



PennState
Behrend

Penn State Behrend - Sigma Xi

Twenty-Fifth Annual Undergraduate Student Research and Creative Accomplishment Conference

Oral Presentations

Session I	<u>Biology I - Microbiology</u>
Session II	<u>Biology II - Cell and Molecular Biology: Genetics</u>
Session III	<u>Biology III - Organismal Biology and Behavior</u>
Session IV	<u>Chemistry and Mathematics</u>
Session V	<u>Computer Science and Engineering</u>
Session VI	<u>Economics I</u>
Session VII	<u>Economics II - Sport Economics</u>
Session VIII	<u>Engineering</u>
Session IX	<u>Psychology and History/Political Science</u>

ORAL PRESENTATIONS

SESSION I BIOLOGY I - Microbiology 169 Nick

- 8:55 a.m. **Welcome**
- 9:00 a.m. **A Second Heme Detoxification System in the Insect Pathogen *Bacillus thuringiensis***
Casey Latario and Rachel Schmidt (Devin Stauff), Grove City College
- 9:15 a.m. **The Effects of Nano Zinc and Nano Silver as Antiseptics and Safety for Human Skin**
Jui-En Hung (Kelly Miller), Penn State Behrend
- 9:30 a.m. **Antimicrobial Activity of Essential Oils from Spices on Foodborne Pathogens**
Usman Ahmad (Om Singh), University of Pittsburgh-Bradford
- 9:45 a.m. **Break**
- 10:30 a.m. ***Musca domestica* Transmission of Chronic Limb Ulcer *Haemophilus ducreyi***
Jordan Gaston (Tricia Humphreys and Bradley Hersh), Allegheny College
- 10:45 a.m. **Use of the Software Program Mothur to Analyze Bacterial and Fungal Diversity on Potato Tubers Treated with 1,4-dimethylnaphthalene (DMN)**
René Díaz and Ravi Patel (Michael Campbell), Penn State Behrend
- 11:00 a.m. **A Long-Term Study Examining the Antibacterial Effectiveness of Agion Silver Zeolite Technology on Door Handles within a College Campus**
Colleen Miller and Melissa Tarquinio (Beth Potter), Penn State Behrend
- 11:15 a.m. **End of Presentations**
- Noon **Awards Luncheon in Erie Hall**

ORAL PRESENTATIONS

SESSION II

BIOLOGY II – Cell & Molecular Biology/Genetics

167 Nick

- 8:40 a.m. **Welcome**
- 8:45 a.m. **Constructing Genetically Modified Human Serum Albumin Reconstituted With Heme as a Potential Nitrite Reductase**
Mohammed Al Shibar (Mary Grace Galinato and Michael Campbell), Penn State Behrend
- 9:00 a.m. **A Genomic Survey for *innexin 5* and *6* in Basal Dipteran Species**
David Klodowski (Bradley Hersh), Allegheny College
- 9:15 a.m. **Using Brainbow Imaging to Trace Individual Cells throughout Zebrafish Development**
Emily Mitchell and Drew Cobert (James Warren), Penn State Behrend
- 9:30 a.m. **Treatment of Potatoes with 1,4-dimethylnaphthalene Results in Transcriptional Changes**
Olivia D'Annibale (Michael Campbell), Penn State Behrend
- 9:45 a.m. **Break**
- 10:30 a.m. **Patterns of *AN11* Expression and thoughts on its Regulation in Gametophytes of the Fern *Ceratopteris richardii***
Randy Toth, Julia Girouard, Kara Norman, and Shivali Singh (Mike Ganger and Sarah Ewing), Gannon University
- 10:45 a.m. **Who's Eating Who?**
Jared Wilczynski and Brian Fuller (Greg Andraso and Kelly Grant), Gannon University
- 11:00 a.m. **Relative Gene Expression in Postnatal Day 25 IRBP-deficient Mice**
Ananya Yerramreddy and Matthew Tilley (Christy Donmoyer), Allegheny College
- 11:15 a.m. **Gene Expression of Structural and Functional Proteins in the LRAT^{-/-} Mouse Model, a Model of Vitamin A Deficiency**
Karishma Reddy (Christy Donmoyer), Allegheny College
- 11:30 a.m. **End of Presentations**
- Noon **Awards Luncheon in Erie Hall**

