

*13<sup>th</sup> Annual*



STUDENT  
SCHOLARS  
SYMPOSIUM

April 11, 2024



## From the Provost of Lipscomb University

Dear Student Scholars,

It is my pleasure to welcome you all to the 13th annual Student Scholars Symposium. This event is a testament to the hard work, dedication, and intellectual curiosity of our student body. I am honored to have the opportunity to acknowledge and celebrate your accomplishments as you showcase your research and scholarship.

As scholars, you play an important role in advancing knowledge in your respective fields. Your work is not only critical to expanding the frontiers of understanding, but it is also vital to the future of our society. Your research provides insights into pressing issues, challenges existing ideas, and creates new avenues of inquiry. By presenting your research as a student, you have an opportunity to engage in scholarly conversation and contribute to the academic community.

I would like to take this opportunity to express my gratitude to the SSS committee for their outstanding work in organizing this event. Their commitment to making this symposium a success is greatly appreciated. Special thanks to Dr. Josh Owens for his excellent work in chairing the SSS committee.

Finally, to all of the student scholars presenting at this year's symposium, I wish you the very best as you share your work. I hope that this event will be an opportunity for you to demonstrate your knowledge and to learn from your peers. I encourage you to engage in thoughtful discussions and to ask questions that challenge your assumptions. I have no doubt that your research will contribute to our understanding of the world around us.

Once again, congratulations on your achievements, and I look forward to seeing the results of your hard work at this year's Student Scholars Symposium.

Sincerely,



A handwritten signature in black ink that reads "Jennifer W. Shewmaker". The signature is fluid and cursive, with a long horizontal flourish at the end.

Lipscomb University Provost  
*Dr. Jennifer Shewmaker*

**Opening Session:** *Shinn Center*

**Chair:** *Dr. Josh Owens, Assistant Professor of Biology*

- 7:30 - 8:30 a.m.            **Registration and Coffee**
- 8:30 - 8:35 a.m.            **Welcome**  
Dr. Trace Hebert, Associate Provost of Research and Graduate Studies
- 8:35 - 8:45 a.m.            **Opening Remarks**  
Dr. Jennifer Shewmaker, Provost
- 8:45 a.m.                    **Opening Prayer**  
Dr. Josh Owens, Assistant Professor of Biology

**9:00 – 10:45 a.m. • Concurrent Sessions**  
**Undergraduate Students Presentations**

**Paper Presentation IA:** *Ward Hall*

**Chair:** *Dr. Kyle Brawner, Assistant Professor of Biology*

- 9:30 a.m.            **Detection Range, Height, and Cloud Cover Effects on Signal Strength of Hybrid Tag Radio Transmitters on Birds**  
Anna Sawyer and John Lewis, Biology
- 9:45 a.m.            **Effects of Albendazole on *C. elegans* Eggs**  
Giselle Domingo Diaz, Anna Thurman, and Brian Ellis, Biology
- 10:00 a.m.            **The Structural Characterization of Tim50 in *Trypanosoma brucei***  
Carolyn Tran and Minu Chaudhuri, Ward Research Fellowship
- 10:15 a.m.            **Emodepside Exposure to Larval Stages of *C. elegans* is Associated with Dose Dependent Motility Deficits and Increased Mortality Rates**  
Malia Bennie, Eric Schall, and Brian Ellis, Biology
- 10:30 a.m.            **Analysis of Anthelmintic Effects of Novel Compounds Using *C. elegans* as a Model Organism**  
Raegan Melhorn, Justin Hockaday, and Brian Ellis, Biology

## **Paper Presentation IB: *Ezell 363***

**Chair:** *Dr. Jill Kirby, Associate Professor of Biology*

- 9:30 a.m.      **Do Cotton Socks or Compression Socks Yield Better Running Performance?**  
Alyssa Gumbman, Kayla Fischer, Madison Eisler, and Ruth Henry, Kinesiology
- 9:45 a.m.      **Sleep Patterns of Female Softball Players During Weekend Series: An Apple Watch Study**  
Marcella Cash, Joie Giarrizzo, Kiara Pralle, Haley Williams, and Ruth Henry, Kinesiology
- 10:00 a.m.     **Effects of Caffeine on Short-term Memory**  
Reed Taylor, Ethan Sanzone, Hayden Fly, and Ruth Henry, Kinesiology
- 10:15 a.m.     **The Effects of Chocolate Consumption on Women with Body Image Dissatisfaction**  
Rachel Shannon, Cambryn Crumpler, and Jaclyn Spivey, Psychology, Counseling, and Family Science
- 10:30 a.m.     **The Effect of Pre-Workout Supplementation on Anaerobic Power Output**  
Corbin Weaver, Andrew Polk, Stephen Stancill and Ruth Henry, Kinesiology

## **Paper Presentation IC: *Ezell Chapel***

**Chair:** *Prof. Donna King, Associate Professor of Music*

- 9:15 a.m.      **“She’s an Eagle When She Flies”: The Lives and Legacies of Women in Appalachian Music during the 20th Century**  
Georgia Leonard and Richard Goode, History, Politics and Philosophy
- 9:30 a.m.      **Analytical Structure in Anton Webern’s Five Movements for String Quartet, op. 5**  
Matthew Martin, Jennifer Snodgrass and Jerome Reed, Music
- 9:45 a.m.      **The Designers of Lipscomb Theatre’s I and You**  
Justice Orrand, Garner Harsh, Kaylie Herpolsheimer, Peyton Lewis, Kellin Ferrell, Saidee Hannel and Beki Baker, Theatre
- 10:00 a.m.     **Analyzing Children’s Immigration Picture Books Through Visual Analysis**  
Erica Diaz, Sammi Sanders, Ashlynn Perry, Shelby Hallett, Emma Sutton and Jeanne Gilliam Fain and Sarah Duncan, Education

