

**T** UNDERGRADUATE RESEARCH & FELLOWSHIPS

*26th  
annual*

# EURēCA

Exhibition of Undergraduate Research and Creative Achievement



**April 25, 2022**

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**W**elcome to the University of Tennessee's 26th annual Exhibition of Undergraduate Research and Creative Achievement (EURēCA)! This event honors original and creative works completed by undergraduate students as the highlight of Research Week events and celebrations. The Office of Undergraduate Research and Fellowships coordinates this unique competitive showcase to encourage, support, and reward undergraduate participation in the campus research enterprise. Participating in campus research empowers students to produce original work, develop and cultivate faculty mentoring relationships, enhance their resumes, become more competitive when applying to graduate school, and lay the groundwork for prestigious fellowships. EURēCA continues to expand its opportunities to participate. We are excited to host the in-person exhibit in addition to an online interactive database, and are proud of our students' resilience during this time as they adjust to an ever-changing landscape. The diverse array of exhibits and performances highlights a broad range of endeavors and approaches, including both individual and collaborative efforts, as well as research produced both within and outside the classroom. Student research posters can be viewed in our online symposium at [symposium.foragerone.com](https://symposium.foragerone.com).

Awards are provided by colleges for college and divisional awards. The Office of Undergraduate Research and Fellowships recognizes student achievement across the colleges. This event would not be possible without the hard work of many individuals. We send a big thank you to our division representatives in organizing the participants from their areas and to our judges for all of their hard work in selecting this year's winners.

We would especially like to thank each of you for taking the time to visit the event, engage with the students, and support the excellent undergraduate research and creative activity at the University of Tennessee, Knoxville. If you would like to become more involved in undergraduate research, I encourage you to take advantage of our enhanced institutional membership of the Council on Undergraduate Research as well as contact our office for information on how to get started.

Sincerely,

The University of Tennessee  
Office of Undergraduate Research and Fellowships

# EURēCA

## ***Exhibition of Undergraduate Research & Creative Achievement***

We are excited to bring back the in-person showcase of research while continuing to showcase research posters and video presentations online at [symposium.foragerone.com](https://symposium.foragerone.com). Although the global COVID-19 pandemic has presented a challenging landscape, our students continued their pursuit of knowledge and creative works, and we are proud of their resilience and flexibility. Their research covers many different disciplines, from music to mechanical engineering to stock market studies, and are categorized into the following judging divisions:

College of Architecture and Design  
College of Architecture and Design, School of Design  
College of Arts and Sciences, Humanities  
College of Arts and Sciences, Natural Sciences  
College of Arts and Sciences, Social Sciences  
College of Arts and Sciences, Visual and Performing Arts  
College of Arts and Sciences, School of Music  
College of Education, Health, and Human Sciences  
College of Nursing  
College of Social Work  
Haslam College of Business  
Herbert College of Agriculture  
Tickle College of Engineering

# ***Exhibition of Undergraduate Research and Creative Achievement***

## 2022 Division Representatives

Larry McKay  
College of Arts &  
Sciences

Kristina McCue  
College of Arts & Sciences,  
Honors English 298

Hollie Raynor  
College of Education,  
Health,  
and Human Sciences

Tyler Wall  
College of Arts &  
Sciences,  
Social Sciences

Paul Lee  
College of Arts & Sciences,  
School of Art

Kevin Kit  
Tickle College of  
Engineering

Jeremiah Johnson  
College of Arts &  
Sciences,  
Natural Sciences

Tracy Moir-McClean  
College of Architecture &  
Design

Brent Lamons  
Herbert College of  
Agriculture

Elias Fernandez  
College of Arts &  
Sciences,  
Natural Sciences

Cary Staples  
College of Architecture &  
Design, School of Design

Bill Nugent  
College of Social Work

Stefanie Ohnesorg  
College of Arts &  
Sciences,  
Humanities

Suzie Allard  
College of Communication  
and Information

Beth Meko  
College of Communication  
and Information

Virginia Fowler  
College of Nursing

Gina DiSalvo  
College of Arts & Sciences,  
Department of Theatre

Kathleen Thompson  
College of Nursing

*Thank you to all of our division representatives who put in countless hours to make this event a success!*

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Office of Undergraduate Research and Fellowships

**Andrew Seidler, Director**  
**Erin Darby, Faculty Director**  
**Laura DeFurio, Assistant Director**  
**Janna Caspersen, Assistant Director**  
**RK Fauth, Writing Specialist**  
**Julianna Tullos, Program Coordinator**  
**Mari LaCure, Administrative Specialist**  
**Sandra Wairimu, Graduate Assistant**

# ***Exhibition of Undergraduate Research and Creative Achievement***

2022

## **Schedule of Events**

### **Monday, April 25**

4:30 p.m. – 5:00 p.m. EURēCA Kickoff:

Vice Provost for Student Success Amber Williams,  
Provost John Zomchick,  
and URF Staff

*Pilot Flying J Ballroom*

5:00 p.m. – 8:00 p.m. Exhibition opens for judging and viewing

*Pilot Flying J Ballroom*

### **Monday, May 2**

5:30 p.m. – 7:00 p.m. EURēCA Awards Ceremony

EURēCA Division Representatives,  
and URF Staff

*Alumni Memorial Building*

We invite you to view the research posters from this year's event at  
[symposium.foragerone.com](https://symposium.foragerone.com)

# EURēCA 2022

## College of Architecture and Design

### **#3 An Introduction to Representing Non-Euclidean Spaces**

Presenter: Shakori Carpenter  
Mentor: Tracy W. Moir-McClean

### **#4 Ford Automotive Experience Center**

Presenters: Zachary Dulin,  
Nicholas van Son, Michael Jenks  
Mentor: Hansjoerg Goeritz

### **#5 Cone's Camp & Residency**

Presenters: Carson Fischer,  
Hannah Lessem, Hector  
Carrera Miranda  
Mentor: Katherine Ambroziak

### **#6 A Design Guideline for Humanity in Extreme Environments**

Presenter: Erin Ganserer  
Mentor: Milagros Zingoni

### **#7 Architectural Reuse and the Welfare Institutions of Late Antique Rome**

Presenter: Zachary Graham  
Mentor: Gregor Kalas

### **#8 The Biotic Machine: WHO Headquarters**

Presenters: Sarina Hermanto,  
Elijah Hale, Rose Crawford  
Mentor: Brian Ambroziak

### **#9 Breaking Barriers**

Presenters: Lauren Johnson,  
Mary Catherine McGovern,  
Hannah Phillips  
Mentor: Katherine Ambroziak

### **#10 Immigrants & Urbanism: Perspectives into Ethnic Enclave's History - Chinatown**

Presenter: Singwei Ling  
Mentor: Hochung Kim

### **#11 Spatial Echelons: An Exposé on Power in the Built Environment**

Presenter: Sarah Lloyd  
Mentor: Jennifer Akerman

### **#12 Middlesboro Masterplan**

Presenters: Gunner Martin,  
Logan Guidera, Emily Slappy,  
Kayla Moretti  
Mentor: Katherine Ambroziak

### **#13 R.I.I.V.E.R.**

Presenters: Joanna Martin,  
Jacob Rabideau, Olivia  
Campbell, Emily Swarzenberg  
Mentor: Katherine Ambroziak

### **#14 Patchwork Colossus**

Presenters: Briley Houston,  
Edyn McCarty, Tyler Trent  
Mentors: Katherine Ambroziak,  
David Matthews

### **#15 The Appalachian Spark**

Presenters: Perto Michel,  
Austyn balcom, Rebecca Neale,  
Madison Leebrick  
Mentor: Katherine Ambroziak

### **#16 W.H.O. STATION**

Presenters: Jakob Mikres,  
Kathleen Rice, Mary Powers,  
James Casey  
Mentor: Brian Ambroziak

### **#17 Death Valley Motel**

Presenter: Gina Nguyen  
Mentor: Brian Ambroziak

### **#18 Spatial Ebonics: Redefining Identity through the exploration of Black Space and Architectural Language**

Presenter: Gianna Noel  
Mentor: Jennifer Akerman

### **#19 The Unfamiliar Familiar: An Exploration into the Architectural Uncanny**

Presenter: Jessica Peters  
Mentor: Jennifer Akerman

### **#20 What are the inhabitable characteristics of Prehistoric caves, dwellings, and settlements that can be applied to modern-day architectural design?**

Presenter: Olivia Robbins  
Mentor: Marie Saldaña

### **#21 Impact! An exploration of Urban Ecosystems**

Presenter: Sophia Spock  
Mentor: Jennifer Akerman

### **#22 Design-Build STEAM Trailer: Partnering with 6th Graders as Co-designers**

Presenters: Elizabeth Tondreau,  
Jacob Abdu, Autumn Hanks,  
Emily Roach  
Mentor: David Matthews

### **#23 Thickening the Membrane: Integrating lightweight sheet material and extruded plastics to refine modular additive construction techniques**

Presenters: Nicholas Van Son,  
Matthew Baumgartner, Trey  
Robbins, Cayden Masters, Jonah  
Zahn, Stephen Kelley, Evan  
Filson  
Mentor: Marshall Prado



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## **#24 Guerrilla Museology: By All Means Necessary**

Presenter: Brendan Wallace  
Mentor: Jennifer Akerman

## **#25 Hill Hub: A Strategy for Supporting Appalachian Neighborhood Connectivity**

Presenters: Bradford Webster, Rebecca Mull, Mary Grace Shuttleworth, Emily Roach  
Mentor: Katherine Ambroziak

## **#26 Mend: Redefining the Appalachian Holler Through Interconnecting Family and Place**

Presenters: Camryn Weekly, KariBeth Propes, Christina Cenicerros  
Mentors: David Matthews, Katherine Ambroziak

## **#28 Bee Aware**

Presenters: Kennedy Davis, Ché Davis  
Mentor: Cary Staples

## **College of Architecture and Design, School of Design**

## **#29 The Future of Human Ecosystems**

Presenter: Gabriel Eckstein  
Mentor: Cary Staples

## **#30 Coping**

Presenter: Leah Falin  
Mentors: Cary Staples, Susan Kalisz

## **#31 Coping Companion: Anxiety Tracking App**

Presenter: Jua Im  
Mentor: Cary Staples

## **#32 Eco-Chess**

Presenters: Victoria Wheelock, Jacqueline Juneau, Jacob Hirschmann  
Mentor: Cary Staples

## **#33 Savor the Invasion**

Presenter: Kailey Kear  
Mentor: Cary Staples

## **#34 Fantasy Flora Warfare**

Presenter: Howard Mosby  
Mentor: Cary Staples

## **#35 Plant Smack**

Presenter: Abigail Ramirez  
Mentors: Dr. Susan Kalisz, Cary Staples

## **#36 NUDNIK**

Presenter: Matt Rightsell  
Mentor: Cary Staple

## **#37 Sundry**

Presenters: Julie Simpson, Henry Dunning, Avery Jones  
Mentor: Professor Cary Staples