ORAL PRESENTATIONS

SESSION III

BIOLOGY III – Organismal Biology and Behavior

170 Nick

- 8:55 a.m. **Welcome**
- 9:00 a.m. **Tick Talk: Prevalence of Zoonotic Pathogens in Pennsylvania**
Ryan Braumann, Colin Fort, Amanda Hutzemann, and Amy Lind (Tracy Farone),
Grove City College
- 9:15 a.m. **A Census of the Bat Population on Gannon University's Campus**
Nick Bengel and Erin Debelak (Steve Ropski), Gannon University
- 9:30 a.m. **The Relationship between Blood Lead Concentration and Raptors Involved in Vehicular Collisions**
Abby Hileman (Anne Jacobs), Allegheny College
- 9:45 a.m. **Break**
- 10:30 a.m. **Heat-Shock Response in *Strongyloides Stercoralis* Infective Larvae**
Laura Johnston (Wayne Forbes), Slippery Rock University
- 10:45 a.m. **Pharyngeal Morphology of Field-Caught and Lab-Reared Bluegills (*Lepomis Macrochirus*), Pumpkinseeds (*Lepomis Gibbosus*), and their Hybrids**
Andrea Landgraf (Greg Andraso and Kelly Grant), Gannon University
- 11:00 a.m. **Indirect Community Repercussions of Gun Violence: A Case-Control Study to Determine the Effect of Mass Shootings in The United States on the Birth Weight of Newborns**
Garrett Devenney (Becky Smullin Dawson), Allegheny College
- 11:15 a.m. **End of Presentations**
- Noon **Awards Luncheon in Erie Hall**

ORAL PRESENTATIONS

SESSION IV CHEMISTRY AND MATHEMATICS 168 Nick

- 8:55 a.m. **Welcome**
- 9:00 a.m. **Developing the Discrete Schrödinger Form via Discrete Orthogonal Polynomial Sequences**
Derek Shaffer and Lauren Minner (Daniel Galiffa and Jennifer Ulrich), Penn State Behrend
- 9:15 a.m. **Ideals and Extensions in Non-Commutative Rings**
Marco Nunez (Papiya Bhattacharjee), Penn State Behrend
- 9:30 a.m. **Elucidating the Nitrite Reductase Activity of Myoglobin by Altering its Hydrogen-Bonding Network: Method Optimization, Kinetics, and Spectroscopic Characterization**
Jaclyn Gowen and Anthony Rodland (Mary Grace Galinato), Penn State Behrend
- 9:45 a.m. **Break**
- 10:30 a.m. **The Discrete Sheffer Sequences as Solutions to the Discrete Schrödinger**
Lauren Minner and Derek Shaffer (Daniel Galiffa and Jennifer Ulrich), Penn State Behrend
- 10:45 a.m. **Assessing Electrochemically Reduced Graphene Oxide as a Support for Cyanide-Coordinated Ferriprotoporphyrin to Selectively Detect H₂S**
Susanne Simkovitch (Jason Bennett), Penn State Behrend
- 11:00 a.m. **Do Vertex Replacement Rules Generate Post Critically Finite Self-Similar Sets?**
Thomas Tuberson (Michelle Previte), Penn State Behrend
- 11:15 a.m. **End of Presentations**
- Noon **Awards Luncheon in Erie Hall**