10:15 a.m.      **Digital Storytelling Part 1**  
Dr. Carol Santiago Sota, LIFE Program

10:30 a.m.      **Digital Storytelling Part 2**  
Dr. Carol Santiago Sota, LIFE Program

**Paper Presentation ID: Ezell 147**

**Chair:** *Kirsten Boatwright, Adjunct Professor of English and Modern Languages*

9:15 a.m.      **Linguistic Confluences in Southern Appalachian English**  
Kearra Weiting and Jan Harris, English and Modern Languages

9:30 a.m.      **The Evolution of English: How Language Affects Agency**  
Faith Adams and Jan Harris, English and Modern Languages

9:45 a.m.      **Existing in the “Wibbly-Wobbly”: Being and Time in TS Eliot’s  
“Burnt Norton”**  
Courtney Grable and Jan Harris, English and Modern Languages

10:00 a.m.      **Why Con-Langs are Bound to Fail**  
Sydney Sneider and Jan Harris, English and Modern Languages

10:15 a.m.      **Research Analysis of Walt Whitman’s “Song of Myself”**  
Allison Norris and Brandi Kellett, English and Modern Languages

10:30 a.m.      **The Feminine Conspiracy: Serpents and Bulls in the  
Western Patriarchal Tradition**  
Mac Chamberlain and Dana Chamblee Carpenter, English and  
Modern Languages

**Paper Presentation IE: Ezell 301**

**Chair:** *Dr. Brian Mast, Vice Provost*

9:15 a.m.      **An Exegetical Analysis of I Corinthians 5**  
Lucas Collins and Mike Williams, Bible and Ministry

9:30 a.m.      **On the Nature of Scripture**  
Preston Scott and Lauren White, Bible and Ministry

9:45 a.m.      **It’s Not About Meat, It’s About Love: An Exegetical Analysis  
of I Corinthians 8**  
Nathan Scott and Mike Williams, Bible and Ministry

10:00 a.m.      **A Case Study of Children’s Spirituality, Adversity and  
Resilience**  
Rebekah Gosnell and Holly Allen, Psychology, Counseling and  
Family Science

10:15 a.m.      **Putting a Pope on Posthumous Trial: Pope Stephen VI and the Cadaver Synod**  
Erynn Barrett and Howard Miller, History, Politics and Philosophy

10:30 a.m.      **Sincerely Yours: A Therapeutic Writing Approach to Grief**  
Raegyn Oliver, Natalia Calderon and Jaclyn Spivey, Psychology, Counseling and Family Science

**Paper Presentation IF:** *John C. Hutcheson Gallery, Beaman Library*  
**Chair:** *Prof. Charlotte Poling, Associate Professor of Fashion and Design*

**Dolly Parton & the Makers**

**9:15 am-9:55 am:** Panel Discussion

**Facilitator:** Dr. Jennifer Shewmaker, Provost

In the Fall of 2023, the Department of Fashion & Design hosted Dolly Parton and the Makers: My Life in Rhinestones fashion exhibition for an incredible six-week run. Featuring nearly a hundred artifacts from Dolly's career, this exhibition paid homage to The Makers that worked tirelessly "behind the seams" to make Dolly's aesthetic her very own. This project also brought both national and international media attention to our university, highlighted our Fashion and Design program, and included a visit from Dolly Parton herself! Nearly 8,000 people from 40 states and 10 countries viewed the exhibition, and there were 420 online and broadcast stories with reach/viewership of over 1 Billion individuals!

**Panelists:**

Sean Worth, Graphic Design

Chloe Beauchene, Hospitality Management

Brynn Abner, Film Production

Morgan Hasse, Fashion Design

Celina Lakner, Fashion and Interior Merchandising

Charlotte Dicks, Fashion and Interior Merchandising

Maycee Finkbeiner, Fashion and Interior Merchandising

Bex Olesek, Studio Art

**Faculty Sponsors:**

Professor Charlotte Poling, Assistant Professor and Department Chair,  
Fashion and Design

Professor Sissy Simmons: Assistant Professor, Fashion and Design

**11:00 a.m. – 12:30 p.m. • Shinn Center  
Lunch and Keynote**

**Chair:** *Dr. Florah Mhlanga, Associate Provost of Undergraduate Academic Affairs*

11:00 a.m.

**Lunch**

**Prayer:** *Dr. David Elrod, Dean of the Raymond B Jones College of Engineering*

11:30 a.m.

**Keynote Presentation: Uncovering the Inner Lives of Electrons in Molecules**

*Dr. Paul Ayers, Professor of Chemistry and Chemical Biology, McMaster University*

Dr. Paul Ayers is a chemistry professor at McMaster University in Ontario, Canada. He graduated from Lipscomb University in 1996 with a triple major in mathematics, physics, and chemistry (and a 4.0 G.P.A.). In 2001, he earned his Ph.D. in Chemistry from University of North Carolina Chapel Hill after which he went to Duke University for a Post-Doctorate in Chemistry. His research focuses on developing new mathematical and computational tools for describing and predicting chemical reactivity and developing accurate and efficient tools for molecular electronic structure. Dr. Ayers has published over 370 papers and book chapters and given more than 300 invited lectures. The impact of his work has been recognized by numerous awards, including an Alfred P. Sloan Fellowship (2008-10), the Steacie Prize for Natural Sciences (2013) and the 2014 Rutherford Memorial Medal in Chemistry from the Royal Society of Canada for outstanding research in chemistry. In 2018, he was selected as a fellow of the Royal Society of Chemistry.



12:25 p.m.