## **#38 Design in the World of VR Gaming**

Presenter: Casey Taylor  
Mentor: Cary Staples

## **#39 Golden Garden**

Presenter: Ashleigh Williams  
Mentor: Cary Staples

## **College of Arts and Sciences, Humanities**

## **#40 Reproductive Rights, Racism, and Nationalism in Modern Israel**

Presenter: Inshira Bediako  
Mentor: Dr. Helene Sinnreich

## **#41 Vikings, Anglo-Saxons, and England: The Germanic revival of the 9th, 10th, and 11th centuries**

Presenter: Amanda Boeing  
Mentor: Dr. Scott Mackenzie

## **#42 Haredi (Ultra-Orthodox Jewish) Women's Fine Art in Israel**

Presenter: Emily Constantin  
Mentor: Helene Sinnreich

## **#43 'Buy Jewish' and 'Buy American': Consumer Nationalism and Evangelical Holy Land Pilgrimage**

Presenter: Daniel Dassow  
Mentor: Dr. Helene Sinnreich

## **#44 Peers, Professors, and Passersby: Antisemitism and Antizionism on College Campuses Across America**

Presenter: Leah Faupel  
Mentor: Helene Sinnreich

## **#46 Zionism as a Religious and Cultural Movement**

Presenter: Chad Larkin  
Mentor: Helene Sinnreich

## **#47 Contemporary Challenges and Changes to Traditional Models of Haredi Education**

Presenter: Elizabeth Plant  
Mentor: Helene Sinnreich

## **#48 The Legality of and Reason for Balfour Declaration**

Presenter: Aaron Norton  
Mentor: Helene Sinnreich

## **#49 Zionism's Masada: The Myth versus the Archaeology**

Presenter: Madison Smith  
Mentor: Helene Sinnreich



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## **#50 The Political Nature of Trade in the Israel-Palestine Conflict**

Presenter: Austin Tallent  
Mentor: Dr. Helene Sinnreich

## **#51 Prosodic Variation Between Autistic and Allistic Individuals By Gender**

Presenter: Isabelle Toth  
Mentor: Dr. Jessica Grieser

## **#52 Israel's Silent Holocaust Survivors**

Presenter: Jennifer Ware  
Mentor: Helene Sinnreich

## **College of Arts and Sciences, Natural Sciences**

## **#54 Cytoplasmic Chemoreceptors Modulate Chemotaxis Sensitivity in *Azospirillum brasilense***

Presenter: Mustafa Abdulhussein  
Mentors: Elena Ganusova, Gladys Alexandre

## **#55 Investigating biofilm formation in a nematode-bacterium symbiosis**

Presenter: Omar Alani  
Mentor: Dr. Jenny Heppert

## **#56 Phylogenetic Analysis of Shifts in Sponge Skeletal Complexity**

Presenter: John Anderson  
Mentor: Brian O'Meara

## **#57 Abundance of Pollinators Associated with Plant Traits**

Presenter: Sydney Baldwin  
Mentor: Laura Russo

## **#58 Post-fire Endophyte Succession in Table Mountain Pines**

Presenter: Findlay Black  
Mentor: Dr. Karen Hughes

## **#59 Synthesis of Symmetric Water Soluble N-Heterocyclic Carbene Ligands for AuNPs**

Presenter: Rowan Borsari  
Mentor: Dr. David Jenkins

## **#60 Deep Learning algorithms aid in identifying movement kinematics important for pup retrieval behavior**

Presenter: Benjamin Bridges  
Mentor: Dr. Keerthi Krishnan

## **#61 Synthesis of C2-symmetric Chiral Diimidazoles for NHC Macrocyclic Construction for Catalytic Applications**

Presenter: Henry Brothers  
Mentor: Dr. David Jenkins

## **#61 Comparison of Methane and Sulfur Cycling in Cape Lookout Bight and White Oak River Estuary**

Presenter: Gage Coon  
Mentor: Karen G. Lloyd

## **#62 Exploring Noncovalent Interactions of Molecular Models of Van der Waals Heterostructures**

Presenter: Carmen Brown  
Mentor: Konstantinos D. Vogiatzis

## **#64 The characterization of synchronous two-state probabilistic cellular automata**

Presenter: Garrett Byrd  
Mentor: Dr. Vitaly Ganusov

## **#65 See "Agricultural Land Use Affects the Body Size of Some Bees" on page 24, column 3**

## **#67 Raman Spectroscopic Characterization of UV Degraded Emulsion Lotions with and without Protective Additives**

Presenter: Isabelle Dancer  
Mentor: Bhavya Sharma

## **#68 Tracking of genetically modified bacterial symbiont from the pea aphid to post-infection fungal spores**

Presenter: Yazmin De anda Acosta  
Mentor: Benjamin J. Parker

## **#69 Investigating Changes in Canopy Cover and Tree Community Composition in High Elevation Ecosystems in the Great Smoky Mountains National Park**

Presenter: Susanna Diamond  
Mentor: Jessica M Budke

## **#70 Effect of Ethylene in Biofilm Formation in *Azospirillum brasilense***

Presenter: Lauren Donnelly  
Mentor: Brad Binder

## **#71 Plasmid Stability in *Sulfitobacter pontiacus* CB-D**

Presenter: Hannah Edwards  
Mentor: Alison Buchan

## **#72 Effects of herbivory and increased temperatures on photosynthetic rates of *Viola rostrata***

Presenter: Drew Freshour  
Mentor: Dr. Susan Kalisz

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## **#73 Isolated Microbes from a Briny Antarctic Ocean Worlds Analog**

Presenter: Kristen Holbrook  
Mentor: Dr. Jill Mikucki

## **#74 Experimental Evidence For Liquid Iron Alloy Flotation On Silicate Melt**

Presenter: Noah Hooper  
Mentor: Nick Dygert

## **#75 A Mathematical Model of Biomolecular Treadmilling Dynamics**

Presenter: Victoria Howard  
Mentor: Ioannis Sgouralis

## **#76 Fast and comprehensive analysis of perineuronal net expression across the whole brain**

Presenters: Sami Isaac, Miranda Blevins, Sarah Perez  
Mentor: Keerthi Krishnan, PhD

## **#78 Drug Discovery for Polycystic Kidney Disease**

Presenter: Austin Jernigan  
Mentor: Dr. Nicholas Smith

## **#79 Reducing Perineuronal Nets in Primary Somatosensory Cortex Rescues Pup Retrieval Behavior in Female Mouse Model of Rett Syndrome**

Presenter: Beyza Kartal  
Mentor: Keerthi Krishnan

## **#80 Molten Ferrofluid**

Presenters: Ellie Kim, Dianna Nguyen  
Mentor: Sheng Dai

## **#81 Quantifying Movement Kinetics of Plasmodium Sporozoites in Skin**

Presenters: Anderson King, Kailynn Deck  
Mentor: Vitaly Ganusov

## **#82 Exploring the Role Ethylene has on Growth and Metabolism in Azospirillum brasilense**

Presenter: Josie King  
Mentor: Scott Carlew

## **#83 The Future of Forest Wildflowers: How Climate Warming and Herbivory Affect Growth and Reproduction of the Long-Spurred Violet**

Presenter: Nicholas Koziol  
Mentor: Susan Kalisz

## **#84 Plant-neighbor interactions of a native goldenrod impact richness and composition of pollinator communities**

Presenter: Emma Kruse  
Mentor: Jennifer Schweitzer

## **#85 Impact of Conformational Restriction on Tetraazacyclododecane Ligands for Atom Transfer Radical Polymerization**

Presenter: Nick Legaux  
Mentor: Brian Long

## **#86 The Untold Story of Mouse Insulin 1 & Insulin 2**

Presenter: Connor Long  
Mentor: Thanh Do

## **#87 Identifying Novel Genes Regulating Leaf Initiation and Meristem Size Through an Enhancer Genetic Screen**

Presenter: Bethany Lunsford  
Mentor: Dr. Elena Shpak

## **#88 Within-Host Mathematical Modeling of Influenza A and B Viral Dynamics During Treatment**

Presenter: John Maddox  
Mentor: Dr. Vitaly Ganusov

## **#89 Age dependent tactile sensory deficits in a female mouse model of Rett syndrome**

Presenter: Alexandra McBryar  
Mentor: Keerthi Krishnan

## **#90 Teamwork makes infections work: Investigating different models of viral cooperativity**

Presenter: Joshua Miller  
Mentor: Vitaly V. Ganusov

## **#92 Extracellular enzyme activities and mineralogy of thawing permafrost soils near Ny Alesund, Svalbard**

Presenter: Cheyenne Mireles  
Mentor: Andrew Steen

## **#93 Examining Gut-Brain Axis Interactions Through Entomopathogenic Nematodes and Their Bacterial Endosymbionts**

Presenter: Tyler Myers  
Mentor: Dr. Heidi Goodrich-Blair

## **#94 Single-Molecule Studies on DNA Bending by Transcription Factor Protein Sox2**

Presenter: Chandni Naidoo  
Mentor: Dr. Rajan Lamichhane

## **#95 Fungal communities may mediate aboveground biomass in increasingly diverse plant communities**

Presenter: Alivia Nytko  
Mentor: Dr. Jen Schweitzer

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**#96 Investigating evolutionary relationships between moss species in the genus Fissidens using DNA sequence data from herbarium specimens**

Presenter: Amy Okafor

Mentor: Dr. Jessica M. Budke

**#97 See "Substance Use is More than a Test" on page 10, column 3**

**#98 Activated CD8 T cells perform persistent random walks and not Levy walks in the brain**

Presenter: Dhruv Patel

Mentor: Vitaly Ganusov

**#99 Evolution of bud break phenology in Populus angustifolia driven by climatic variation**

Presenter: Katherine Reed

Mentor: Jennifer Schweitzer

**#100 Rapid and Improved Surface Passivation Method for Single-Molecule TIRF Experiments**

Presenter: Anthony Rios

Mentor: Rajan Lamichhane

**#101 Deep Tissue Detection of N-Heterocyclic Carbene Gold Nanoparticle Probes With SESORS**

Presenters: Nicholas Robins, Quen Deckbar, Tarek Atyia, Lillian Mooney

Mentor: Bhavya Sharma

**#102 The Effect of Meteoric Fluids on Deformation in the Cordillera Blanca Shear Zone**

Presenter: Lena Schwebs

Mentor: Micah Jessup

**#103 Investigation into the Identity and Function of Ruegeria pomeroyi DSS-3 Pigment Production**

Presenter: Taylor Smith

Mentor: Alison Buchan

**#104 Encoding Angular Information in Persistent Images for Machine Learning Algorithms**

Presenter: Jacob Steeley

Mentor: Dr. Konstantinos D. Vogiatzis

**#105 Identification of Optimal Affinity Tag for C. albicans Cho1 Protein Purification**

Presenter: Jawhar Syed

Mentor: Todd Reynolds

**#106 Genetic Analysis of a Sequence Motif in DNA Elimination**

Presenter: Vincent Terta

Mentor: Jianbin Wang

**#107 Exploring Mu-Opioid Receptor Dynamics Using Single-Molecule Fluorescence**

Presenter: Raegan Van Wirt

Mentor: Dr. Rajan Lamichhane

**#108 Biochemical role of the plant GCN2-eIF2 $\alpha$  module in mRNA ribonucleoprotein particle homeostasis**

Presenter: Lindsey Young

Mentor: Albrecht von Arnim

## College of Arts and Sciences, Social Sciences

**#97 Substance Use is More than a Test**

Presenter: Madison Owens

Mentor: Erin Darby

**#109 Does mixed-species flock size and composition influence foraging and calling under risky contexts?**

Presenter: Colton Adams

Mentor: Todd Freeberg

**#110 Influence of Speaker Type and Group Child Care Experience on Word Learning in Toddlers**

Presenters: Reva Bagi, Makenzie Sims, Noah Bosilca, Sadira Austin

Mentors: Jessica Hay, Daniela Santos Oliveira

**#111 Interrupting Dynamics: How the Supreme Court's Switch to Teleconferences During COVID Altered Patterns of Interruptions**