ORAL PRESENTATIONS

SESSION V COMPUTER SCIENCE AND ENGINEERING 155 Nick

- 8:25 a.m. **Welcome**
- 8:30 a.m. **An Intelligent Analysis Application that Helps Telling Student's Academic Preference to Others**
Xiaoyu Zhou (Meng Su), Penn State Behrend
- 8:45 a.m. **Implementation of a NAS System**
Blake Dulick (Terri Lenox), Westminster College
- 9:00 a.m. **Leveraging Web Technologies for PLC Interfacing**
Ryan Kelley (E. George Walters), Penn State Behrend
- 9:15 a.m. **Analyzing Various Intelligent Agent Designs in a New Game Environment**
Mark Patton (John Bonomo), Westminster College
- 9:30 a.m. **Using Aquatic Adventure to Enhance the Learning of Mathematics in Preschool Children**
Aaron Shifflett (Terri Lenox), Westminster College
- 9:45 a.m. **Break**
- 10:30 a.m. **Developing a Tersoff Potential Molecular Dynamics Framework to Simulate Amorphous Materials**
Yehya Awad (Blair Tuttle), Penn State Behrend
- 10:45 a.m. **Learning to Learn: Using Artificial Neural Networks to Assist in the Short-Term Learning of Brain-Computer Interfaces**
Zachary Derner (C. David Shaffer), Westminster College
- 11:00 a.m. **Application of the Internet of Things in Education**
Yehya Awad (Naseem Ibrahim), Penn State Behrend
- 11:15 a.m. **Library Call Number Sorting Application**
Christopher Andrejewski (David Loker), Penn State Behrend
- 11:30 a.m. **End of Presentations**
- Noon **Awards Luncheon in Erie Hall**

ORAL PRESENTATIONS

SESSION VI ECONOMICS I 171 Nick

- 8:40 a.m. **Welcome**
- 8:45 a.m. **Does a College's Admission Selectivity Affect its Student Loan Default Rate?**
Annie McGowan (Stephanie Martin), Allegheny College
- 9:00 a.m. **The Effects of the Samaritans Dilemma on the Outcome in Natural Disasters**
Taylor Samuel (Stephanie Martin), Allegheny College
- 9:15 a.m. **The Determinants of Renting versus Owning a Home**
Edward Tiemann (Stephanie Martin), Allegheny College
- 9:30 a.m. **The Essential Correctional College Education**
Mark Egan (Stephanie Martin), Allegheny College
- 9:45 a.m. **Break**
- 10:30 a.m. **Case Study on the Determinants of the Euro versus the United States Dollar Since 1999**
Emily Neuherz (Stephanie Martin), Allegheny College
- 10:45 a.m. **Gas Prices in Erie, Pennsylvania**
Natalie Szalajko (Kenneth Louie), Penn State Behrend
- 11:00 a.m. **Examining Minority Business Ownership**
Marissa Baker (Kenneth Louie), Penn State Behrend
- 11:15 a.m. **End of Presentations**
- Noon **Awards Luncheon in Erie Hall**

ORAL PRESENTATIONS

SESSION VII ECONOMICS II – Sports Economics 156 Nick

- 8:55 a.m. **Welcome**
- 9:00 a.m. **Performance, Wage and Nationality Discrimination in the Competitive Labor Market of Major League Soccer**
Steven Ramsdell (Stephanie Martin), Allegheny College
- 9:15 a.m. **Does Age in the NFL Matter in Order to Succeed Relative to the Salaries of the Highest Paid Players per Team?**
Zach Harvey (Stephanie Martin), Allegheny College
- 9:30 a.m. **NFL Player Trade and Acquisition Effects on Jersey Sales**
Cody Stolar (Stephanie Martin), Allegheny College
- 9:45 a.m. **Break**
- 10:30 a.m. **Economic Impact of Professional Sports Teams on their Cities**
Nick Deichler (Stephanie Martin), Allegheny College
- 10:45 a.m. **Does the Presence of Sports Affect Alcohol Sales and Crime Rates?**
Zachary Hudac (Stephanie Martin), Allegheny College
- 11:00 a.m. **Do Sports Venues Act as a Catalyst for Gentrification in Low Income Areas?**
Ian Richards (Kenneth Louie), Penn State Behrend
- 11:15 a.m. **End of Presentations**
- Noon **Awards Luncheon in Erie Hall**