**Introduction of the McClure Faith and Science Lecture**

*Dr. John Lewis, McClure Professor of Faith and Science Professor of Biology*

**12:30 – 1:50 p.m. • Allen Arena**  
**Undergraduate Students Poster Presentations**

**Chair:** *Dr. Shanna Ray, Senior Associate Dean of the College of Liberal Arts and Sciences*

**Group I**

**Chair:** *Dr. Sarah Collier, Assistant Professor of Pharmaceutical Science*

- 1. Effect of Human Alpha Defensin 5 (HD5) on Filamin A Effectiveness and Cellular Wound Healing**  
Jafer Aljorani, Hunter Hulke, Jonathan Womble, and Amanda Williams, Biology
- 2. Analyzing the Expression of Dsg2 in NMC460 Cells Treated with HD5**  
Leah M. Jacob, Ariadna Daniela Menjivar, Kayleigh D. Maner, and Amanda Williams, Biology
- 3. IBD: HD5 Effects on Colon Wound Healing and CDH-1 Expression**  
Alan Mohammad, Gavin Smith, Arlo Colvard, and Amanda Williams, Biology
- 4. Exploring the Effects of HD5 on Wound Healing in Colonic Epithelial Cells**  
Maryam Gerges and Amanda Williams, Biology
- 5. Observing the Effects of HD5 with ChIP Assays**  
Chad Phan and Amanda Williams, Biology

**Group II**

**Chair:** *Dr. Kyle Brauner, Assistant Professor of Biology*

- 6. Characterizing Nephrilysin's Regulation of the PI3K Pathway in Triple Negative Breast Cancer**  
Mariam Iskandar, Chris Yang, and Beth Conway, Biology
- 7. Characterizing the Contributions of Nephrilysin, Casein Kinase II, and AKT in Triple-Negative Breast Cancer Migration**  
Elise Griner and Beth Conway, Biology
- 8. Migration Using MDA-MB-231**  
Maryam Mina, Joy Lawson, and Joshua Owens, Biology
- 9. Effects of Valerobetaine in Fatty-Acid Induced Breast Cancer Cell Proliferation**  
Carolyn Tran, Diyar Fadhil, and Joshua Owens, Biology



**10. Elucidating the Effect of Carnitine-Dependent Fat Metabolism Inhibition in Breast Cancer Cell Migration**

Audrey Birdwell, Emerson Kremer, and Joshua Owens, Biology

**Group III**

**Chair:** *Dr. Joseph Weinstein-Webb, Assistant Professor of Chemistry*

**11. Investigating the Effect of Valerobetaine on FAK Activation and its Pathway**

Lincoln Brown, Braxton Ivie, and Joshua Owens, Biology

**12. A Novel Discovery Platform to Elucidate Novel Microbe-Derived Metabolites and their Effects on Fatty-acid Metabolism**

Helana Khalif, Jackson Head, Morgan Martin, and Joshua Owens, Biology

**13. Sensitivity of Epithelial and Mesenchymal-like TNBC Cells to Chemotherapy**

Abby Powell and Florah Mhlanga, Biology

**14. BPA Exposure During Zebrafish Embryonic Development Lowers Heart Rate**

Shabana Hussaini, Gracen Vinyard, Dmiana Latif, and Bonny Millimaki, Biology

**15. Effects of Hu-331 on Neuronal Development in Zebrafish**

Ellie Kowitz and Bonny Millimaki, Biology

**Group IV**

**Chair:** *Dr. Josh Owens, Assistant Professor of Biology*

**16. Investigation of the Ability of Aryl Hydrocarbon Receptor Activation to Rescue LPS-induced Cytotoxicity in Small Intestinal Epithelial Cells**

Gabriella Longoria and Kyle Brawner, Biology

**17. Indole Treatment of *C. elegans* does not Rescue Illness Induced by the Opportunistic Pathogen *Cronobacter sakazakii***

Joshua Asselin and Kyle Brawner, Biology

**18. The Opportunistic Pathogen *Cronobacter sakazakii* Inhibits Aryl Hydrocarbon Receptor Signaling in Intestinal Epithelial Cells**

Paul Agaiby, Lauren Phillips, Eleanor Williams, and Kyle Brawner, Biology

**19. The Effects of Emodepside on *C. elegans* as a Model for Helminth Infections**

Caleb K. Taylor, Audrey Cox, and Brian Ellis, Biology

**20. Nesting Behavior of the Wood Thrush**

Amelia Browning and John Lewis, Biology

## **Group V**

**Chair:** *Dr. Brandon Banes, Associate Professor of Mathematics*

### **21. Overview of Oral Cavity Squamous Cell Carcinoma**

Youssef Hanna and Brian Ellis, Biology

### **22. Human Epidermal Growth Factor Receptor 2 (HER2) Amplification in Breast Cancer**

Sawyer Shepherd, Braxton White, and Joshua Owens, Biology

### **23. Ras Signaling in Pancreatic Cancer**

Addie Haga, Allie Thompson, Katya Tibbetts, and Joshua Owens, Biology

### **24. Impact of Ras Signaling in Pancreatic Cancer**

Morgan Martin, Katherine Kidd, Elise Rice, and Joshua Owens, Biology

### **25. P53 Signaling in Cervical Cancer**

Annie Cage Childers, Winter Karysma Phelps, Alex Irwin, and Joshua Owens, Biology

### **26. An Analysis of a Targeted Dual Modality Imaging (TDMI) for the Detection and Removal of Head and Neck Cancer**

Leah M. Jacob, Jocelyn G. Howland, Jackie M. Ceballos, and Eben Rosenthal, Department of Otolaryngology; Vanderbilt University Medical Center

## **Group VI**

**Chair:** *Dr. Emily Medlock, Associate Professor of Education*

### **27. Implications of BCL2 Signaling in Alzheimer's Disease**

Ivana Huffines and Joshua Owens, Biology

### **28. The Effects of PI3K Signaling in Cardiovascular Disease**

Rezheen Taher, Kai Lam, and Joshua Owens, Biology

### **29. GPCR-Signaling in Inflammatory Bowel Disease**

Malak Hauter, Vina Nguyen, Abigail Sedam, and Joshua Owens, Biology

### **30. Anatomy Unveiled: Elevating Undergraduate Anatomy Education Through Student-led Medical Illustration**

Lauren Blank, Jill Kirby, and Cindy Wingert, Biology, Physician Assistant Studies