Presenter: Gavin Buehring

Mentor: Dr. Kirsten Widner

**#112 Exploring Early Colonial Animal Management Practices in Virginia: A View from Coan Hall**

Presenter: Keri Burge

Mentor: Anneke Janzen

**#113 The Impact of Inattention and Working Memory Difficulties on Children's Social Functioning and Friendships**

Presenter: Alyssa Cooley

Mentor: Jennifer Bolden Bush

# EURēCA 2022

## **#114 Connection between Sleeping Habits and Academic Success in times of a Global Pandemic**

Presenter: Zachary Coover  
Mentor: Dr. Lance Dean

## **#115 An Assessment of the Dynamics of Social Play in Syrian Hamsters**

Presenter: Leila Hennon  
Mentor: Matthew Cooper

## **#116 The Archaeology of 17th-century Conflicts along the Potomac River: A Case Study from Coan Hall**

Presenter: Axel Huichapa  
Mentor: Dr. Barbara J. Heath

## **#117 Alcohol use moderates the association between coercive sexting and intimate partner violence perpetration**

Presenter: Mary Jensen  
Mentors: Dr. Gregory Stuart,  
Alisa Garner

## **#118 The Effects of Caffeine Usage at Different Times of the Day on Sleep Quality**

Presenters: Alysia Kang,  
Jacqueline Gonzalez, Andrea  
Mcdowell  
Mentor: Hollie Pellosmaa

## **#119 Scientific Patterns of Behavior and Neural Activity in Female Syrian Hamsters Following a Stressful Event**

Presenter: Jessica Kearney  
Mentor: Matthew Cooper

## **#120 The Effects of Social Play on Stress-Induced Anxiety**

Presenter: Benjamin Kilgore  
Mentor: Matthew A. Cooper

## **#121 A Chinese Olive Branch to the West: The Promising Tropical Island, Hainan**

Presenter: Peibo Li  
Mentor: Dr. Wonjae Hwang

## **#122 The development of tone discrimination in infancy: An online adaptation**

Presenters: Ashlynn Malone,  
Sophia Diorio, Chloe Fleenor,  
Alyssa Lee, Juliana White  
Mentor: Jessica Hay

## **#123 Neural Activation During Semantic Category Learning: An fNIRS Study of Language Lateralization in Children and Adults**

Presenter: Alexis McCraw  
Mentor: Aaron Buss

## **#124 Summary statistics for simultaneous tornado and flash flood (TORFF) warnings to analyze their general behavior and dynamics**

Presenter: Zachary Medley  
Mentor: Dr. Kelsey Ellis

## **#125 Investigation of the Ectocranial Squamosal Suture to Estimate Age-at-Death**

Presenter: Navit Nachmias  
Mentor: Dr. Joanne Devlin

## **#126 Exploring the Effect of Alcohol Use and Benevolent Childhood Experiences on the Relation Between Borderline Personality Disorder Symptoms and Intimate Partner Violence Perpetration**

Presenter: Krissy Paradissis  
Mentor: Dr. Gregory Stuart

## **#127 Who Sets the Human Rights Agenda?**

Presenter: Nolan Ragland  
Mentor: Dr. Jon Ring

## **#128 Black Feminist History Timeline**

Presenter: Isabella Reed  
Mentor: Dr. Danielle Procope  
Bell

## **#129 A Neurophysiological Investigation of Listening Effort in Normal Hearing Adults using fNIRS and Pupillometry**

Presenter: Jubin Son  
Mentor: Caglar Tas

## **#130 "It feels like nobody's watching me!" A Case Study of Readers' Theatre with African Immigrant and Refugee Students**

Presenter: Denee Stewart  
Freeman  
Mentor: Deborah Welsh

## **#131 What are the Effects of Gonadal Steroid Hormones on the Presence of Perineuronal Nets in the Ventromedial Hypothalamus in c/57 Mice?**

Presenters: Courtney Tolbert,  
Micah Igot  
Mentor: Kalynn Schulz

## **College of Arts and Sciences, Visual and Performing Arts/ Music**

## **#132 Callaway: Examining the Present with the Past**

Presenter: Emily Pope  
Mentor: Dr. Gina Di Salvo

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## College of Arts and Sciences, School of Music

### **#133 An analysis on the compositional techniques of Donkey Kong Country and Donkey Kong 64**

Presenter: Garrett Byrd  
Mentor: Dr. Brendan McConville

### **#134 Notes About Nothing: Seinfeld and the End of the Sitcom Theme Song**

Presenter: Alan Cook  
Mentor: Dr. Nathan Fleshner

## College of Education, Health, and Human Sciences

### **#135 Hydration and Health: College Student Behaviors and Priorities**

Presenter: Jacob Altmock  
Mentor: Dr. Sarah Colby

### **#136 Navigating Hidden Hunger: An Exploratory Analysis of the Lived Experience of Food Insecurity Among College Students**

Presenters: Ashlyn Anderson, Jacqui Lazarus  
Mentor: Betsy Anderson Steeves

### **#137 Food acquisition behavior for those at-risk for food insecurity at the beginning of the COVID-19 pandemic**

Presenter: Sydney Bernard  
Mentor: Dr. Sarah Colby

### **#138 Demographic characteristics of women reporting higher stress at the beginning of the COVID-19 pandemic.**

Presenter: Hanna Boshnag  
Mentor: Dr. Sarah Colby

### **#139 BetterBus**

Presenters: Karrie Bowen, James Tatum, Laura Gullledge  
Mentor: Yolanda Kirkpatrick

### **#140 Genetic Ablation and Pharmacological Inhibition of Soluble Epoxide Hydrolase in the $\beta$ -Cells Enhance Glucose-Stimulated Insulin Secretion**

Presenters: Cole Bozeman, Kerrigan Magnus  
Mentor: Ahmed Bettaieb

### **#141 Moms and Vaccines: A Cross-Sectional Survey Assessing COVID-19 Vaccine Acceptance During Pregnancy**

Presenter: Sara Burnette  
Mentor: Samantha Ehrlich

### **#142 Regulation of thermogenic adipogenesis via the PKM2/ $\beta$ -catenin axis**

Presenter: Jenna Demeter  
Mentor: Ahmed Bettaieb

### **#143 Reduce, Reuse, Recreation: Redesigning Local Playgrounds for a Sustainable Future**

Presenters: Courtney Drennen, Daniel Blackburn, Austin Marsh  
Mentor: Yolanda Kirkpatrick

### **#144 Ginsenoside-Rc Alleviates Palmitate-Induced Cell Injury in Primary Cochlear Cells**

Presenter: Nick Gill  
Mentor: Dr. Ahmed Bettaieb

### **#145 Who was more likely to become less active at the beginning of COVID-19?**

Presenter: Jacob Hahn  
Mentor: Dr. Sarah Colby

### **#146 Demographic Characteristics of Individuals Experiencing Changes in Stress and Boredom Eating Habits During the COVID-19 Pandemic**

Presenter: Rhea Joshi  
Mentor: Sarah Colby

### **#147 W3Design Homes**

Presenters: Janyia Joyner, Sarah Jennings, Benjamin Bridges  
Mentor: Yolanda Kirkpatrick

### **#148 A Case Study: acute continuous interstitial glucose measurements during various types, intensities, and durations of exercise in a Type I diabetic.**

Presenter: Valeria Lozano  
Mentor: Jessica Kutz Fleming

### **#149 Novel Insights into the Role of Soluble Epoxide Hydrolase in Adipogenesis**

Presenters: Caroline Macfee, Eduardo Villalobos  
Mentor: Ahmed Bettaieb

### **#150 Hazing and Leadership: Do student leaders have the ability to break the cycle?**

Presenter: Dariana Martre  
Mentor: James Williams



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## **#151 Supporting Science Teacher Learning through Capturing and Selecting Video of One's Own Classroom**

Presenter: Brandon Meadows  
Mentor: Dr. Elizabeth Dyer

## **#152 Merchandising Strategies for the Big Orange Pantry**

Presenter: Madison Morgan  
Mentors: Dr. Michelle Childs, Dr. Christopher Sneed

## **#153 Play and the Built Environment**

Presenter: Hannah Morris  
Mentors: Dr. Margaret Quinn, Michael Camponovo

## **#154 Vaccination Behavior and Beliefs in Individuals with Pregnancy Hyperglycemia**

Presenter: Emily Olatt  
Mentor: Samantha Ehrlich

## **#155 Adults with Chronic Disease and Older Adults, Regardless of Chronic Disease Status had Increased Stress and Worry at the Beginning of COVID**

Presenter: Chloe Potter  
Mentor: Sarah Colby

## **#156 Impact and Implementation of a Structured Phonological Awareness Intervention for Children who Benefit from AAC: Picture Validation Test**

Presenter: Isabelle Toth  
Mentor: Dr. Jillian McCarthy

## **#157 The Relationship between Working Memory and Speech in Noise**

Presenter: Alexis Williams  
Mentor: Dr. Eun Jin Paek

## **#158 A Systematic Review of Sexual Consent Education Research**

Presenter: Nikki Williams  
Mentor: Spencer Olmstead, Ph.D.

