Undergraduate Research and Creative Activity
Conference Winners

Overall Session Winners

Session 1- Sarah Burnash
Sex Differences in Cardiovascular Drift and Maximal Oxygen Uptake During Heat Stress
*Mentor:* Dr. Jonathan Wingo, Tori Stone

Session 2- Jacob Wall
Stable and Highly Efficient All Inorganic Perovskite Solar Cell
*Mentor:* Feng Yan, Liping Guo

Session 3- Jacob Collins
Unlearning Information: Exploring Campus Folklore via Fact-Checking
*Mentor:* Darrin Griffin

Session 4- Kyle Van Frank
Blended Cultures: The Story of Tap Dancing America
*Mentor:* Stacy Alley

Creative Showcase- Kaitlyn Sarao
Restitching History: A Contemporary take on designs of the Past
*Mentor:* Brian Taylor, Paula Robinson
Session 1- Health Sciences: Completed Works

Top Winner
Sarah Burnash
Sex Differences in Cardiovascular Drift and Maximal Oxygen Uptake During Heat Stress
*Mentor:* Dr. Jonathan Wingo

First Place
Katelyn Kcomt, Megan Cobb
Burnout and Empowerment among Medical Faculty, Staff, and Residents in an Academic Medical Center
*Mentor:* Nathan Culmer, Catayna Stager

Second Place
MacKenzie Robb, Abby Jurczyk
Physical Activity Predicts Depression in Older Adults
*Mentor:* Mercy Mumba

Third Place
Madeline Erwin
Maternal Vitamin A Supplementation Modulates Adipose Tissue Development in Offspring of Rats Consuming a High-Fat Diet
*Mentor:* Libo Tan, Kristi Crowe-White, Katelyn Senkus, Shu Kwan

Alex Parks, Elisabeth Pettibone
Functional Sugar-Free Gums Infused with Spices Improve the Antioxidant Capacity of Saliva
*Mentor:* Kristi Crowe-White

Fourth Place
Aly Gutierrez
Inhibitory Effect of Tea on the in vitro Enzymatic Digestion of Starch
*Mentor:* Lingyan Kong, Jiannan Feng, Libo Tan

Fifth Place
Sydney Miles
Adipose Tissue Development of Neonatal and Weanling Rats in Response to Maternal High Fat Diet Supplemented with Lycopene
*Mentor:* Libo Tan, Kristi Crowe-White

Gracie Trulove, Bailee Gist
Differences in Temporal Measures of Infant Swallow Function
*Mentor:* Memorie Gosa

Sixth Place
Andrew Cooper
Nanoencapsulation of Curcumin and β-carotene in Amylose Inclusion Complex
*Mentor:* Libo Tan, Lingyan Kong, Yanqi Zhang

Seventh Place
Amanda Ferrito
Physiological Correlates of Energy and Fatigue: An Addison's Disease Case Study
*Mentor:* Michael Fedewa

Kaitlyn Towers
What exercises can help prevent overuse shoulder and elbow injuries in baseball pitchers?
*Mentor:* Lizzie Hibberd

Melissa Sharpe
Examining Opioid Use and Socioeconomic Disparity Among College Students
*Mentor:* Michael Fedewa
Honorable Mention

Sara Ferguson
Assessing Risk Factors for Cardiovascular Disease and Type 2 Diabetes in Low-Income, Minority Preschool Children
*Mentor:* Michele Montgomery

Grace Shirah, Hannah Stevens
Relationship Between Pediatric Oral Feeding Skill and Reported Behavior During Mealtimes
*Mentor:* Memorie Gosa

Tomasz Gruchala
Mental Health Consequences of Digital Media Addiction
*Mentor:* Alan Blum

Jessica Bentley, Claire Lewis
Sex-related Differences in Anthropometric Measures in Young Adults
*Mentor:* Michael Fedewa
Session 1- Health Sciences: Works in Progress

First Place

Elizabeth Kantzler
The Opioid Epidemic: Examining the Long-term Effectiveness of Opioids as Pain Relievers
*Mentor: Jason Parton, Dwight Lewis*

