

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 Amirghanian, Atolo Tuinukuafe

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

Investigating ApoE-associated regulation of
neuroprotection and survival from A β -mediated
neurodegeneration in transgenic *Caenorhabditis*
elegans.

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 *Steinichisma 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, Miclaine 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