## **#159 Redesigning the Outdoor Water Fountain Infrastructure on UTK's Campus to make water access more equitable.**

Presenters: Max Workman, Reese Taylor, Patsy Donahue  
Mentor: Yolanda Kirkpatrick

## **#160 Effects of a 17,18-EEQ stable analog on murine brown adipocyte differentiation**

Presenter: Haoying Wu  
Mentor: Ling Zhao

## **College of Nursing**

## **#161 Are you healthy or not? Trends in health practices amongst those with a difference in their health perception and general health status**

Presenters: Saahit Adabala, Colten Carver  
Mentor: Dr. Patricia Roberson

## **#162 Effects of Increased Companionship on Decreasing Loneliness and Depression in the Elderly Population**

Presenters: Karlee Anderson, Crimson Sanders  
Mentor: Gail A. Griffith, MSN, RN, CHSE

## **#163 The effects of age, gender, race, and socioeconomic status on Covid-19 vaccine hesitancy in adults in the United States: A review of the literature**

Presenter: Noah Anderson  
Mentor: Dr. Koijma

## **#164 Girl Scouts of the Southern Appalachians Engagement through COVID-19**

Presenters: Abigail Baker, Ellie Williams, Kaitlyn Weeden  
Mentor: Cindi Adams

## **#165 Effect of Diet Modifications on ADHD Behaviors in Children and Adolescents**

Presenters: Annalee Baldwin, Chloe Siscoe, Jaiden Kraft, Abigail Taylor  
Mentor: Katherine Morgan

## **#166 The Effects of Consistent Exercise on the Mental Health of Adolescents**

Presenters: Laurel Barrentine, Lauren Irvine  
Mentor: Frank Thomasson



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## **#167 Maternal Prenatal Acetaminophen Use and Risk for ADHD in Children**

Presenters: Bailee Bentley, Shelby Turek, Lizzie Pereira, Shelby Stevens  
Mentor: Amy Alspaugh

## **#168 The Effects of Hepatitis C Education on the Health Literacy and Maintenance Levels of Knox County Harm Reduction Participants**

Presenter: Vanessa Betancourt  
Mentor: Maria Hurt

## **#170 The Effects of Caffeine on Adolescents with Depressive Symptoms**

Presenters: Sydney Birchfield, Julia Horras, Sophia Clark, Sara Leese  
Mentor: Cristina Barroso

## **#172 Effect of Patient Play Board Use for Two Months on ED Volunteer Play Interventions in Behavioral Health Patients at East Tennessee Children's Hospital**

Presenters: Mary Bosson, Sarah Hodges  
Mentor: Melanie Mixon

## **#173 Increasing Career Planning Confidence in Low-Income School-Aged Kids**

Presenters: Allie Brown, Haley Benson  
Mentor: Deonna Anderson-Washington, MSN-Ed, RN

## **#174 The Impact of Mental Health Screenings in Primary Care Settings on Adolescent Suicide Rates**

Presenters: Isabella Brown, Emma Joseph, Rebecca Fowver, Sydney Born  
Mentor: Cristina Barroso

## **#175 The Effect of Exercise on Cognitive Function in Adults with Mild Cognitive Impairment or Dementia: A Literature Review**

Presenters: Claire Phillips, Sarah Bryant, Hannah Kirby, Grace Gardener  
Mentor: Dr. Dominique Bulgin

## **#176 Effects of Health Disparities on Mental Health in School Aged Children**

Presenter: Vada Butler  
Mentor: Kathleen Thompson

## **#177 Strategies for the College-aged Population to Reduce Risk Factors of Alzheimer's disease**

Presenter: Krista Cameron  
Mentor: Kathleen Thompson PhD, RN

## **#178 Sexual Assault Education**

Presenters: Alexis Campbell, Phoebe Grossman  
Mentor: Sara Borges

## **#179 Effects of Art Therapy on Anxiety Levels of Children**

Presenter: Kaitlyn Carmichael  
Mentor: Melanie Mixon

## **#180 Evaluating the Positive Effects of Animal Assisted Therapy on Symptom Management in Children Diagnosed with Cancer**

Presenters: Abby Read, Amelia Cassidy, Anna Lynne Brandon, Kieran Elliott  
Mentor: Dr. Dominique Bulgin

## **#181 The Impact that Mentoring has on School Attendance for Children Ages 4-17 Years Old in the Amachi Program**

Presenters: Madison Cavalli, Shelby Moore  
Mentor: Frank Thomasson

## **#182 Increase the Awareness of Resources for Food Insecure Students**

Presenters: Mackenzie Cavnar, Trang Nguyen  
Mentor: Maria Hurt, DNP, MSN-Ed. FNP-C

## **#183 Cognitive Behavioral Therapy Interventions and the Increase in Mental Health among Adolescent LGBTQ+ Individuals: A Literature Review**

Presenters: Seri Chang, Leanna Sanders, Payton Fielder, Nolan Pearson  
Mentor: Amy Alspaugh

## **#184 Self-Testing as an Evidence Based Option to Increase Access to STI Testing for Men Who Have Sex with Men - A Review of the Literature**

Presenters: Zoe Childs, Kelsey Conboy, Sophie Morrow, Jane Hughes, Madison Houston  
Mentor: Amy Alspaugh, PhD, CNM

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## **#185 Is there a correlation between socioeconomic factors and pain levels in rural Appalachia?**

Presenters: Megha Chitturi, Carter Satterfield  
Mentor: Patricia N.E. Roberson PhD

## **#186 Assessing the Effects of a Vaccine Information Sheet on COVID-19 Vaccine Hesitancy at Cherokee Health Systems in East Tennessee's Rural Primary Care**

Presenters: Linus Cho, Emily Dermis, Lauren Caradine, Macy Feldman, Katelyn McBride, Ana Bridgeman, Tiya Ruffin, Gavin Blakely  
Mentor: Professor Chris Brown

## **#187 The Effects of Hand Washing Education in Elementary Students in Decreasing Illness**

Presenter: Yoo Jin Cho  
Mentor: DeOnna Anderson-Washington, MSN-Ed, RN

## **#188 Effect of Social Media Outreach on Health Literacy of Knox County Residents**

Presenter: Yeonjeong Choi  
Mentor: Cindi Adams MSN, PMHNP-BC

## **#189 The effects of social media on increasing awareness for nonprofit organizations**

Presenters: Jaclyn Clark, Josie Parsons  
Mentor: Amanda Harper, DNP, RN, CPNP

## **#190 The effects of social media breaks on adolescent's mental health**

Presenters: Julia Clark, Lauren Hennigar  
Mentor: Marcia McAllister

## **#192 The Effects of Daily Exercise on Self-Esteem in Students**

Presenters: Carson Clinard Grisham, Holly Del Vecchio  
Mentor: Travis Rhoten

## **#193 The Socio-Economic Relationship to Oral Health: Addressing Oral Health at Thrive**

Presenters: Lillie Cole, Merelove Myers, Anna Klepzig, Holly McComas  
Mentor: Shelia Swift

## **#194 An Inconclusive Study of the Effects of the HPV-Vaccine (Gardasil®) on the Development of HPV-Related Cancers and the Efficacy of HPV Education on Vaccination Rates for Males Ages 11-18**

Presenters: Amanda Colla, Natalie Bueche, Emily Woods, Stella Weinkauff  
Mentor: Green-Laughlin

## **#195 The Relationship between Attending Social Activities at Maud Booth and the Incidence of Depression Among Maud Booth Residents**

Presenter: Rachel Colon  
Mentor: April Bryant

## **#196 Conducting a Needs Assessment and Implementing an Educational Intervention of UT Students and Staff on the American Red Cross**

Presenters: Emily Considine, Alex Gerkin  
Mentor: Dr. Kathleen Thompson

## **#197 Prophylactic Medications in Reducing Sexually-Transmitted Infections in Sexual Assault Victims**

Presenters: Chelsea Consolini, Taylor Carter  
Mentor: Edelyn Bishop

## **#198 Effects of Community Building Activities on the Self-Reported Depression and Mental Health of the Residents at the YWCA in Knoxville**

Presenters: Marilee Cowden, Sarah Regener  
Mentor: Gail Griffith

## **#199 The Effects of Animal Assisted Therapy on the Psychological Health of Older Adults with Dementia - A review of the literature**

Presenter: Natasha Coy  
Mentor: Dominique Bulgin

## **#200 The Relationship Between Guided Reading Interventions and Elementary Students' Reading Levels**

Presenter: Casey Crownover  
Mentor: Vikki Meloy

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## **#201 The Effects of a Physical Health Class on Health Literacy in the Homeless Population**

Presenter: Russell Cunningham  
Mentor: Dr. Freddie Kojima

## **#202 Use of Behavioral Chart to Improve Behavior in Preschool Age Children**

Presenter: Bryce Cutting  
Mentor: Kimberly Brown DNP, MSN-Ed

## **#203 The Relationship Between Vaccine Hesitancy Amongst Parents and the Risk of Increased Childhood Illness: A Literature Review**

Presenters: Karsen Daniel, Maggie Martin, Nicole Cohen, Isabela Gebhardt  
Mentor: Cristina Barroso

## **#205 The Impact of In-School Prevention Programs on Suicidal Behavior in Teens**

Presenters: Owen Dittes, Samantha Burrell, Jamison Gould, Honor Worthy  
Mentor: Dominique Bulgin

## **#206 The Epidemic Lost in the Pandemic: Effects of Community Education on Opioid Epidemic Awareness and Prevention Involvement in Knoxville**

Presenters: Jenna Doak, Michael Darby  
Mentor: Edelyn Bishop

## **#207 Academic Service Learning Project for the College of Nursing**

Presenters: Madolyn Donehoo, Emma Clifton  
Mentor: Marcia McAllister

## **#208 The Effect of a Balanced Macronutrient Intake on the Mental Health Status of Children and Adolescents: A Review of the Literature.**

Presenters: Savannah Ashley Eaton, Jessie Bonnell, Abigail Mullinix, Katherine Cimino  
Mentor: Cristina Barroso

## **#209 Preventing Adolescent Pregnancy and Enhancing Adolescent Sexual Health**

Presenters: Rachel McAllister, Alicia D'Amore, Rebecca Elias, Katie Meyer  
Mentor: Knar Sagherian, PhD, RN

## **#210 Investigation of Parental Influence on Adolescent Vaccination Rates in the United States: A Literature Review**

Presenters: Josephine Ellis, Victoria Wilson, Lily Setter, Brenna Etherton  
Mentor: Cristina Barroso

## **#211 The Effects of Tablets and Media on Helping With Isolation and Depression Levels in the Elderly During the Covid Pandemic**

Presenter: Jazmine Ervin  
Mentor: Gail Griffith

## **#212 Do Healthy Diets Play a Role in Decreasing Symptoms of Depression in College Students?**

Presenters: Hannah Esguerra, Lurnea Marks, Kaitlyn Biggs, Daniella Tate  
Mentor: Dr. Katherine Morgan

## **#213 How can the implementation of sex education in rural communities be used to decrease unplanned pregnancy among teenagers?**

Presenters: Jaylah Espy, Hailey Benner, Gabriella Huzyk, Jamie Jordahl  
Mentor: Freddie Kojima

## **#214 How Animal Therapy Affects Psychological Health in Patients with Dementia in the United States**

Presenters: Taylor Etheridge, Anna Dunham, Marina Morra, Alex Colburn  
Mentor: Karen Carver

## **#215 The Effects of Clonidine on Outcomes in Patients with Neonatal Abstinence Syndrome**

Presenter: Claire Flatt  
Mentor: Jennifer Tourville, DNP

## **#216 The Increased Risk of Developing Metabolic Syndrome in Night Shift Nurses: A Review of the Literature**

Presenters: Allison Flynn, Lindsey Dickman, Summer Nesto, Elizabeth Ellis  
Mentor: Knar Sagherian

## **#217 The Effect of Online Learning on Increasing Understanding in The Dream Connection**

Presenter: Juliana Foreman  
Mentor: Amanda Harper

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## **#218 Improving Planning and Scheduling Strategies to Better Involve Interns Within Knoxville Fellowship of Christian Athletes**

Presenter: Ashley Foster  
Mentor: Travis Rhoten

## **#219 The Relationship Between Mentorship and Mental Health of Adolescents**

Presenters: Melissa Freifelder, Elizabeth Roddy, Sarah Mccloud  
Mentor: Frank Thomasson