### **31. Reporting Conflicts of Interest in Bronchoscopy Research – Is Self-Reporting Sufficient?**

Timothy Khalil and Florah Mhlanga, Biology

**32. PI3K Pathway in Relation to Cardiovascular Disease**

Jacob Richards, Tim Martin, Cedric Tra, and John Lewis, Biology

**Group VII**

**Chair:** *Prof. Monica Sartain, Assistant Professor of Civil Engineering*

**33. Pedestrian-Friendly Streets: Assessing Overall Success on Well-Being with Post-Evaluations**

Ariana Ordoñez and Scott Bledsoe, Law, Justice, and Society

**34. Protecting American Children: A Social-Ecological Analysis of PACTPA**

Julia Rossmiller, Cayce Watson and Autumn Maxwell, Social Work and Sociology

**35. Sustainable Server Synthesis: Repurposing Enterprise-Grade Equipment for Personal Self-Sufficient Cloud**

Grant Duncan and Ken Mayer, School of Computing

**36. Exploring the Effects of Indoor Plants on Executive Function**

Jose David Romero Silva and A.J. Heritage, Psychology, Counseling and Family Science

**37. What Implementation of Sustainable Practices into Theatre Productions have been made on the Collegiate Level and what Impact has it had on the Environment?**

Ava Sin and Emily Stutzman, Environmental and Sustainability Science

**Group VIII**

**Chair:** *Dr. Marc Schwerdt, Associate Professor of History, Politics and Philosophy*

**38. Unveiling the Strategies Behind the Statistically Significant Outperformance of the TVA Investment Portfolio in Fiscal Year 2023**

Alex Walentynowicz, Henry Wolfe, Kendal Matas and Han-Sheng-Chen, Finance

**39. Social Turmoil and Adolescent Aggression: An Expanded Analysis of Crime Committed in Tennessee Surrounding the 2020 Pandemic**

Allie Melhorn, Rachel Russell and Jaclyn Spivey, Psychology, Counseling and Family Science

**40. Eleanor of Aquitaine: Women and Political Power in Medieval Europe**

Lucy Seay and Howard Miller, History, Politics, and Philosophy

**41. Rehabilitation and Recidivism**

Carson Coward and Scott Bledsoe, Law, Justice and Society

## **Group IX**

**Chair:** *Dr. Misty Parsley, Professor of Education*

- 42. The effects of delayed cord clamping on the hematological factors in neonates: A systematic review**  
Clara Hullinger, Raegan Chambers, Adelaide Cahill, Kim Nguyen, Laurel Underwood, Grace Below and Jennifer Hicks, Nursing
- 43. Efficacy of Virtual Reality Interventions to Provide Comfort and Reduce Anxiety in Children During Intravenous Insertion: A Systematic Review**  
Kailey Burton, Nardos Abdela, Ashley Garcia, Ana Reyes, Olushola Kukoyi and Jennifer Hicks, Nursing
- 44. Neonatal Morbidity Associated with Elective Labor Induction and Spontaneous Labor Onset: A Systematic Review**  
Jalyn Crawford, Sarah Hill, Meghan Garrett, Olivia Schuette, Mariana Arias, Clara Stringer and Jennifer Hicks, Nursing
- 45. A Systematic Review Comparing Water Birth Versus Land Birth and Their Outcomes**  
Celeste Legaspi, Lydia Clifford, Allena Klamorick, Kaylee Wilson and Jennifer Hicks, Nursing
- 46. Exploring the Effects of Maternal Stress on Child Outcomes**  
Maggie Daugherty and Jaclyn Spivey, Psychology, Counseling and Family Science

## **Group X**

**Chair:** *Dr. Lynette Austin, Dean, College of Health Sciences*

- 47. Day or Night Shift Factors Contributing to Nurses Experiencing Burnout: A Systematic Review**  
Soha Haydari, Lilianna Schmurr, Sherwin Nazemi, Sophia Iskander, Basant Williams, Caroline Hube and Jennifer Hicks, Nursing
- 48. Effects of Traditional and Modern Medicine in Women with Polycystic Ovarian Syndrome: A Systematic Review**  
Reagan Davy, Jonelle Fitzgerald, Nicole Oshomaji, Esther Cing, Carley Spaeth, Ciara Hopkins and Jennifer Hicks, Nursing
- 49. Effectiveness of Semaglutide Versus Liraglutide and Dulaglutide on Diabetic Weight Loss and Blood Glucose Management: A Systematic Review**  
Carissa Carron, Ashlyn Koegle, Samantha Owen, Katherine Munn, Adelyn Holliday, Dara Haynes and Jennifer Hicks, Nursing

**50. PTSD Effects on Sexual Assault Victims Using EMDR Therapy: A Systematic Review**

Angel Belog, Sandra Loc, Angelli Aguilar, Madilynn Angell-Tucker, Ciin Kiim, Angie Sanchez Flores and Jennifer Hicks, Nursing

**51. A Systematic Review: Oral Hormonal Contraceptive Effects on Mood**

Elise White, Kaitlyn Baird, Laney Hansel, Emily Perkins, Rebekah Nickerson, and Jennifer Hicks, Nursing