Second Place

Luke Rakers
Computer Simulation of Cryoprotectants' Behavior in Cellular Membranes
*Mentor: Heath Turner, Joanna Szala-bilnik*

Third Place

Darby Davenport
Distributed Darbs: The Intersections of Blockchain Technology and Healthcare
*Mentor: Ashley Ewing, Lori Turner*

Honorable Mention

Savannah Stewart
Food Distribution in Tuscaloosa County
*Mentor: Darren Surman*

Jordan May, Julianne Rockett, Joy Bobo
Understanding Common Barriers and Facilitators of Whole Grain Consumption Among the Older Adult Population: A Literature Review
*Mentor: Seung Eun Jung*

Brianna Velez
Cannabis, Sleep, and Traumatic Brain Injury: A Scoping Review
*Mentor: Rachael Mumbower*

Hillary Melton
Telomere Length, American Heart Association's Life's Simple 7, and Psychosociocultural Factors Among African American Women
*Mentor: Theresa Wadas*

Elizabeth Di Valerio
Modeling the Journey of Transgender and Gender Creative (TGC) Patients through Healthcare System Contact Points and Experiences of Stigma
*Mentor: Joshua Eyer, Holly Kennedy*

Kate Bergey
RISE Center
*Mentor: Lori Turner*

Mia McKee
A Review of the Literature on Occupational Health, Safety, and Performance of Tactical and Industrial Athletes
*Mentor: Hayley MacDonald*
Session 2- Life/Physical Sciences, Engineering: Completed Works

Top Winner

Jacob Wall
Stable and Highly Efficient All Inorganic Perovskite Solar Cell
*Mentor:* Feng Yan, Liping Guo

First Place

Blake Wright, Ben Hallihan
Using Isochrones to Examine NICU Availability in Alabama
*Mentor:* Travis Atkison, Miclain Keffeler

Second Place

Tanner Carr
Alabama Link-Node Project: Transferring Legacy Crash Data to an Enterprise GIS-Based Roadway Data Management System
*Mentor:* Andrew Graettinger, Qifan Nie

Nicole Angel
Electrospinning of Cellulose Acetate Nanofibers: Process Optimization
*Mentor:* Lingyan Kong, Liping Guo, Feng Yan

Third Place

Timothy Foley
Determination of Set Point for Alkali-Activated Materials Utilizing Electrical Impedance Spectroscopy
*Mentor:* Armen Amirkhanian, Atolo Tuinukuaf

Fourth Place

Joshua Hunt
Investigating Internal Pressure Changes in Residential Structures during Garage Door Failure in High Wind Events
*Mentor:* Thang Dao, Ahmed Eldeeb

Anna Perkins
Development of Non-Leaching Surfactant for High Internal Phase Polymer Foams
*Mentor:* Amanda Koh

Fifth Place

Madeline Vaji
*Mentor:* Guy Caldwell, Kim Caldwell, Cayman Stephen

Laura Malis
Vehicle Crashes: Early Detection through Image Recognition
*Mentor:* Travis Atkison

Henry Abrams, Robert Bergstone
Rapid Layer-Specific Annealing Enabled by Ultraviolet LED for High-Performance Perovskite Solar Cells
*Mentor:* Dawen Li, Feng Zhu, Quantao Li

Dani Noll, Emily DeVriese
Design, Synthesis, and Application of High-Performance Ionene Polymers
*Mentor:* Jason Bara, Kathryn O’Harra
Honorable Mention

Daniel Mantoni
Effect of Organic Molecules on the Electrodeposition of Cobalt for Interconnect Applications
*Mentor: Qiang Huang

Hope Burnham
A Phase-Changing Borane Containing Fuel
*Mentor: Shane Street, Matthew Confer, David Dixon, Alice DeSimone

Kaitlyn Grady
Effects of Leaching on HIPE Foams
*Mentor: Amanda Koh

Jordan Walker
Manipulation of Properties of Liquid Metal Particles to Produce Electrically Conductive, Stretchable Wires
*Mentor: Amanda Koh

