

**2015 Berea Undergraduate Research Symposium**  
**October 23<sup>rd</sup>, 2015**

Sponsored by Division I



**Special Thanks**

Chemistry Program

Undergraduate Research and Creative Projects Program

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## Oral Session I – Room 106

Moderator – Dawn Anderson

Speakers indicated by bold typeface

- 2:00 PM** **Olamide Adejumo**, Moondil Jahan, Kevin Montgomery, “Dormancy-Breaking And Germination Patterns In Seeds Of *Calycanthus Floridus L.* (Eastern Sweetshrub)”, Berea College; Mentor – Christopher Adams
- 2:20 PM** **Kaitlyn Reasoner**, “pH Induced Compaction Of The N-Terminal Domain Of Lipidated Caveolin-3”, Vanderbilt University; Mentor – Charles Sanders
- 2:40 PM** **Hsuan Peng**, “The Bioactivity Of Pericellular Matrix From Adult Stem Cells”, University of Pittsburgh; Mentor – Yangzi Jiang, Rocky S. Tuan
- 3:00 PM** **Kevin Montgomery**, Moondil Jahan, Olamide Adejumo, “Physiological Dormancy And Germination Patterns In Seeds Of The Rare Yellow Gentian (*Gentiana Flavida Muhl.*)”, Berea College; Mentor – Christopher Adams
- 3:20 PM** *Refreshment Break*
- 3:40 PM** **Gabrielle Christian**, “Evaluating The Impact Of Community Gardens In The Appalachia Region”, Berea College & Grow Appalachia; Mentor – Lisa Turner
- 4:00 PM** **Chi Peng**, “The Dynamics Of Immunoediting In Skin Carcinogenesis”, Charles C. Gates Center for Regenerative Medicine and Stem Cell Biology, University of Colorado Denver; Mentor – Dennis Roop
- 4:20 PM** **Moondil Jahan**, Olamide Adejumo, Kevin Montgomery, “Comparison Of Dormancy States And Germination Patterns In Seeds Of *Calycanthus Floridus L.* (Eastern Sweetshrub)”, Berea College; Mentor – Christopher Adams
- 4:40 PM** **Zachary Spicer**, Jeremy Wilde, Morgan Stacy, “Diversity Of Stream Salamanders In Relation To Human Disturbance And Watershed Affiliation In Central Kentucky”, Berea College; Mentor – Roy Scudder-Davis

## Oral Session II – Room 101

Moderator – Mary Robert Garrett

Speakers indicated by bold typeface

- 2:40 PM** **Tatiana Mikhailova**, “Identification Of Factors Stabilizing The 3d Structure Of The Goodpasture Autoantigen Of Glomerular Basement Membrane”, Vanderbilt University; Mentors – Vadim Pedchenko, Billy Hudson
- 3:00 PM** **Seth Reasoner**, “Type 1 Interferon Expression Following Small Molecule Inhibition Of Cyclic GMP-AMP Synthase”, Vanderbilt University Medical Center; Mentors – Manuel Ascano
- 3:20 PM** *Refreshment Break*
- 3:40 PM** **Dorothy Coe**, Katie Bragdon, “A Simple Mechanochemical Aryl Bromination Procedure”, Berea College; Mentor – Nicholas Marshall

- 4:00 PM**      **Jonah Rector**, “The Effects Of Heat Shock Preconditioning On Protein Induction And Cell Survival After Nanoparticle Exposure”, Pepperdine University; Mentor – Jay Brewster
- 4:20 PM**      **Kyaw Hpone Myint**, “Dissipative Particle Dynamics (DPD) Simulations Of Hard Nanoparticle-Encapsulated Polymeric Micelle Formation”, The Ohio State University; Mentor – Barbara Wyslouzil
- 4:40 PM**      Lydia Bauler, **M. Ethan Johnson**, and Joseph Carrick, “Understanding Maps as Argument: Decoding Spatial Constructs”, Berea College & Chicago, IL; Mentor – Jason Cohen

### **Poster Session – Lobby**

**3:30 to 5:00 PM**

- Poster 1**      Lillian Setters, Amanda Burns, “Soil Quality At Berea College Farm”, Berea College; Mentor – Mary Parr
- Poster 2**      Jane Hostomsky, “Effects Of Protein Supplementation On The Parasite Susceptibility And Growth Performance Of Lactating Does And Continuously Suckled Kids Raised In A Sustainable Production System At Berea College Farm”, Berea College; Mentor – Quinn Baptiste
- Poster 3**      Maria Anastasiadou, “Engineering Stress-Resistant Mouse Embryonic Stem (ES) Cells”, University of Colorado-Denver; Mentor – Wallace Chick
- Poster 4**      Meghan Kramer, “Broadening Definitions Of Plant Biodiversity In Restored Tallgrass Prairies”, Chicago Botanic Garden; Mentor – Evelyn Williams, Rebecca Barak, Dan Larkin
- Poster 5**      Geri Mitchell, Jessica Vinson, Sean Nilan, “Comparisons Between Prey Species In Barn Owl (*Tyto Alba*) Pellets Collected In 1988, 1996, And 1997 From A Silo Roost In Harrogate, Tennessee”, Berea College; Mentor – G. Neil Douglas
- Poster 6**      Jazmin Escamilla, “Lysyl Oxidase Homolog Extracellular Processing”, Vanderbilt Medical Center; Mentor – Roberto Vanacore, Alberto J. López-Jiménez
- Poster 7**      Sophia Toe, “Integrin Subunits  $\alpha 3$  And  $\alpha 6$  Mediate FGF10-Dependent Signaling Events In Collecting Duct Cells Bound To LM511”, Vanderbilt University Medical Center; Mentor – Eugenia Yazlovitskaya, Roy Zent
- Poster 8**      Sarah W. Tabor, Sam C. Moody, “Does Membrane Composition Affect Whole-Animal Performance And Thermal Tolerance In The Eastern Newt (*Notophthalmus Viridescens*)?” Berea College; Mentor – Patrick M. Mineo
- Poster 9**      Sunaina Sherchan, Sarah Tabor, “Thermal Tolerance Differs Between Terrestrial And Aquatic Life History Stages In The Eastern Newt (*Notophthalmus Viridescens*)”, Berea College; Mentor – Patrick M. Mineo