**Group XI**

**Chair:** *Prof. Rebecca Clark, Professor of Social Work*

**52. Evaluating Educational Service Delivery within Juvenile Detention Centers**

Carly Quenneville and Cayce Watson, Social Work and Sociology

**53. Interpersonal Violence and Educational Outcomes: From Impact to Solution**

Samantha Hurst and Cayce Watson, Social Work and Sociology

**54. Improving Self-Efficacy and Empowerment Amongst Foster Youth**

Hanah Friel and Cayce Watson, Social Work and Sociology

**55. Reducing Caregiver Burden: Supporting Older Adults with Dementia**

Ellie Bancroft and Cayce Watson, Social Work and Sociology

**56. Intersection of Sexual Violence and Dance: Increasing the Knowledge of Dance Instructors**

Sabrina Nguyen and Cayce Watson, Social Work and Sociology

**Group XII**

**Chair:** *Dr. Matthew Ruiz, Professor of Kinesiology*

**57. The Effects of Egg Replacers on Sensory Characteristics and Acceptability of Peanut Butter Chocolate Chip Cookies**

Julia Chandler, Andrea Colina, Sophia Dunn and Autumn Marshall, Nutrition

**58. The Effects of Lactose-Free Milk on Sensory Characteristics and Acceptability of Milk Chocolate**

Sydney Jones, Autumn Robison, Jeydan Richardson and Autumn Marshall, Nutrition

**59. Comparison of Anaerobic and Aerobic performance with pre-workout supplementation in cycling and graded treadmill tests**

Levi Streeval, Trey Haralson and William Vantrease, Exercise Science

**60. Exploring the impact of crowd noise on reaction time in Collegiate Athletes**

Jace Cunningham, Joshua Niter, Carter King and Andrew Mauldin, Kinesiology

## 61. Whoop

Jack Morris and Han Sheng-Chen, Finance

## Group XIII

**Chair:** *Dr. Amanda Williams, Assistant Professor of Biology*

## 62. Isolating an *E. Coli* Adhesin Protein (fimH) for Future Thermodynamic Characterization

Antonious Mikael and Brian Cavitt, Chemistry and Biochemistry

## 63. Synthesis and Analysis of Halogenated Gem-Dihalocyclopropane Fatty Esters

David Saakov and Kent Clinger, Chemistry and Biochemistry

## 64. Development of an LC-MS/MS Method for the Quantitation of Drugs and Pollutants in Environmental Waters

Kennedy Brothers, Joy Osipchuk, Cora Coletti, Abigail Davis, and Matt Vergne, Pharmacy

## 65. "I've got a gut feeling" - The Effects of Energy Drinks on the Slow Waves of the Gastrointestinal Tract Using an Electrogastrogram (EGG)

Leah M. Jacob, Paul S. Agaiby, Mariam I. Yakoub, and Alan Bradshaw, Physics

## Group XIV

**Chair:** *Dr. Michael Watson, Assistant Professor of Physics*

## 66. Isolation and Thermodynamic Characterization of FimH, an *E. Coli* Adhesion Protein

Antonious Mikael, Raphael Chandler, and Brian Cavitt, Chemistry and Biochemistry

## 67. Spinning a Webb of Information: Unleashing the Transformative Power of Quantum Processing

Kenneth Klutse, Hunter Hulke, and Joseph Weinstein-Webb, Chemistry and Biochemistry

## 68. Error Analysis of Methods of Reducing Gibbs Phenomenon in Fourier Transform

Michael Ent, Morgan Hayes, and Gary Hall, Mathematics

## 69. Implementation of Forward Bessel-Fourier Analytical Model of Gastrointestinal Slow Waves

Jocelyn Howland and Alan Bradshaw, Physics

## 70. General Solution to the Plane Simple Pendulum

Christopher Wengert, Jaqueline Cabellos, Dominick Dingus, and Randy Bybee, Physics

## **Group XV**

**Chair:** *Dr. Rachel Crouch, Assistant Professor of Pharmacy*

**71. Multimodal Detection of Toxic Metals in Victorian Era Book Cloths as part of the Beaman Library Collection**

Leila Ais, Abigail Hoermann, Jafer Aljorani, and Joseph Weinstein-Webb, Chemistry and Biochemistry

**72. Rapid Method for Vitamin B Analysis by LC-MS/MS**

Abigail Davis, Joy Osipchuk, Kennedy Brothers, Cora Coletti, Katelyn Covington, Joanna Cravens, and Matt Vergne, Pharmacy

**73. High Resolution Electrogastrogram Frequency and Spatiotemporal Analysis**

Jocelyn Howland, Riley Robertson, Olivia Huckabay, and Alan Bradshaw, Physics

**74. Development of an LC-MS/MS Method for Intestinal Permeability Determination with Micro-Volume Blood**

Joy Osipchuk and Matt Vergne, Pharmacy

**75. High Resolution Electrogastrogram for Non-Invasive Assessment of Gastrointestinal Slow Waves**

Antonious Mikael, Tony Khalil, Helana Khalif, and Alan Bradshaw, Physics

## **Group XVI**

**Chair:** *Prof. David Davidson, Professor of Civil Engineering*

**76. Electric Self-Propelled Longboard Presentation**

Aidan Lovelace, and Kirsten Dodson, Engineering

**77. Implementing Photogrammetry and LiDAR Analysis into Land Surveying**

Dylan Maynard, Alhawrra Kareem, and Jordan Wilson, Engineering

**78. Erosion Control in Changing Climates: Evaluating the Effectiveness of Traditional Methods in the Face of Increased Rainfall Intensity**