Tyler Rhodes, Matthew Mason
Spherical Additive Manufacturing 3D Printing Project
*Mentor: Susan Burkett

Cole Wagenhals
Observing the behaviors of sputtered zirconium in an oxidizing environment
*Mentor: Mark Weaver, Rachel White
Session 2- Life/Physical Sciences, Engineering: Works in Progress

First Place

Joseph Holden
Development of novel tools to study host-microbiome interactions mediated through ectopic olfactory receptors
*Mentor:* Lukasz Ciesla

Emma Neumann, Jake Houck
Hybridization and Phylogenetic Relationships Between Southeastern Vaccinium Species
*Mentor:* Michael McKain

Second Place

Michelle Tan, Rosemary Hartline, Rachael Cowan
Investigating modern dietary interventions and adulthood exercise as therapeutic treatments for the negative effects of a juvenile high-fat diet through glucose and protein analysis
*Mentor:* Laura Reed

Danielle Goduto, Catherine Howard
Characterization of Salt Tolerance in Greater Duckweed (Spirodela polyrhiza)
*Mentor:* Michael McKain

Third Place

Kayla R. Meeks
Belize Mapping Project: Modernization of Geospatial Landscape Analyses
*Mentor:* Michael Steinberg

Ryan Tuckey
Functional Analysis of the Cellular Mechanisms and Genetic Factors Associated with Alzheimer’s Disease using C. elegans
*Mentor:* Guy Caldwell

Madeline Shay
The Characterization of FosM, a Novel Class of Fosfomycin Resistance Enzymes found in *Mycobacterium abscessus*
*Mentor:* Matthew Thompson, Skye Travis

Honorable Mention

Ashley Eberly
Predicting the Properties and Covalency of High Oxidation State An(OH)x Complexes
*Mentor:* David Dixon, Zachary Lee, Monica Vasiliu

Kira Eickman, Owen Cunneely
The Influence of Gut Microbiota Composition on D. melanogaster Metabolic Phenotype
*Mentor:* Laura Reed, Andrei Bombin

Amelia Horine
Project Health Greek Peer Educators
*Mentor:* Charlotte Petonic

Sydney Jones, Daniel Risman
Variation in photosynthetic syndrome of the C3-C4 intermediate species Steinchisma hians
*Mentor:* Michael McKain

Lacey Kennedy
Investigation of Dopamine Neuron Degeneration as a Consequence of Parkinson's Disease Associated Bacteria
*Mentor:* Kim Caldwell, Guy Caldwell

Victoria Colon, Nathaniel Hill
Dose-Dependent and Sex-Specific Effects of Synthetic Estrogens on Reproductive Function
*Mentor:* Ryan Earley
Session 3- Social Sciences: Completed Works

Top overall

Jacob Collins
Unlearning Information: Exploring Campus Folklore via Fact-Checking
Mentor: Darrin Griffin

First Place

Margaret Lawson
Mississippi Memories: Lynchings in Hinds County, Mississippi, 1880-1934
Mentor: John Giggie

Second Place

Elizabeth Stinson
Investigating the Moderating Role of Race in the Relationship Between Vascular Health and Brain Activation During an Association Episodic Memory Task in Middle-Aged and Older Adults
Mentor: Ian McDonough

Third Place

Andrew Penunuri, Sera Levy
Posttraumatic stress and problem drinking among young adults: differences by trauma type
Mentor: Tricia Witte, Bridget Weymouth, Jonathan Stewart

Erica Ackerman
Adverse Childhood Events and Female Offending
Mentor: Jennifer Kenney

Elizabeth Small
Sleep and Physical Health in Infancy Predicts Better Social-Emotional Development in the First Two Years of Life
Mentor: Maria Hernandez-Reif, Nahide Gungordu

Fourth Place

Alisha Caves
Exploring the Associations of Relational Victimization and Relational Aggression with Peer Rejection: A Meta-Analysis
Mentor: Deborah Casper, Caroline Barlow