## **#220 Effects of Delayed First Baths on Thermoregulation, Exclusive Breastfeeding Rates, and Glucose Stability in Newborns**

Presenters: Victoria Furka, Marya Hubbard, Coutney Bailey, Morgan Amick  
Mentor: Dr. Amy Alspaugh

## **#221 The Effects of a Brief Educational Poster on the Health Literacy of People 'Under the Bridge'**

Presenter: Stacie Gaddis  
Mentor: Maria Hurt, DNP, MSN-Edu, APRN, FNP-C

## **#222 The Role of Birth Plans in the American Perinatal Experience**

Presenter: Juli Anna Gibson  
Mentor: April Bryant, RN, MSN, APRN, FNP-C

## **#223 The Positive Effects of Delayed First Bath on Glycemic Control, Temperature Regulation, and Breastfeeding among Neonates**

Presenters: Hannah Goralnick, Madison Crabtree, Jasmine Russell, Lucy Gilbert  
Mentor: Dominique Bulgin

## **#224 Effect of Aerobic and Physical Exercise on Reducing Symptoms Associated with Cognitive Function in Adults with Mild Cognitive Impairment or Dementia**

Presenters: Samuel Greeley, Joshua Porter, Steven LeBreux, Michael Smith  
Mentor: Dylindia Green-Laughlin

## **#225 The Impact of the Implementation of a Nutrition Education Program on the Nutritional Knowledge and Preferences of Knoxville Inner City Kids Outreach Participants**

Presenter: Madeline Grimes  
Mentor: DeOnna Anderson-Washington

## **#226 The Positive Correlation of the COVID-19 Pandemic and Anxiety and Depression Amongst Adolescents Aged 12-18 Years Old**

Presenters: Ann Ragan Grissom, Nealy Anderson, Sophie Hitchens, Sarah Johnson  
Mentor: Dr. Crawford

## **#227 The Intersection of Metabolomics and Potential Biomarkers of Parkinson's Disease: A Review of Literature**

Presenter: Katherine Havranek  
Mentor: Katherine Morgan

## **#228 Effects of Blowing Bubbles on Fear and Pain from Pediatric Outpatient Injections**

Presenter: Lindsey Hedrick  
Mentors: Dr. Robert Cornette, Dr. Kathleen Thompson

## **#229 GC-MS Analysis of Firefighter Urine to Identify Potential Carcinogenic Compounds**

Presenter: Evan Heldt  
Mentor: Ji Youn Yoo

## **#230 Socioeconomic Impact to Perceived Social Support in Breast Cancer Patients Residing in Rural versus Urban Communities**

Presenter: Amelia Helms  
Mentor: Dr. Patricia Roberson

## **#231 Examining Child-Life Volunteer Use of Communication Boards with Spanish-Speaking Patients**

Presenters: Hallie Henegar, Katie Pendergast  
Mentor: Melanie Mixon

## **#232 ASL Project : Effectiveness of reading logs on improving reading time and quality over a month**

Presenter: Logan Hinch  
Mentor: Sara Borges

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**#233 Increasing Incidence of Depression in Adolescents Due to COVID-19 Pandemic Crisis and the Impact on Academic Performance: A Literature Review**

Presenters: Devin Hinson, Anber Akmanligil, Sydney Stapleton, Sara Hunley

Mentor: Dr. Kathryn Crawford

**#234 The Use of Educational Handouts to Increase Parental Knowledge of Infant Nutrition Between Ages 6-12 Months**

Presenters: Caitlyn Hintz, Nicole Wigent

Mentor: Melissa Hessoock

**#235 The Effects of an Educational COVID-19 Protection Program on the Implementation of Safety Measures amongst Primary Care Nurses**

Presenter: Megan Hoffman

Mentor: Dr. Laurie Acred-Natelson

**#236 The Effect of Animal Assisted Therapy on Decreasing Physiological Outcomes to Improve Pain and Stress Levels in Hospitalized Pediatric Patients: A Literature Review**

Presenters: Alayna Holbert, Ashleigh Harrison, Shelby Campbell, Megan Lawless

Mentor: Amy Alspaugh

**#238 The Effect of Reading on Students' Test Scores at Emerald Youth Foundation**

Presenter: Sydney Horner

Mentor: Tammy Bullard

**#239 The Effect of Hand Hygiene in children for Underserved Communities: A Literature Review**

Presenter: Christopher Hough

Mentor: DeOnna Anderson-Washington MSN-Ed, RN

**#240 The Application of Communication Platforms to Improve Communication and Organization in Businesses and Non-Profit Organizations**

Presenters: Emma House, Maggie Piazza

Mentor: Amanda Harper, DNP, RN, CPNP

**#241 The Effects of Art Therapy on Aggression Related Write Ups Among Children at Boys and Girls Club**

Presenters: Amanda Howard, Catie Heilman

Mentor: Marcia McAllister

**#242 Blood-Injection-Injury Phobia: A Study to Identify the Demographics of Adults with this Phobia**

Presenter: Aliza Huff

Mentor: Dr. Shelia Swift

**#243 The Impact of Patient Anxiety on Caregiver Anxiety in Breast Cancer Patients in Rural Appalachia**

Presenters: Merrell Irion, Emmanuel Quezada

Mentor: Dr. Patricia N.E. Roberson

**#244 How Animal Assisted Therapy Affects Psychological Health in Older Adults with Dementia: A Review of the Literature**

Presenters: Taylor Irwin, Faith Whitt, Ellie Streeter, Charley Sullivan

Mentor: Kathryn Crawford

**#245 The Effects of Communication on Families with Children who Suffer from Life-threatening Disease**

Presenter: Brooke Jackson

Mentor: Dr. Amanda Harper

**#246 The Effects of Moral Reconation Theory (MRT) Therapy on Self-Esteem and Resilience in Incarcerated Sexual Assault Survivors**

Presenter: Drew Janes

Mentors: Kathleen Thompson, Amanda Harper

**#247 The Positive Effects of Reading with Students of the Joy Baker Program**

Presenter: Jessica Jones

Mentor: n/a

**#248 One-On-One Conversations About Coping Mechanisms and Their Effect on Mental Health: A Study on Children and Adolescents**

Presenters: Christine Karklins, Rebekah Brandon

Mentor: Vikki Meloy



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## **#249 Access to Substance Abuse Treatment and Rates of Substance Abuse in Rural Communities Within the United States**

Presenters: Eva Karnowski, Courtney Miller, Maren Stevens, Elly Stanga  
Mentor: Freddie Kojima

## **#250 The Usefulness of a Quick Tips Profile Card in Healthcare Visits for Intellectually and Developmentally Disabled Patients Caregivers**

Presenter: Sarah Keller  
Mentor: Kathleen Thompson

## **#251 Administration of Probiotics and Neurodevelopment in Low-Birth-Weight Infants**

Presenters: Lindsey Cummings, Megan Kizer, Haley Reed, Elizabeth Dowd  
Mentor: Katherine Morgan

## **#253 Medication Management: Equipping Those Who Suffer From Homelessness**

Presenter: Margaret Lavoie  
Mentor: Freddie Kojima

## **#254 The Effects of COVID-19 Education on Vaccination Rates Among Pediatric Students**

Presenters: Tina Le, Claire Hayes  
Mentor: Susan Hebert

## **#255 The Increased Rate of Maternal Satisfaction for Women Who Were Free to Eat and Drink During Active Labor of Low-Risk Pregnancies**

Presenters: Adrianna Leicht, Anna Taylor, Erica Weaver, Jamie Stauffer  
Mentor: Amy Alspaugh

## **#256 The Effectiveness of New Methods of STI Screening Reducing Barriers to Care and Increasing Patient Accessibility Among Adolescent College Students**

Presenters: Taylor Hosmer, Katherine Regan, Nikki Leishman, Kara Robinson  
Mentor: Amy Alspaugh

## **#258 The Effects of an Urban Gardening Course on the Availability of Fresh Produce in a Food Desert**

Presenter: Barklee Loflin  
Mentor: Tammy Bullard

## **#259 Correlational Study Between Disordered Eating and Postpartum Depression Among Women Four-to-Eight Weeks Postpartum**

Presenter: Mika Long  
Mentor: Dr. Melissa Hessock

## **#260 The Effects of Education Interventions on the Use of Developmentally Appropriate Play by Daycare Teachers**

Presenters: Emily Malott, Elizabeth Martin  
Mentor: Dr. Melissa Hessock

## **#261 The Effect of Mental Health Screenings on the Incidence of Suicide in Middle School Aged Girls**

Presenter: Taylor Mann  
Mentor: Dr. Kathleen Thompson

## **#262 The Effect of Education on Recognizing HIV in Homeless Population at Knox Area Rescue Ministries**

Presenters: Gabrielle McClarin, Abby Miller  
Mentor: Dr. Kojima

## **#263 Improving Self-Efficacy in the Residents of Love Towers in Relation to Blood Pressure**

Presenters: Margaret McConnell, Radha Patel, Brooke Paris, Kemar Ali  
Mentor: Christina Brown

## **#264 How Coping Skills Developed in Nursing School Effect Burnout in the Transition to Practice**

Presenter: Natalie Meade  
Mentor: Kimberly Brown

## **#265 Can Art Decrease Loneliness in Children with Cancer?**

Presenter: Heidi Middeke  
Mentor: Amanda Harper

## **#266 Adolescents Diagnosed with Autism Spectrum Disorder and the Discrepancies Related to Access to Specialized Healthcare Services in Rural vs Urban Areas**

Presenters: Savanah Miles, mary hart, britt klosterman, ryan stone, lefler mcmanus  
Mentor: DeLyndia Green-Laughlin



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## **#267 Improving Communication within East Tennessee Children's Hospital Through Reduction of Language Barriers**

Presenter: Margaret Miller  
Mentor: Melanie Mixon BSN, RN

## **#268 Activity for Preschoolers During Nap Time to Reduce Behavioral Outbursts**

Presenter: Sarah Morin  
Mentor: Dr. Kimberly Brown

## **#269 Gaining Awareness for the Wesley House Food Pantry**

Presenters: Jenna Mrkonich, Jessica McChesney, Annika O'Neill  
Mentor: Dr. Casey Norris

## **#270 Effects of Systematic Improvements on Quality of Sleep in a Women's Homeless Shelter Dorm**

Presenter: Annie Nelson  
Mentor: Dr. Freddie Kojima

## **#271 Improving Infection Control Knowledge and Tracking Among Day-Care Teachers**

Presenters: Ashlyn Nokes, Emma Seigmund  
Mentor: Melissa Haddock

## **#272 Effects of Social Media on Volunteer Recruitment**

Presenters: Madison Peret, Camille Phillipy  
Mentor: Libby Burns

## **#273 Breaking Barriers to Long Acting Reversible Contraception with STI Education**

Presenter: Haley Persch  
Mentor: Eddie Petrie

## **#274 The Negative Effect Caregiving Can Have on Caregiver Quality of Life**

Presenters: Kaylee Gray, Celine Phan  
Mentor: Patricia Roberson

## **#275 The Relationship between Probiotic Use and Delayed Onset of the Neurodegenerative Disease, Alzheimer's, in Older Adults over 65**