- Poster 10** Morgan Stacy, Jeremy Wilde, Zachary Spicer, “A Preliminary Species Identification For An Isolated Population Of Salamanders Of The Plethodon Glutinosus Complex”, Berea College; Mentor – Roy Scudder-Davis
- Poster 11** Kodey Blankenship, “Solid-state NMR Study of Crystalline Pyrophosphate Salts”, Berea College; Mentor – Jay Baltisberger
- Poster 12** Boubacar Cherif, “Chemical And Physical Resistance Of Guayule And Nitrile Blend Rubber Gloves”, The Ohio State University; Mentor – Katrina Cornish
- Poster 13** Kidist Ashami, “Expression And Purification Of Transforming Growth Factor Receptor B-Ii Cytoplasmic Tail From *E. coli*”, Vanderbilt University; Mentor – Ambra Pozzi
- Poster 14** Alaina Fox, “Effect of FeRu Core-shell Catalysts Size on Fischer–Tropsch Reactions”, Louisiana Tech University; Mentor – Daniela Mainardi
- Poster 15** Tyler Hutsell, Marco Santos, “Mechanochemical chlorination and iodination of electron-rich aromatics”, Berea College; Mentors – Nicholas Marshall
- Poster 16** Bruce Plowshay Jr., “TRIM24 Induces Epithelial to Mesenchymal Transition (EMT) in MCF10A Cells”, The University of Texas MD Anderson Cancer Center; Mentor – Michelle Barton
- Poster 17** Samuel A. Effoe, Benjamin R. Quesada, Maria S. Ledesma-Alonso, Lyndsey J. Barker, “New Methods to Synthesize Nickel N-Heterocyclic Carbene Complexes”, Berea College; Mentor – Anes Kovacevic
- Poster 18** Lyndsey J. Barker, Maria S. Ledesma-Alonso, Samuel A. Effoe, Benjamin R. Quesada, “Abnormal N-Heterocyclic Carbene Complexes”, Berea College; Mentor – Anes Kovacevic
- Poster 19** Tatiana Mikhailova, Brennan Taylor, “Rapid, electroless surface modification through surface-directed azo coupling”, Berea College; Mentor – Nicholas Marshall
- Poster 20** Ebony Adams, “IT Support within the Corporate Environment Today”, Google; Mentor – Scott Heggan
- Poster 21** Carlos Andres Berejnoi Bejarano, “Developing an Affordable Traffic Counting System Using Computer Vision”, Berea College; Mentor – Matt Jadud
- Poster 22** Bria Williams, Kristian Toole, “Design and Development of a Bio-Inspired Robotic Quadruped Using Programmable Central Pattern Generators”, Berea College; Mentor – Scott Heggan, Matthew Jadud
- Poster 23** Amber Tolleson, Ashley Aiken, “The Detection of Gas in Fracking Contaminated Water”, Berea College; Mentor – Matt Jadud
- Poster 24** David Orr, Colin Weckman, “A comparison of optical versus electrical heart rate monitoring across various exercise intensities and modalities”, Berea College; Mentor – A.J. Mortara

- Poster 25** Dadbeh Shaddel, “Image reduction for MaAGA”, University of Kentucky; Mentor – Renbin Yan
- Poster 26** Nicholas Hubbard, “Millimeter Wave Propagation Through the Atmosphere”, United States Air Force Research Laboratory; Mentor – Steven Lane
- Poster 27** Denzell Barnett, “Differential Thermal Analysis of Bioactive Glass Material for Bone Tissue Regeneration”, Kennesaw State University; Mentor – Tracy Hodge
- Poster 28** Noah Broomfield, Lindsey Harper, Felicia Flesch, “A Student Built Wood Kiln: Exploring Sustainable Practices in the Ceramics Studio”, Berea College; Mentor – Philip Wiggs
- Poster 29** Madelaine Collett, David Battoe, “Lawn Care”, Berea College; Mentor – Daniel Feinberg
- Poster 30** John Attelah, Gracia El Ayle, “Synthesis of Amine-Functionalized Cyclotribenzylenes (CTBs)”, Georgetown University; Mentor – K. Travis Holman
- Poster 31** Joseph Carrick, “Network Analysis in Colonial State Papers”, Berea College; Mentor – Jason Cohen
- Poster 32** Job Limo, “Phytochemical Investigation of *Albizia Shimperiana* and *Bridelia Micrantha* for Cytotoxic Principles Against Drug Sensitive and Multidrug Resistant Cancer Cell Lines”, University of Nairobi, Kenya; Mentor – Leonidah Kerubo



**Plenary Talk – Room 106 at 5:15 PM**  
**Dr. Roy Zent - “Any Science Can Be Cool!”**  
**Thomas F. Frist Senior Professor of Medicine**  
**Vanderbilt University School of Medicine in Nashville TN**

Roy attained his Bachelor of Medicine and Surgery (MBBCh) at the University of Witwatersrand from 1978-1984, then gaining a PhD at the University of Toronto from 1993-1997. Following these, he has additional degrees and qualifications, including 1993 Fellow of the Royal College of Physicians Canada (FRCPC); 1992 Masters of Medicine (MMED), University of Cape Town; 1991 Fellow of the South African College of Physicians (FCP).