Nisha Singh
Peer Victimization: The Role of Aggression and Self-Esteem
Mentor: Fran Conners, Kristina McDonald, Jenna Reardanz

Fifth Place

Dawson Tan
Developing a Toolkit of Human Performance Measures for NASA
Mentor: Kimberly Stowers

Brooklyn Pfanstiel, Caroline Ward, Abby Slusser
"If he's cheating now, he's always going to cheat": Exploring Victim Perspectives and Network Member Involvement in the Coping and Repair Process following Romantic Infidelity
Mentor: Joshua Pederson, Leah LeFebvre

Honorable Mention

Mary Shupard
Why Do Officers Support Community Policing?: A Cross-Departmental Comparison
Mentor: Erin Kearns

Alicia Gallo, Shelton Owen
Examining Predictors of Protective Behavioral Strategies on Alcohol Use in a College Sample
Mentor: Tricia Witte

Angelina Jones
Cognitive Decline in Adolescents and Adults with Down Syndrome
Mentor: Frances Conners
Session 3- Social Sciences: Works in Progress

First Place
Emily Gibson, Emma Harper, Martha Glen Sease
Celebrating the Art and Historical Significance of the Lincoln Normal Quilters
*Mentor: David Bolus*

Second Place
Riley O’Neill
A Multiethnic Examination of Sleep as a Mediator of Relationships Between Childhood Adversity and Adult Emotional Health
*Mentor: Matthew Cribbet, Jeanne Cundiff, Chris Wendel*

Third Place
Lena Brysacz
Reform or Punishment: The Futility of Criminal Justice in America
*Mentor: Darren Surman*

Bailey Lanai
The influence of music on engagement during an art therapy program for adults living with dementia
*Mentor: Rebecca Allen*

Fourth Place
Abigail Kappelman
Morbidity and Mortality in the United States: How Inequality Produces Health Disparities
*Mentor: Jason DeCaro*

Alyssa Dick
He STEM, She STEM: Exploring the gendered student academic motivations influencing STEM interest and participation
*Mentor: Joan Barth*

Christian Bender
Truth-Telling in Everyday Life
*Mentor: Darrin Griffin*
Honorable Mention

Grant Gabrielson
First Comes Google, Then Comes Love: Sequential Information-Seeking Process of Relationship Initiation  
*Mentor:* Leah LeFebvre

Mackenzie Johnson
Developing Countries, Developing Crime: The Effects of Transnational Organized Crime on Culture and Government  
*Mentor:* Diana Dolliver

Bradley Beasley
Land Rush: A Socio-Economic Synthesis  
*Mentor:* Nicholas Magliocca

Trey Sullivan
Corruption, Democracy, and Independence in Latin America  
*Mentor:* Jennifer Greer

Sara Carmichael
Releasing the Incarcerated Elderly: Analysis of State Compassionate Release Policies  
*Mentor:* Jane Daquin

Samuel Reece
Quiescence in the Face of the Corruption of Power  
*Mentor:* Darren Surman

Taylor Canfield
Sleep, Pain, and Depression Among Nursing Home Residents  
*Mentor:* Patricia Parmelee

Ariana Evans-Young
Effects of Socially Malevolent Personalities on Altercasting  
*Mentor:* William Hart, Christopher Breeden

Samantha Ricks
The Relations of Adaptive Behaviors and Executive Functioning with Parental Stress in Those Parenting a Child with Autism Spectrum Disorder  
*Mentor:* Theodore Tomeny

Emily Gibson, Audrey Rollins
Developing Marion Through Collaboration and Community Resource Accessibility  
*Mentor:* David Bolus

Kaitlin Tindol
Mass Shootings in America: Do Media Representations of Perpetrators Exacerbate the Threat?  
*Mentor:* Adam Lankford
Session 4- Arts & Humanities, Business, Computer Science, MIS & Cyber, Fine Arts, and Education: Completed Works

Top Winners

Session 4

Kyle Van Frank
Blended Cultures: The Story of Tap Dancing America
*Mentor:* Stacy Alley

Creative Showcase

Kaitlyn Sarao
Restitching History: A Contemporary take on designs of the Past
*Mentor:* Brian Taylor