ORAL PRESENTATIONS

SESSION VIII ENGINEERING 165 Nick

- 8:10 a.m. **Welcome**
- 8:15 a.m. **Experimental Investigation of Bend-Unbend Mechanics in the Tube-Flaring Process**
Bradley Pier (Chetan Nikhare), Penn State Behrend
- 8:30 a.m. **Acoustic Noise Emission Analysis for Manufacturing Processes**
Travis Roney (David Loker, Cheatan Nikhare, and Ihab Ragai), Penn State Behrend
- 8:45 a.m. **Hole Expansion and Strain Evolution during Biaxial Tension**
John Nolan (Chetan Nikhare), Penn State Behrend
- 9:00 a.m. **Assessment of Ergonomic Risks in Engineering Research Labs at Penn State Behrend**
Anton Benedikt and Kyle Beckett (Faisal Aqlan), Penn State Behrend
- 9:15 a.m. **Reconfiguring the Goat Wrench**
Tyler Loughran (Charlotte de Vries), Penn State Behrend
- 9:30 a.m. **Mathematical Modeling of Microscale Fuel Cell Electrode Performance**
Daniel Doleiden and Naz Argun (Adam Hollinger), Penn State Behrend
- 9:45 a.m. **Break**
- 10:30 a.m. **Sectional Heat-Treated Tubing during Uniaxial Crash Test**
Zachary McCauley (Chetan Nikhare), Penn State Behrend
- 10:45 a.m. **Case Study of Multipurpose Product Design Methodology**
Johnathan Moody (Shraddha Sangelkar), Penn State Behrend
- 11:00 a.m. **The Effect of Applied Electricity on Springback during Bending and Flattening of Stainless Steel 304 and 316, Titanium ASM-T-9046, and Magnesium AZ31B**
Jacklyn Niebauer and Ian Sweeney (Ihab Ragai and John Roth), Penn State Behrend
- 11:15 a.m. **Validation of Anisotropic Strain Data for University-Built Biaxial Tensile Machine**
Emmett Vorisek (John Roth and Chetan Nikhare), Penn State Behrend
- 11:30 a.m. **End of Presentations**
- Noon **Awards Luncheon in Erie Hall**

ORAL PRESENTATIONS

SESSION IX PSYCHOLOGY AND HISTORY/POLITICAL SCIENCE 166 Nick

- 8:25 a.m. **Welcome**
- 8:30 a.m. **Assessing the Effectiveness of Therapy Dogs for Children with Autism in an Educational Setting**
Emily Galeza, Julia Gabrys, and Danielle Carioto (Heather Lum and Victoria Kazmerski), Penn State Behrend
- 8:45 a.m. **The Influence of Mentoring on Positive Youth Development**
Emily Marsden, Anana Tinnhe, Brianna Zaffino, Christina Murzynski, and Taylor Morris (Charisse Nixon and Nicole Rosen), Penn State Behrend
- 9:00 a.m. **Parental Attachment and College Student Adjustment**
Allison Rupe, Skylar Amorose, Jane Ann Wiggers, and Chelsey Cratty (David Herring), Penn State Behrend
- 9:15 a.m. **Parenting Styles, Bullying, and Adjustment to College**
Alyssa Pollo, Kyleen Baker, Jessica Mihalic, Melissa Watson, and Raven Porter (David Herring), Penn State Behrend
- 9:30 a.m. **The Effect of Game-Play Difficulty on Auditory Attention: an Event-Related Potential Study**
Alysha Simmons and Rachel Mooney (Victoria Kazmerski), Penn State Behrend
- 9:45 a.m. **Break**
- 10:30 a.m. **“I’m in Lesbians with You”: A Microhistory of Romantic Friendships and Homosexuality Starring Emily Dickinson**
Breanna Black (Amy Carney), Penn State Behrend
- 10:45 a.m. **Examining the Effectiveness of a Promotional Giveaway Social Norms Campaign**
Rebecca Dinsmore and Allison Gage (Melanie Hetzel-Riggin), Penn State Behrend
- 11:00 a.m. **The Role of Life Events on Feelings**
Meghan Burgdolt, Julia Luke, Jacob Benedict, and Brianna Zaffino (David Herring), Penn State Behrend
- 11:15 a.m. **The Relationship between Personality and Perceived Support within a Friendship**
Kelsey Heinrich, Madison Barone, and Carlye Swanson (David Herring), Penn State Behrend
- 11:30 a.m. **End of Presentations**
- Noon **Awards Luncheon in Erie Hall**