Liv Meek, Alyssa Hampton, and Monica Sartain, Engineering

**79. Emissions Analysis for Biomedical Waste Incinerator**

Reid Murdock and Kirsten Dodson, Engineering

**80. Sediment Control Practices on Construction Sites**

Anna Davidson, Rawan Alrubaye, and Monica Sartain, Engineering

**81. Rheological Effects of Aggregate Properties on Fresh Concrete for 3D-Printing Applications**

Aaron Hardy and Todd Lynn, Engineering

## Group XVII

**Chair:** *Dr. Jordan Wilson, Professor of Engineering*

- 82. Coding and Thematic Analysis on the Effects of Humanitarian Engineering Projects on Inclusivity from Two Student Interviews**  
Renè Marius, Mark Sedek, Laurence Miranda, and Kirsten Dodson, Engineering
- 83. AISC Steel Bridge Competition**  
Moheb Sous, Liv Meek, Rylee Johnson, Dylan Maynard, Felipe David, Rawan Alrubaye, and David Davidson, Engineering
- 84. Baja SAE Senior Design**  
William Messner, Jaren Phipps, Tommy Walker, William Fredrick, Graham Davis, Juan Hernandez Alvarez, and Richard Pearce, Engineering
- 85. Guatemala Clean Water Distribution System Enhancement**  
Justice White, Anna Davidson, Faris Jugovic, L. Gretchen Link, Zac McAuley, Courtney Stevens, and Kevin Colvett, Engineering
- 86. Peugeot Center Remote Water Metering Design Team**  
Josh Radoha, R'Mani Martinez-Nauta, Bibiana Zermeno-Magana, Brendan Nguyen, Peyton Solley, and John Hutton, Engineering
- 87. Multidisciplinary Engineering Solutions for Mitigating Temperature and Humidity Concerns in Biophilic Spaces: A Study of Gaylord Opryland's Delta Atrium**  
Alyssa Hampton, Tracie Santiago, Saly Alammuri, Taylor Crawford, Jonathan Ochoa Guzman, Gracie Hall, Daniel Harvey, Tamyra Kirby, and Monica Sartain, Engineering
- 88. Effects of Surcharge Loading on Retaining Walls**  
Moheb Sous and David Davidson, Engineering

## Graduate Poster Presentations Ezell Lobby

## Group XVIII

**Chair:** *Dr. Jennifer Hicks, Professor of Nursing*

- 89. Effects of Cognitive and Visual Training on Reaction Time in Volleyball Athletes**  
Asha Phillips, Andrew Mauldin, and Laurel Littlefield, Kinesiology



- 90. The effect of Dehydration on Anaerobic Power Performance**  
Madeline Dixon, Andrew Mauldin, and Laurel Littlefield, Kinesiology
- 91. Post Activation Potentiation Following Resistance Training in Collegiate Softball Hitters**  
Lauren Higginbotham, Andrew Mauldin, and Laurel Littlefield, Kinesiology
- 92. The Impact of Caffeinated, Fed, and Fasted Pre-exercise Fueling Strategies on Athletic Performance and Perceived Fatigue During Morning Training Sessions in Collegiate Athletes**  
Kelliann Harden, Molly Smith, and Ann Toy, Nutrition

### **Group XIX**

**Chair:** *Dr. Andrew Mauldin, Assistant Professor of Kinesiology*

- 93. Changes in Knowledge of Collegiate Coaches on Relative Energy Deficiency in Sport (RED-S) Following an Educational Intervention**  
Margaret Green, Jaelin Richardson, and Ann Toy, Nutrition
- 94. Examining the Effectiveness of Hydration Strategies on Division I Football Players**  
Carly Ponder, Maria Lopez, and Ann Toy, Nutrition
- 95. Effectiveness of Motivational Interviewing (MI) Education on MI Confidence and Perception by Outpatient Dietitians**  
Kayti Kuhn, Anna Beth Taylor, and Tracy Noerper, Nutrition
- 96. The Effect of Probiotics on Perceived Stress in Female Graduate Students**  
Jordan Neves, Adrienne Shaw, and Tracy Noerper, Nutrition
- 97. The Infant Formula Shortage: How a Time of Crisis Influenced Infant Feeding Practices**  
Cara Hodgins, Annie Hayes, and Tracy Noerper, Nutrition

### **Group XX**

**Chair:** *Dr. Cayce Watson, Professor of Social Work and Sociology*

- 98. Development of a Sensitive Analytical Method to Measure Montelukast Levels in Plasma and the Stability of an Oral Montelukast Suspension**  
Dana Dishman, Donald Arnold, and Scott Akers, Pharmacy
- 99. Development of an Analytical Method to Measure Doxorubicin Levels in Human Plasma**  
Ashley Rector, Matthew Vergne, and Scott Akers, Pharmacy

- 100. Development of an Analytical Method to Measure Nintedanib and Pirfenidone Levels in Plasma to Support an Ongoing Phase II Clinical Trial**  
Joanna Cravens, Katelyn Covington, and Scott Akers, Pharmacy
- 101. *In vitro* Drug Metabolism and Pharmacokinetic Evaluation of Ent-Verticilide**  
Min Li, Michael Aguon, and Rachel Crouch, Pharmacy
- 102. Elucidation of Fat Metabolism Inhibition on Breast Cancer Cell Proliferation**  
Mohamud Mohamed and Joshua Owens, Biology

## Group XXI

**Chair:** *Dr. Autumn Marshall, Professor of Nutrition*

- 103. Effects of Patient Assistance Programs at Faith Family Medical Center**  
Mikayla Morrow and Sarah Uroza, Pharmacy
- 104. Eosinophilia Association with Exposed to IL-1 and IL-6 Blocking Biologic Medications in a Systemic Juvenile Idiopathic Arthritis Patient Cohort**  
Rachel Dickey and Kam Nola, Pharmacy
- 105. H. Pylori Infections Linked to Gastric Cancer Disparities Across Hispanic Populations throughout the United States: A Systematic Review**  
Lino Gaglio Jr., Katelin Baird, and Sarah Collier, Pharmacy
- 106. How to Search for the Supplemental Truth: A Probiotic Evaluation Integrating Natural Medicine and Drug Literature**  
Gabiella Young, Jimmy Torr, Jonathon Pouliot, and Sarah Collier, Pharmacy
- 107. *In vitro* and *in vivo* Preclinical Development of the Cyclopeptide Ent-Verticilide for the Treatment of Cardiac Arrhythmias**  
Kevin Wu, Matt Vergne, and Scott Akers, Pharmacy

