College |

# Psychology

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Examining the Effectiveness of the Captain McFinn Anti-Bullying Program among Erie Elementary Schools** Taylor Morris, Chelsea Ptak, Christina Murzynski, and Rebecca Dinsmore (Charisse Nixon and James Hodge), Penn State Behrend |
| Runner Up | **Vicarious Embarrassment and Reluctant Student Participation in Classrooms** Emily Galeza (Carol Wilson, Victoria Kazmerski), Penn State Behrend |

# **Poster Presentations**

# Biology I

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Effects of prenatal nicotine and caffeine exposure on the respiratory response to hypercapnia in neonatal mice: a possible link to SIDS** Jasmine Nguyen (Lee Coates), Allegheny College |
| Runner Up | **Determining the Prevalence of *Borellia burgdorferi* in *Ixodes scapularis* in Presque Isle State Park** Robert Wood (Sara Turner), Mercyhurst University |

# Biology II

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Early Campanian Elasmobranch Assemblage from North Carolina with Paleoecological and Paleobiogeographical Implications**  Taylor Kightlinger and Gerard R. Case (Todd Cook), Penn State Behrend |
| Runner Up | **TempPoster Variation of the Amphibian Fungal Pathogen *Batrachochytrium dendrobatidis* in Northwest Pennsylvania** Logan Billet, Carissa Lange, and Bryce Olson (Matthew Venesky), Allegheny College |

# Biology III and IV

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Complementary Genetic Screens Reveal Inactivating and Constitutively Activating Mutations in Two-Component Systems of *Bacillus anthracis*** Michelle Chu, and Ellen Upton (Devin Stauff), Grove City College |
| Runner Up | **Population Frequency of Group 1 Pilin Producing *Pseudomonas aeruginosa* in Environmental Isolates** Samantha Runser (Tara Allison), Gannon University |

# Biology V

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **17-B Estradiol Attenuates Inflammatory Mediators in Rats after Traumatic Brain Injury** Olivia Dack (Jeffrey Cross), Allegheny College |
| Runner Up | **Effects of Glial and Apoptosis Inhibitors in a Modified Controlled Cortical Impact (CCI) Model in Juvenile Male Rats** Colleen Bodnar (Jeff Cross and Jeff Hollerman), Allegheny College |

# Chemistry, Mathematics, and Physics

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Increasing the Area of a White Diffusive Background can Increase the Power Output of a Luminescent Solar Concentrator** Jonathon Schrecengost (Bruce Wittmershaus), Penn State Behrend |
| Runner Up | **Investigating a Conjecture about Integrals from Probability Theory** Bridget Torsey (Peter Mercer), SUNY Buffalo State |

# Computer Science & Engineering I

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Solar Eclipse High Altitude Balloon System** Kaitlyn Babiarz, Maia MacKellar, Donovan Starks, Stephen Karpinsky, Alejandro Ferrero, Tenger Batjargal, Lauren Reilly, Carter Miller, Jessica Moukoro, and Kangxu Wang (Wookwon Lee, Nicholas Conklin), Gannon University |
| Runner Up | **Acoustic Noise Emission Data Collection for quenching process** Samantha Muhhuku (Chetan Nikhare, David Loker, and Ihab Ragai), Penn State Behrend |

# Engineering II

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Characterization of Advanced High Strength, Cost Effective Steels** Tyler Rigby, Dan Smith, and Joseph Helbling (Paul Lynch), Penn State Behrend |
| Runner Up | **Determining Material Properties of Nanotube Filament** Noah Shinn, Adam Giovanelli, and Patrick Campoli (Krishna Mukherjee), Slippery Rock University |

# Environmental Science

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Assessing Monthly Changes to the Degradation of Terrestrially Derived Dissolved Organic Carbon in a Temperate Lake** Sarah Magyan ( ), |
| Runner Up | **Assessing Penn State Behrend stream health through analysis of leaf decomposition** Emily M Brown, and Megan M Palko ( ), |

# Psychology I

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Visual and Auditory Neural Activation for the Multimodal Integration in Visual Word Processing** Rebecca Sheley and James Dickinson ( ), |
| Runner Up | **Comparison of Breathing Techniques and Art Therapy on Stress Reduction** Alyssa Tobin, Shelby Seidler, and Katerina Simon ( ), |

# Psychology II

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Money Conflicts Between Romantic Partners** Emma Walton, Leanne Confer, Leslie Hasty, and Skyler Ferringer ( ), |
| Runner Up | **Gender Stereotypes in Video Game Characters** Austin Kobylinski, Kayla Redd, and Brock McCullough ( ), |

# Psychology III

| Placement | Title and Student Presenters |
| --- | --- |
| First Place | **Playing Your Way to Success: Mental Mapping Using Pokémon Go** Jacob Benedict, Grace Waldfogle, Kameron Landers, Mason McGuire, and Tiffany Eichler ( and ), |
| Runner Up | **Inhibition of Automatic Spatial Attention Causing Depletion** Hannah Smith and Alexandera Zielinski (Allison Connell Pensky), Allegheny College |