Presenters: Hannah Piepol, Catherine House, Mackenzie Cain, Natalie Handshy  
Mentor: Katherine Morgan, PhD, FNP-BC

## **#276 Promoting Resilience in Pediatric Hematology/Oncology Patients and Their Families**

Presenter: Ryleigh Rayburn  
Mentor: Dr Amanda Harper

## **#277 The Positive Effects of the HPV (Gardasil®) Vaccine on the Development of Throat Cancer Among Men**

Presenters: Erin Remijan, Jared Henderson, Patrick Phillips, Karli Dallas  
Mentor: Dr. Amy Alspaugh

## **#279 The Effect of Working Through the COVID-19 Pandemic on Nurses: A Literature Review**

Presenters: Paige Rounsavall, Samantha Lawson, Kate Roberson, Erin Weiland  
Mentor: Christina Barroso

## **#280 Improving Quality of Care of Pediatric Behavioral Health Patients by Implementation of Tabletop Activities**

Presenters: Tavyn Santee, Mary-Katherine Kidney  
Mentor: Melanie Mixon, PPCNP, MSN, RN

## **#281 Irregular Sleep Cycles and Development of Metabolic Syndrome in Night Shift Nurses: A Literature Review**

Presenters: Gracie Satterfield, Alexandria Yarnell, Emily Holmes, Kylie McConnell  
Mentor: Cristina Barroso

## **#282 Positive Effects of Mindfulness-Based Interventions on Levels of Occupational Stress in Hospital Nurses**

Presenters: Bryanna Schroeter, Candace Reid, Thy Kim, Marina Ibrahim  
Mentor: Dr. DeLyndia Green-Laughlin

## **#283 Barriers of Medication Assisted Treatment (MAT) for Pregnant Women with Opioid Use Disorder (OUD) in Rural Tennessee: Treatment Protocols and Training of Providers**

Presenter: Rachel Schutte  
Mentor: Jennifer Miller PhD, RN

## **#284 Self Esteem of Adolescents Attending High School Online: A Quality Improvement Project**

Presenter: Amanda Shamp  
Mentor: Frank Thomasson, Jr.

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## **#285 Productive Leisure Time Activities for Inner City Adolescents**

Presenter: Chris Sheets  
Mentor: Deonna Anderson  
MSN-Ed, RN

## **#286 Study Tactics for Elementary-Aged Children in Single Parent Homes**

Presenter: Cheyenne Simon  
Mentor: Vivian Rookard

## **#287 The Effects of Hosting a Social Media Giveaway on Increasing Feminine Hygiene Collection for I Support the Girls-Knoxville**

Presenters: Jillian Simpson, Dailey Davis, Elissa Adams, Mikayla Nalley  
Mentor: Brooke Lakin

## **#288 Neuroprotective Care and Breastfeeding in Neonates: A Literature Review**

Presenters: Caroline Sims, Casey Langsjoen, Emma Swingle, Olivia Gossard, Tori Reed  
Mentor: Dr. Cristina Barroso

## **#289 The Effects Low Socioeconomic Status Has on Childhood Nutrition**

Presenter: Lauren Skoog  
Mentor: Vivian Rookard

## **#290 The Effects of Sex Education on the Rate of Unintended Pregnancies in Adolescent Females in Rural Communities: A Review of the Literature**

Presenters: Elizabeth Smith, Paulina Hutchison, Vontae Sebastian, Bridgette Anderson  
Mentor: Dr. Barroso

## **#291 The Effects of Prenatal Dietary Intake of Macronutrients on Fetal Birth Weight**

Presenter: Lauren Song  
Mentor: Kathleen Thompson

## **#292 Healthcare worker perceptions of treatment of drug withdrawal among pregnant women in jail in the South-Central Appalachia region: A qualitative pilot study**

Presenter: Skylar Sopko  
Mentor: Dr. Sadie Hutson

## **#293 The Effects of Social Interaction Interventions on Mental Health in Older Adults Who Experienced Isolation During the COVID-19 Pandemic**

Presenters: Alyssa Steffy, Lillian Sackleh, Amy Dieu, Sydney Gregg  
Mentor: April Bryant

## **#294 Induction of Labor Versus Expectant Management and Rates of Severe Maternal Morbidity**

Presenters: Elise Strevell, Olivia Francis, Rebecca Seigmund, Hannah Hooper  
Mentor: Amy Alspaugh

## **#295 Health Care Experiences of Older Adults and Their Family Caregivers During the COVID-19 Pandemic**

Presenter: Audrey Summers  
Mentor: Joel Anderson

## **#296 An Implementation of Chair-Yoga Exercise and the Impact on the Mental and Physical Health in Adults with Alzheimer's Disease**

Presenter: Mary Swafford  
Mentor: Libby Burns

## **#297 Differences Between College Males and Females' Coping Mechanisms in Relation to the COVID-19 Pandemic**

Presenter: Margaret Tasket  
Mentor: Dr. Allyson Neal

## **#298 Adjusting Material Format for Partnerships to Advance Nursing Practice and Education: The Precious Prints Project®**

Presenters: Alexandra Taylor, Marissa Newman  
Mentor: Lynne Miller, MSN, RN, CNE

## **#299 Joining Forces: A Quantitative Study on the Effect of Interdisciplinary Collaboration Among Business and Nursing Students**

Presenter: Megan Tomasek  
Mentor: Lynne Miller

## **#300 The Impact of Social Support on Mental Health Outcomes among Breast Cancer Patients**

Presenters: Minh Tran, James Griffith  
Mentors: Patricia Roberson, PhD, Jordan Tasman

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## **#301 The Positive Effects of Sex Education on Unintended Pregnancies in Schools in Rural Communities - A Literature Review**

Presenters: Madelyn Turner, Sabrina Sowell, Hannah Cooke, Caroline Current  
Mentor: Amy Alspaugh

## **#302 The Effect of Schoolwork Incentives and Education Programs on Inner-City kids**

Presenter: Samantha Vawter  
Mentor: Deonna Anderson-Washington

## **#303 The Positive Effect of Oral and/or Intravenous Intake During Labor on Physical and Emotional Outcomes of Birthing People**

Presenters: Amia Walker, Kayla Steele, Tara Vincenc, Elea Sevrain  
Mentor: Amy Alspaugh

## **#304 Pregnant Women with Asthma: Factors that Influence Their Decision to Continue or Discontinue Their Medications**

Presenter: Emma Vysoky  
Mentor: Dr. Tami Wyatt

## **#305 Metabolic Syndrome in Night Shift Nurses**

Presenters: Amy Waitman, Jackson Lee, Hailey Houston, Rachel Yates  
Mentor: Karen Carver

## **#306 ASL: Education and Incentivization of Proper Mask-wearing in Children Ages 5-14**

Presenter: Lindsay Webb  
Mentor: Vivian Rookard

## **#307 The Effectiveness of Animal Assisted Therapy on Decreasing Psychological Distress in Older Adults with Dementia**

Presenters: Olivia Weggeman, Mikayla Walter, Matthew Waznis, Isabelle Way  
Mentor: DeLyndia Green-Laughlin

## **#308 The Effect of a Reward System on Adolescent Attention Span**

Presenter: Maiya Welch  
Mentor: Deonna Washington-Anderson

## **#309 Management of Hypertension in an Aging Adult Population**

Presenters: Morgan Wettengel, Sam Smith, Kaitlyn Reinhardt  
Mentor: April Bryant

## **#310 The Effects of Cognitive Based Therapy (CBT) and Stress in Health Care Providers**

Presenters: Chloe Windham, Sheridan Lennartz, Leslie Robison, Olivia Zimmerman  
Mentor: Dominique Bulgin

## **#311 An Exploration into How Animal Assisted Therapy Has No Effect On Cognitive Functioning in Older Adults Aged 65+ With Dementia, in Comparison to Human Assisted Therapy**

Presenters: Zechariah Wooten, Jordan Nabors, Siegfried Boehm  
Mentor: Carrie Bailey

## **College of Social Work**

## **#312 Descriptive Analysis of Causation for Recurring Support Requests from Social Assistance Recipients**

Presenter: Jessie Baer  
Mentor: Dr. William Nugent

## **#313 Comparing the Attendance Rates between Face-to-Face Therapy Sessions and Telehealth Therapy Sessions**

Presenter: Olivia Dowling  
Mentor: Dr. Nugent

## **#314 Equity in the Number of Student Conduct Sanctions for Academic Misconduct Given to Students as it Relates to Race and Sex in Higher Education**

Presenter: Paola Gomez  
Mentor: Dr. William Nugent

## **#315 Demographic Study of Individuals Experiencing Homelessness**

Presenter: Anna Higgins  
Mentor: William Nugent

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## **#316 Relationship Between Agency Resources and Client HIV Viral Load**

Presenter: Arianna Hill  
Mentor: Dr. Bill Nugent  
**#317 An Analysis of a Local Mentoring Program Per Match Success**  
Presenter: Summer Hunley  
Mentor: Dr. William Nugent

## **#318 What is the Relationship between Pre-Trial Diversion programs and Rates of Recidivism?**

Presenter: Maggie Kelly  
Mentor: William Nugent

## **#319 A Descriptive Analysis of Demographics of Individuals Experiencing Substance Use & Entering Programs for Service**

Presenter: Amari Ratliff  
Mentor: Dr. Bill Nugent

## **#320 A Study of the Relationship Between Adolescent Bullying and Suicide Consideration, Planning, and Attempt**

Presenter: Sophie Richards  
Mentor: Dr. Bill Nugent

## **#321 A Linear Regression Analysis of Re-Hospitalization Rates in Relation to Psychosocial Therapy Attendance**

Presenter: Emma Richey  
Mentor: William Nugent

## **Haslam College of Business**

### **#322 Harlan County, Kentucky in a Post-Coal America: A Case Study**

Presenter: Karli Ailshie  
Mentor: Sara Easler

### **#323 The world's on fire! Won't you be my neighbor? Comparative Analysis of Reddit Community Growth and Sentiment Before and During the Covid-19 Pandemic**

Presenter: Kayla Beard  
Mentor: Brian Stevens

### **#324 The 2021 Texas Winter Outage: An Equity and Energy Analysis of an Independent Grid**

Presenter: Ameera Bhatti  
Mentor: Dr. Scott Holladay

### **#325 Does Corporate ESG Reporting Reflect Internal Feelings?**

Presenter: Nicholas Brodeur  
Mentor: Dr. Wenjun Zhou

### **#326 The Implications of Corporate Social Responsibility within the Supply Chain: Does it Really Help the Bottom Line?**

Presenter: Lauren Brown  
Mentor: Dr. Sining Song

### **#327 The Effect of the Local Economy on Opioid Overdoses: Evidence from the States**

Presenter: Helen Chiasson  
Mentor: Larry Fauver

### **#328 How Does Governmental and State Investments in Mental Health Affect the National and State Level of Homelessness?**