## 2:00 – 5:00 p.m. • Concurrent Sessions Undergraduate Students Presentations II

**Paper Presentation IIA:** *Ward Hall*

**Chair:** *Dr. Bonny Millimaki, Professor of Biology*

- 3:00 p.m.      **Three Prominent Hallmarks of Triple Negative Breast Cancer and the Relationship Between Them**  
Mina Ibrahim and Joshua Owens, Biology

- 3:15 p.m.      **Evaluation of CYFRA 21-1 Measurements Across Different Detection Methods Suggests Varying Fragment Length Identification for Expanded Use in NSCLC Diagnostics**  
Timothy Khalil and Eric Grogan, Biology
- 3:30 p.m.      **Critical Hallmarks In The Survival And Proliferation Of Acute Lymphoblastic Leukemia**  
Jafer Aljorani and Joshua Owens, Biology
- 3:45 p.m.      **Investigating the Interplay between Toll-like Receptor 4 Signaling and Aryl Hydrocarbon Receptor Activity in Small Intestinal Epithelial Cells: Implications for Necrotizing Enterocolitis**  
Arlo Colvard and Kyle Brawner, Biology

**Paper Presentation IIB: McFarland 219**

**Chair:** *Dr. Kirsten Dodson, Associate Professor and Chair of Mechanical Engineering*

- 3:00 p.m.      **Thermodynamic analyses of FimH, an *E. coli* adhesin**  
Sidney Hinson, Antonious Mikael, and Brian Cavitt, Chemistry and Biochemistry
- 3:15 p.m.      **Development of a Cannabinoid Testing Method Using Blood Collection Cards and LC-MS/MS**  
Cora Coletti, Kennedy Brothers, Joy Osipchuk, Abigail Davis, and Matt Vergne, Pharmacy
- 3:30 p.m.      **The History of Cyclopropane Synthesis and Structural Analysis at Lipscomb University**  
David Saakov, and Kent Clinger, Chemistry and Biochemistry
- 3:45 p.m.      **Break**
- 4:00 p.m.      **Exploring Cloud Security Risks: Unprotected EC2 Instance Snapshots and S3 XSS Exploitation**  
Jeffrey Allen, and Ken Mayer, School of Computing
- 4:15 p.m.      **Invariant Rotation Experience Replay**  
Justice Roberts, and Juan Rojas, Engineering

## **Graduate Paper Presentation IIC: *Ezell 363***

**Chair:** *Dr. Richard Goode, Professor of History, Politics and Philosophy*

- 3:00 p.m.           **“The Strange, Heroic and Self-Sacrificing Acts of Woman in this Struggle for Our Independence”: Female Soldiers in Tennessee During the American Civil War**  
Erynn Barrett and Tim Johnson, History, Politics and Philosophy
- 3:15 p.m.           **Understanding China’s Influence in Latin America and Its Implications: A Case Study of Argentina, Cuba, and Venezuela**  
Kalliope Clayton and Scott Bledsoe, History, Politics, and Philosophy
- 3:30 p.m.           **AI Ethics: An Aristotelian Approach**  
Mary Mousa and Kimberly McCall, Law, Justice, and Society
- 3:45 p.m.           **How Should a Prison System Look Based on Democratic Ideology, and Why do we see Different Imprisonment Structures Between Established Democracies?**  
Emma Winters and Scott Bledsoe, Law, Justice, and Society
- 4:00 p.m.           **The Influence of Religiosity on the Sex Trafficking Trade in Southeast Asia**  
Macy Provance and Scott Bledsoe, Law, Justice, and Society
- 4:15 p.m.           **What is Income: The U.S. Taxation of Unrealized Income in the Moore vs United States Case**  
Karolina Podryadchikova and Bonnie Brown, Accounting, Finance and Economics

## **Paper Presentation IID: *Ezell 301***

**Chair:** *Dr. Brandi Kellet, Associate Professor and Chair of English and Modern Languages*

- 3:15 p.m.           **Lily’s Journey To Authenticity**  
Callie Horner and Jan Harris, English and Modern Languages
- 3:30 p.m.           **Negative Theology and “The End of the Affair”**  
Ashlynn Perry and Jan Harris, English and Modern Languages
- 3:45 p.m.           **The Catcher in the Rye and Post-COVID America**  
Abigail McQueen and Dana Chamblee Carpenter, English and Modern Languages
- 4:00 p.m.           **Austen’s Realist Feminine Icon**  
Sean McConnell and Kimberly Reed, English and Modern Languages

4:15 p.m.      **Psychological Prisoners of Social Conventions**  
**Nightwood**  
Sean McConnell and Jan Harris, English and Modern Languages

**2:00 p.m. – 4:30 p.m.**  
**Undergraduate Performances**

**Performances I: Poetry**, *John C. Hutcheson Gallery, Beaman Library*

**Chair:** *Prof. Steve Taylor, Assistant Professor of Cinematic Arts*

2:00 p.m.      **Altar of Ariadne O**  
Kearra Weiting, and Jan Harris, English and Modern Languages

2:10 p.m.      **Love and Dying in the Nuclear Age**  
Mac Chamberlain, and Jan Harris, English and Modern Languages

2:20 p.m.      **Drawing on Walls**  
Anna Camille Floyd, and Jan Harris, English and Modern Languages

2:30 p.m.      **Lucy and Dr. LeVert**  
Abigail McQueen, and Dana Carpenter, English and Modern Languages

2:40 p.m.      **Treehouse Child**  
Faith Adams, and Jan Harris, English and Modern Languages