Humanities

First place

Natalie Lett
“Know Thine Own Meaning:” Raciolinguistic Exploration of Savage
*Mentor:* Dilin Liu

Computer Science, MIS & Cyber

First Place

Myles McLeroy
Sustainable Mobility: Developing a Web-based Software Suite for Transportation and Traffic Analysis
*Mentor:* Travis Atkison, Miclain Keffeler

Creative Showcase

First Place

Jennica Mancarella
Stitching History: Connecting Eras Through Design
*Mentor:* Brian Taylor

Second Place

Trevor Hill
Roses from the Holocaust
*Mentor:* Brian Taylor, Paula Robinson

Third Place

Kailyn Thomas
Design Exhibition: In Honor of Hedy Strnad
*Mentor:* Brian Taylor

Fine Arts

First Place

Tommie Quinlan
The Rise and Fall of the Paper Caper
*Mentor:* Amanda Thompson, Marcy Koontz, Brian Taylor
Business

First Place

Carter Shelton
The Evolution of Technology and Its Impact on Patient Outcomes in Healthcare
Mentor: Kimberly Stowers

Second Place

Sarah Lessley
The Next Generation of Marketing: Entering the Digital Age
Mentor: Susan Fant

Emily Passmore, Kevin Williams, Lauren Johnson
The Socio-Economic Impact of Nonprofits in West Alabama
Mentor: David Ford

Education

First Place

Emma Brown
The Role of Comprehensive P-12 Sex Education on Collegiate Women’s Perceptions and Knowledge
Mentor: Elizabeth Wilson, Dr. Cindy Ann Kilgo

Session 4 Honorable Mention

Caneel VanNostrand, Kayla Merritt
Kitschy Packaging: How Consumer Expertise and Product Packaging Impact Perceptions
Mentor: Clay Voorhees, Stacey Robinson

Cassandra Horkan
Keep Droning On
Mentor: Paul Drnevich, Josie Burks

David McDowell
Analysis of Domain Name Server Traffic on Tor Network Exit Node
Mentor: Diana Dolliver
Session 4- Arts & Humanities, Business, Computer Science, MIS & Cyber, Fine Arts, and Education: Works in Progress

Humanities

First Place

Molly Buffington
A War of Words: The Lutheran-Calvinist Debate on Acts 3:21 and the Eucharist
Mentor: Kirk Summers

MIS

First Place

John Martin Weed
Mapping the Digital Divide
Mentor: Darren Surman

Business

First Place

Michael Smith
Network Spillovers in Contests
Mentor: Paan Jindapon

Education

First Place

Riley Raynor, DeAnna Lockett
The Neglected Students: The Black Student Experience in the Public School System
Mentor: Darren Surman
Alabama Power Innovation Grant Winners

**Hillary Melton**  
Telomere Length, American Heart Association's Life's Simple 7, and Psychosociocultural Factors Among African American Women  
*Mentor: Theresa Wadas*

**Jacob Wall**  
Stable and Highly Efficient All Inorganic Perovskite Solar Cell  
*Mentor: Feng Yan, Liping Guo*

**Sean Sawaya**  
Rainbow Schlieren Tomography of Rotating Detonation Combustion  
*Mentor: Ajay K. Agrawal, Robert Miller*

**John Martin Weed**  
Mapping the Digital Divide  
*Mentor: Darren Surman*
Order of Events

Monday, April 8, 2019
South End Zone of Bryant Denny Stadium

1. Welcome—Dr. Russ Mumper-
   Vice President of Research and Economic Development

2. Conference Overview—Dr. Kim Bissell
   Director of Undergraduate Research

3. Session Winners—Dr. Kim Bissell & Jackie Harrison
   a. Health Sciences
   b. Life/Physical Sciences, Engineering
   c. Social Sciences
   d. Computer Science, MIS, Cybersecurity, Business, Education, Fine Arts and Humanities
   e. Creative Showcase

4. Alabama Power Innovation Grant winners—
   Alabama Power Representative