Presenter: Mikahla Clemens  
Mentor: Dr. Jonathan Ring

### **#329 How Negative is Instagram? A Study of Body Positivity Through Instagram**

Presenter: Claire Donelan  
Mentor: Melinda Micheletto

### **#330 Corporate Sustainability: The Effectiveness of ESG Standards in the Measuring of Corporate Environmentalism**

Presenter: Joseph Geibig  
Mentor: Wendy Tate

### **#331 SPACs: What Elements Indicate Success? A Hard Look at Wall Street's Hottest Trend**

Presenter: Reid Grafton  
Mentor: Roy Schmardebeck

### **#332 Exploring How Small Businesses are Utilizing Digital Marketing to Promote Their Products and Services**

Presenter: Alyssa Grissom  
Mentor: Jules Morris

### **#333 Optimizing a Transportation Network by Minimizing Partial Pallet Orders**

Presenter: Ellysa Groh  
Mentor: Sean Willems

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## **#334 The NBA Home Court Advantage: Betting Odds as a Measure**

Presenter: Will Gross  
Mentor: Dr. James Chyz

## **#335 Dynamic Pricing with Sequence Modeling Based Deep Reinforcement Learning**

Presenter: Jack Hutchins  
Mentor: Michel Ballings

## **#336 Public Accounting Firm Statement Analysis: A Predictive Model to Identify Semantic Criteria to Enhance Firm Discussion Addressing Racial Injustice**

Presenter: Courtney Lam  
Mentor: Dr. Lauren Cunningham

## **#337 A Look At The Drug Supply Chain Security Act And Its Affect On Capital Expenditures**

Presenter: Emma Lampson  
Mentor: Phillip Daves

## **#338 How World-Wide Travel Turns into First-Year Paycheck Premiums upon Graduation**

Presenter: Macy McCullough  
Mentor: Brian Stevens

## **#339 How a Regional Fast-food Chain Has Managed Shortages and Risk during a Global Supply Crisis**

Presenter: Andrew Miller  
Mentor: Dr. Lance Saunders

## **#340 Factors which Influence Perceptions of Leadership**

Presenter: Brent Phillips  
Mentor: Dr. Jackie Jacobs

## **#341 Carpet Company X: A Communication Structure Analysis Case Study of New Product CGC**

Presenter: Elise Presberg  
Mentors: Wendy Tate, Jennifer Rittenhouse

## **#342 The Value of Analytics at Optimizing Operational Performance at a Local Free Clinic**

Presenter: Varun Rangnekar  
Mentor: Bogdan Bichescu

## **#343 Supply Chain Leadership: Exploring the Effect of COO Personality on Supply Chain Performance**

Presenter: Deanna Sickels  
Mentor: Dr. Jason Strickling

## **#344 Implications of Producing to Forecast-Driven Scheduling vs Demand-Driven Scheduling**

Presenter: Harshil Singapuri  
Mentor: Dr. Kenneth Gilbert

## **#345 Stress and Coping with COVID-19: Working Adults**

Presenter: Abigail Smith  
Mentor: Dr. Timothy Munyon

## **#346 Who Would Be Affected by a \$15 Minimum Wage in Tennessee?**

Presenter: Marshall Summar  
Mentor: Dr. Marianne Wanamaker

## **#347 Managing Consumer-Packaged Goods Supply Chain Disruptions during COVID-19**

Presenter: Logan Tennell  
Mentor: Lance Saunders

## **#348 How To Go Viral: A Descriptive Model of The TikTok Algorithm**

Presenter: Max Thompson  
Mentor: Dr. Sophie Xiao

## **#349 Diagnostic Decision Support Software for Colorectal Cancer Diagnosis Using Deep Learning Methods**

Presenter: Nathalie-Sofia Tomov  
Mentor: Hamparsum Bozdogan

## **#350 Women of Color in Accounting: Analyzing the Career Progression of Women of Color in Leading Accounting Roles**

Presenter: Jada Worries  
Mentor: Jules Morris

## **#351 Using AutoML to Conduct Propensity Score Matching**

Presenter: Mark Zimmerman  
Mentor: Dr. Wenjun Zhou

## **Herbert College of Agriculture**

## **#65 Agricultural Land Use Affects the Body Size of Some Bees**

Presenter: Maggie Clark  
Mentor: Laura Russo

## **#352 Novel Ultraviolet Light Technologies for the Inactivation of Murine Hepatitis Virus, a SARS-CoV-2 Surrogate**

Presenter: Alexia Angelos  
Mentor: Dr. Doris D'Souza

## **#353 Anatomical Atlas of the Ovine Amygdala**

Presenter: Cydney Babione  
Mentor: Dr. Brian Whitlock



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## **#354 Creating a Backyard Buzz: Evaluating the Effectiveness of Using a Video Infographic To Increase Knowledge About a Local Mosquito-borne Disease**

Presenter: Caroline Barnes  
Mentor: Dr. Rebecca Trout Fryxell

## **#355 Soil Chemistry and Vegetation: The Relationship Between Soil Quality and Native Species**

Presenter: Sophie Carter  
Mentor: Jennifer Franklin

## **#356 Chronic Wasting Disease Prion Detection: Use of Gold Nanoparticles and Modified Nucleic Acids for Improved Sensitivity of an Immunoassay**

Presenter: Haley Channell  
Mentor: Shigetoshi Eda

## **#357 The Effects of Climate Change on Immature Sea Turtles and Associated Bacteria**

Presenter: Megan Cox  
Mentor: Dr. Deb Miller

## **#358 Preparation of Cheese-like Products Using Hempseed Hearts Extract**

Presenter: Peyton Crates  
Mentor: Vermont P Dia

## **#359 Is germinating in the dark beneficial? The influence of light intensity and days without light on butterhead lettuce and basil**

Presenter: Dustin Del Moro  
Mentor: Dr. Kellie J. Walters

## **#360 Evaluation of Protective Efficacy of Novel Staphylococcal Mastitis Vaccines in Cattle**

Presenter: Sarah Desai  
Mentor: Oudessa Kerro Dego

## **#361 Pharmacokinetics of Pantoprazole and Pantoprazole Sulfone in Goats After Intravenous Administration: A Preliminary Report**

Presenters: Bryanna Fayne, Olivia Escher, Windy Soto-Gonzalez  
Mentor: Joseph Smith

## **#362 Juglone inhibits Beauveria bassiana and Cordyceps fumosorosea Growth in vitro**

Presenters: Autumn Finnell, Spencer Givens  
Mentor: Denita Hadziabdic-Guerry

## **#363 Chronic Wasting disease prion detection: Optimizing electrochemical conditions for a higher sensitivity**

Presenter: Veronica Hafner  
Mentors: Shigetoshi Eda, Jay Ramos

## **#364 The Effect of Planting Density on Green and Purple Basil Yield and Quality**

Presenter: William Hagen  
Mentor: Dr. Kellie Walters

## **#365 The presence of transcripts for estrogen receptor 1, estrogen receptor 2, and G-protein coupled estrogen receptor 1 in oocytes and cumulus cells of cattle**

Presenter: Meredith Hinson  
Mentor: Sarah Moorey

## **#366 'Breeding Without Breeding' in Black Walnut (Juglans nigra)**

Presenter: Justin Kosiewska  
Mentor: Denita Hadziabdic

## **#367 Strategies and Techniques Used to Monitor Candidate Insect Vectors and Detect Tree Disease Pathogens in TN Forests**

Presenter: Gaige Lariscy  
Mentor: William E. Klingeman

## **#368 Bridging the Digital Divide: Community Programs Targeting Broadband Access and Adoption in Rural Tennessee**

Presenter: Makayla Lerner  
Mentor: Sreedhar Upendram

## **#369 Effect of the early ruminant embryo on maternal anterior pituitary gene expression**

Presenters: Adella Lonas, Malone Young  
Mentor: Daniel Mathew

## **#370 Effects of Anabasin on Plant Biostimulants and Pathogens**

Presenter: Alana Messier  
Mentor: Dr. Kimberly Gwinn



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**#371 A novel method for point-of-care pathogen detection: development of a DNA-based molecular probe for double stranded DNA sensing**

Presenter: Bailey Morgan  
Mentor: Shigetoshi Eda

**#372 Impact of Alkaline Treatment on Split Pigeon Pea Protein**

Presenters: Avery Ollis, Laila Martin  
Mentor: Dr. Vermont Dia

**#374 Characterization of Fungal Communities Living Within the Leaves of Whorled Sunflowers**

Presenter: Luis Perez  
Mentor: Denita Hadziabdic

**#375 Plasma Metabolome Profiles to Predict Average Daily Gain in Weaned Heifers**

Presenter: Samantha Roberts  
Mentor: Dr. Sarah Moorey

**#376 Alcalase and bromelain hydrolysis improved the bioactivity of hempseed protein isolate**

Presenter: Joshua Saad  
Mentor: Vermont Dia

**#377 Viral Recoverability in Soil Environment**

Presenter: Ann Smith  
Mentor: Mark Radosevich

**#378 Cytocompatibility of a High Graphene Content polymer-based ink for Bone Regeneration**

Presenter: Kaitlin Smith  
Mentor: Dr. Madhu Dhar

**#380 Conserving the imperiled Atlantic White-cedar: a population genetics perspective**

Presenter: Zane Smith  
Mentors: Margaret Staton, Denita Hadziabdic

**#381 Length of Proestrus and Concentrations of Estradiol and Progesterone in Serum and Follicular Fluid of Cows Undergoing Synchronization of Estrus**

Presenter: Allyson Stokes  
Mentor: Sarah E. Moorey

**#382 Increasing Sustainability of Pest Management in Apple Production by Coupling Reduced-Rate Applications with Variable-Rate Spray Technology**

Presenter: Hannah Sutt  
Mentor: Amy Fulcher

**#383 Soybean Agroinfiltration**

Presenter: Bryce Trull  
Mentor: C. Neal Stewart, Jr.