**Performances II: Poetry**, *John C. Hutcheson Gallery, Beaman Library*

**Chair:** *Professor Rebecca Clark, Associate Professor and Chair of Social Work and Sociology*

3:00 p.m.      **Sermon of the Moan**  
Mar'a Harris, and Jan Harris, English and Modern Languages

3:10 p.m.      **This is Everything I Want to Say**  
Katherine Shell, and Jan Harris, English and Modern Languages

3:20 p.m.      **By Moon's Way**  
Layla Al-Sadoon, and Jan Harris, English and Modern Languages

3:30 p.m.      **Clairvoyance**  
Marin Brown and Jan Harris, English and Modern Languages

3:40 p.m.      **Biomimicry**  
Abigail Miller, and Jan Harris, English and Modern Languages

**Performances III: Music and Theatre, Collins Auditorium**

**Chair:** *Dr. Christopher Bailey, Visiting Professor of Music*

3:00 p.m.      **Amarilli Mia Bella**  
Kathryn Lee Williamsen and Jenny Snodgrass, Music

3:15 p.m.      **Shorten Performance of Lipscomb Theatre's I and You**  
Justice Orrand and Beki Baker, Theatre

3:30 p.m.      **Haydn Trumpet Concerto in E flat**  
Elizabeth Lundy and Jenny Snodgrass, Music

3:45 p.m.      **Beethoven's Fifth Symphony Motif in his Piano Sonatas**  
Matthew Martin and Jerome Reed and Jenny Snodgrass, Music

**2:00 – 4:40 p.m. • Concurrent Sessions**  
**Graduate Students Presentations**

**Graduate Paper Presentations I: Ezell 147, Ezell Board Room**

**Chair:** *Dr. Marc Schwerdt, Associate Professor and Chair of History, Politics, and Philosophy*

2:00 p.m.      **The Divine Imaging of a Processual Convert: Propaganda and Identity in the Constantinian Cityscape of Rome**  
James Gilbert, and Tom Davis, Archaeology

2:20 p.m.      **Forsaking Eden: Proposed Reflections on Tyre & God's Temple in Ezekiel 28**  
Scott S. Huff, and Steven Ortiz, Archaeology

2:40 p.m.      **The Reliability of Josephus' Account of the Mass Murder-Suicide at Masada**  
Emma Augustin, and Mark Janzen, Archaeology

**Graduate Paper Presentations II: Ezell Chapel, Ezell 241**

**Chair:** *Dr. William Turner, Distinguished Professor, Provost's Office*

- 2:00 p.m.      **The Effect of Heterogeneous Grouping on Language Proficiency and Engagement**  
Michael Bartus and Lonnie Cochran, Education
- 2:20 p.m.      **Imposter Syndrome, Gender, and Personality in Varying Levels of Academia**  
Gracen Kelly, and A.J. Heritage, Psychology, Counseling & Family Science
- 2:40 p.m.      **Losing the Lost Cause: The Role of Conflict in Overcoming Identity-based Beliefs Formed through Southern Racist Propaganda**  
Abby Bell and Scott Bledsoe, Conflict Management
- 3:00 p.m.      **Break**
- 3:10 p.m.      **Toward a Catholic Vision of Accounting**  
Juan David Barajas, and Tim Creel, Accounting
- 3:30 p.m.      **Evaluating the Influence of an Active Learning Community on the Dimensions of Belonging in First and Second Year Pharmacy Students**  
Madeline DiCenso and Sarah Collier, Pharmacy
- 3:50 p.m.      **The Enneagram: A Qualitative Outlook using Thematic Analysis to Find One's Congruency to their Number**  
Andrew O'Dwyer and Damian McClintock, Psychology, Counseling and Family Science

**4:30 – 5:45 p.m. • Shinn  
Reception and Awards Ceremony**

**Chair:** *Dr. Brandon Banes, Associate Professor of Mathematics*

**Presentation of Awards:** *Dr. Jennifer Shewnmaker, Provost*

**Closing Remarks:** *Dr. Florah Mhlanga, Associate Provost of Undergraduate Academic Affairs*

**Announcement of Outstanding Student Presenters**

**Undergraduate Oral Presenters:** *Dr. Kirsten Dodson, Associate Professor and Chair of Mechanical Engineering*

**Undergraduate Poster Presenters:** *Dr. Kyle Brawner, Assistant Professor of Biology*

**Graduate Oral Presenters:** *Dr. Sarah Graff, Assistant Professor of Pharmacy*

**Graduate Poster Presenters:** *Dr. Brandon Banes, Associate Professor of Mathematics*



6:00 p.m. • Ezell 147  
McClure Lectureship

**McClure Faith and Science Lecture: Can a Christian be an Environmentalist?**

*Dr. Sandra Richter, Professor and Robert H. Gundry Chair of Biblical Studies, Westmont College*

Dr. Sandra Richter, the author of *Stewards of Eden: What Scripture Has to Say About the Environment and Why It Matters* (IVP 2020), is the Robert H. Gundry Chair of Biblical Studies at Westmont College. Richter earned her PhD from Harvard University's Near Eastern Languages and Civilizations Department and her MA in Theological Studies from Gordon-Conwell Theological Seminary. She has taught at Asbury Theological Seminary, Wesley Biblical Seminary, and Wheaton College, and due to her passion for the "real space and time" of the Bible has spent many years directing historical geography and field archaeology programs in Israel. Richter is best known in the Academy for her work on the book of Deuteronomy and the Deuteronomistic History. In the Church, she is known for *The Epic of Eden: A Christian Entry into the Old Testament* (IVP 2008) and the video curriculums stemming from the project (HarperCollins and Seedbed). She is broadly published on environmental theology and is a sought after and respected speaker in academic and popular settings.



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Dr. Kristin Baese • Dr. Kyle Brawner

Faculty Mentors • Student Presenters  
Symposium Sessions Chairs and Co-Judges • Sodexo and Lipscomb Dining  
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