**#384 Testing the Efficacy of Plant-Derived Fungicides at Inactivating Batrachochytrium salamandrivorans in Pond Water**

Presenters: Merrie Urban, Carmen Merolle  
Mentor: Dr. Matthew Gray

**#385 Quillaja saponaria bark extract prevents Salmonella enterica serovar Typhimurium Sal54 attachment on Vero Cells**

Presenter: Halia Walrond  
Mentor: Doris D'Souza

**#386 Edge Effects: Shining a Light on Rodent Visitations to Black Bear Scat in Differently Managed Forests in the Southern Appalachians**

Presenter: Holly Whited  
Mentor: Dr. Charles Kwit

**Tickle College of Engineering**

**#387 Ring Amplifier Frequency Response Simulations for Technology Scaling**

Presenter: Samuel Aba  
Mentor: Dr. Benjamin Blalock

**#388 Atomic-Scale Structure of Yttria-Stabilized Zirconia**

Presenter: Cade Abbott  
Mentor: Maik Lang

**#389 Reverse Engineering of a Bioreactor for Cultured Meat Research**

Presenters: Patricia Abernathy, Sean Moran, Keely Sage  
Mentor: Dr. Jiajia Chen

**#390 Camera Based System for Noninvasive Monitoring in the NICU**

Presenters: Samantha Bell, Jordan Grant, Michael Palmaccio, Gabrielle McClarin  
Mentors: Dr. Xiaopeng Zhao, Dr. Tami Wyatt

**#391 Microplastics Methodology: A Study of Second Creek**

Presenter: Claudia Bible  
Mentor: Jon Hathaway

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## **#392 High Throughput Enzyme Screening for Ester Quantification**

Presenter: Nathaniel Blalock  
Mentor: Dr. Cong Trinh

## **#394 Bridging the STEM Gender Gap through Women-focused Outreach**

Presenter: Isabel Boyd  
Mentor: Jalonda Thompson

## **#395 The effect of composition on the thermodynamics and properties of deep eutectic solvents**

Presenter: William Brackett  
Mentor: Joshua Sangoro

## **#397 Investigation of Preferential CO<sub>2</sub> Binding and Lignin-derived Carbon Quantum Dots Through Molecular Dynamics Simulations**

Presenter: Michael Broud  
Mentor: David Keffer

## **#398 3D Printing of Autonomous Self-Healing Elastomers**

Presenter: Emily Buckner  
Mentor: Dr. Rigoberto Advincula

## **#399 The unexpected effect of ligand exchange on the internal ordering of perovskite nanocrystals**

Presenter: Alexandria Carter  
Mentor: Katharine Page

## **#400 Establishing Crystal Structure in Dissolved Organic Molecules Through Low Temperatures**

Presenter: Jakob Cielo  
Mentor: Dr. Bin Hu

## **#401 Influence of Advancing Operating Speed on Milling-Induced Phase Transformation in Ho<sub>2</sub>O<sub>3</sub> and Yb<sub>2</sub>O<sub>3</sub> Sesquioxides**

Presenter: Casey Corbridge  
Mentor: Dr. Lang

## **#402 Al-Ce Alloys for Riverine Turbines**

Presenters: Emilee Counce, John Rayle, Michelangelo Hooghkirk, Jacob Morton  
Mentor: n/a

## **#403 Vacuum Time Dependence on Uniform Dispersion**

Presenter: Sherrice Dale  
Mentor: Dr. Bin Hu

## **#404 Metal Coating as Electrodes in High Purity Germanium Gamma Radiation Detectors n Detectors**

Presenters: Mollie Daniell, Eli Christoph, David Crigger, Mohamed Shoieb, Josh Moorey  
Mentor: Dustin Gilbert

## **#405 Uniaxial Manufacturing of Fully Ceramic Microencapsulated (FCM®) Fuel**

Presenter: Ethan Deters  
Mentor: Dr. Caen Ang

## **#406 3D Printing of Graphene Oxide Nanocomposites for Biocompatible Devices via Digital Light Processing**

Presenter: Justin Edaugal  
Mentor: Rigoberto Advincula

## **#407 Effect of laser power on melt pool characteristics and fluid flow during laser line-melting on a Ti-6Al-4V alloy: An in-situ dynamic synchrotron x-ray radiography study**

Presenter: Garrett Fields  
Mentor: Hahn Choo

## **#408 Crystal Growth and Characterization of the Physical and Scintillation Properties of CsZn<sub>2</sub>Cl<sub>5</sub>**

Presenter: Christopher Fritz  
Mentor: Mariya Zhuravleva

## **#409 Autonomizing Static Chamber-Based Soil Trace Gas Sampling**

Presenters: Isaac Fugate, Sean Moran  
Mentor: Dr. Daniel Yoder

## **#410 Adhesive Characterization for Automotive Applications**

Presenters: Jacob Furst, Jacob Clark, Tonia Helmboldt, Mack Bethell  
Mentor: Dr. David Harper

## **#411 Design of Engineered Media Amendment Testing Process**

Presenters: Madeline Ginsberg, Ella Knight, Jaimie Armitage, Bryce Miller  
Mentors: Andrea Ludwig, Forbes Walker

## **#412 Measurement of Thrombectomy Device Removal Forces in Experimental Models of Acute Ischemic Stroke**

Presenter: Eleni Gollosi  
Mentor: Bryan Good

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## **#413 Assessment of Atomic Ordering in Alloys**

Presenter: Alexander Greenhalgh  
Mentor: David Keffer

## **#414 Current Practices and Potential Rider Benefits of Fare Capping Policies in the U.S.A.**

Presenter: Ashley Hightower  
Mentor: Candace Brakewood

## **#415 Characterization of Al-Ce Alloys via Atomic Force Microscopy**

Presenters: Gillian Holcomb, Alec Devaney, Joshua Safin, Noah Smith  
Mentor: Dr. Mahshid Ahmadi

## **#416 An Analysis of Applying LSTM Neural Networks to Predict Future Watershed Reservoir Depth**

Presenter: Jordan Huff  
Mentor: Dr. Anahita Khojandi

## **#417 Development of an in Vitro Test Bed for the Optimization of Drug Diffusion in Pediatric Solid Tumors**

Presenter: Rachel Ivy  
Mentor: Dr. Elizebeth Barker

## **#418 Evaluation of different ion-exchange membranes for aqueous organic redox flow battery**

Presenter: Jake Johnson  
Mentor: Gabriel Goenaga

## **#419 Evaluation of Forces Required by a Stent Retriever to Remove Experimental Models of Acute Ischemic Stroke**

Presenter: Caitlyn Kicza  
Mentor: Dr. Bryan Good

## **#420 Solid State Synthesis and Doping of $\text{YCa}_4\text{O}(\text{BO}_3)_3$**

Presenter: Marissa Knofczynski  
Mentor: Charles Melcher

## **#421 Developing FRED: Friendly Robot to Ease Dementia with Care Ethics**

Presenter: Kinley Koontz  
Mentor: Xiaopeng Zhao

## **#423 Experimental Model of a Strongback System**

Presenter: Paxton Lifsey  
Mentor: Mark D. Denavit

## **#424 Phase formation of High-Entropy Rare-Earth Monoclinic Aluminates**

Presenter: Madeline Loveday  
Mentor: Dr. Mariya Zhuravleva

## **#425 Prototyping a Variable Inertance Device**

Presenter: Carter Manson  
Mentor: Dr. Nicholas Wierschem

## **#426 Single-size and cluster dynamics modeling of intra-granular fission gas bubbles in $\text{UO}_2$**

Presenter: Nicholas Militello  
Mentor: Dr. Brian Wirth

## **#427 Optimizing Processing Parameters of 316L Stainless Steel Bellows**

Presenters: Colin Moore, Mary Hagemeyer, Sarah Lantzy, Ryan Maples  
Mentor: Eric Lass

## **#428 Optimal Double-Vacuum Preservative Treatment for Cross-Laminated Timber Panels**

Presenter: Alex Moore  
Mentor: Mark Denavit

## **#429 Neutronics Modeling for a Two-Fluid Molten Salt iso-Breeder Reactor Operating on the Thorium Fuel Cycle**

Presenter: C. Erika Moss  
Mentor: Dr. Ondrej Chvala

## **#430 3D Printing of Polyelectrolyte Materials via Direct Ink Writing**

Presenters: Anh Nguyen, Alicja Zeligowska  
Mentor: Rigoberto Advincula

## **#431 Soft poly-ethylene-glycol (PEG) micelles and lipid nanoparticles (LNPs) resolve autophagy and reduce pro-inflammatory cytokine secretion in RAW264.7 mouse macrophages**

Presenter: Nicole Nguyen  
Mentor: Paul Dalhaimer

## **#432 Structural stability of $\text{REE-PO}_4$ ( $\text{REE}=\text{Sm}, \text{Tb}$ ) under swift heavy ion irradiation**

Presenter: Cale Overstreet  
Mentor: Maik Lang

## **#433 3D Printing of Epoxy-Silica Corrosion Resistant Coatings**

Presenter: Taegyung Park  
Mentor: Dr. Rigoberto Advincula

## **#434 Floating Treatment Wetland Anchor System**

Presenters: Houston Phillips, Brea Sorrells  
Mentor: Dr. Daniel Yoder

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## **#435 Microstructural and Microhardness Evolution in Similar and Dissimilar Aluminum 2219 and 2195 Self-Reacting Friction Stir Welds**

Presenter: Dov Polsky  
Mentor: Claudia Rawn

## **#436 Machine Learning for Bioinformatics**

Presenter: Owen Queen  
Mentor: Scott Emrich

## **#437 Measuring Pre-Service, K-12 Teachers' Self-Efficacy in Teaching Engineering and Their Perceptions of Engineering as a Career**

Presenter: Neel Reeves  
Mentors: Dr. Courtney Faber, Dr. Betsy Chesnutt

## **#438 Flow Characteristics of Fast Molten Salt Reactors (FC-FMSR)**

Presenter: Harrison Reisinger  
Mentor: Dr. Ondrej Chvala

## **#439 3-D Printed PLA: Making a commonly brittle polymer elastic and ductile via annealment**

Presenter: Salvador Rohan  
Mentor: Dr. Rigoberto Advincula

## **#440 Passive Structural Control Achieved with a Mass Lever Inerter**

Presenter: Jonathan Shell  
Mentor: Dr. Nicholas Wierschem

## **#441 Hysteretic Rectification Utilizing Insulator to Metal Transition Materials**

Presenter: Dawson Smith  
Mentor: Ahmedullah Aziz

## **#441 Hysteretic Rectification Utilizing Insulator to Metal Transition Materials**

Presenter: Dawson Smith  
Mentor: Dr. Ahmedullah Aziz

## **#442 Investigation into the Unloading Response of Porous Materials**

Presenter: Noah Smith  
Mentor: Andrew Wereszczak

## **#443 Bioprinting osmotically actuated tissue-like materials**

Presenter: McKayla Torbett  
Mentor: Andy Sarles

## **#444 Restoration of Musical Organs: Analysis of Rubber Cloth and Other Historical Materials**

Presenters: Matthew Valderrama, Mackenzie Camp, Christopher Webb, Charlotte Buchanan  
Mentor: Dr. David Keffer

## **#445 Diamond-like Carbon Thin Films for Anti-fog Lens Coatings in Laparoscopy**

Presenter: Daniel Woods  
Mentor: Jacqueline Johnson

## **#446 A high-speed synchrotron x-ray radiography study on the effect of dwell time on melt-pool dynamics during the laser melting and solidification processes**

Presenter: Raymond Wysmierski  
Mentor: Hahn Choo

# Research presented at the 26<sup>th</sup> Annual Exhibition of Research and Creative Achievement benefitted, or was conducted in conjunction with the following organizations:

A Step Ahead	KARM	Siemens Medical
Alzheimer's Tennessee-Howard Circle of Friends	Knox County Health Department	Texas Christian University
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American Red Cross	Knoxville Inner City Kids Outreach (KICKO)	Thrive
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Catholic Charities	Metro Drug Coalition	University of Tennessee Medical Center
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Choice Health Network	NASA	US Department of Energy
City of Florence	NASA MSFC	US Forest service
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Emerald Youth Foundation	Oak Ridge National Laboratory	Volunteers of America at Candleridge Plaza
Fellowship of Christian Athletes	Office of Nuclear Energy	Wesley House Community Center
Flibe Energy	Office on Aging	YWCA
Friends of Literacy	Oxford Instruments	
Fulton Bellows	Purdue University	
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