

SPECIAL AREA COMPETITIONS

The Spring 2024 Undergraduate Research Symposium featured eleven Special Area Competitions, designed to provide discipline and category-specific recognition of excellence in student scholarship, sponsored by a variety of undergraduate research partners across Mississippi State University.

3MINUTE RESEARCH PITCH

Sponsored by The Graduate School

The 3Minute Research Pitch is a competition modeled after the Three Minute Thesis (3MT) graduate competition that challenges undergraduate students to present a compelling verbal presentation of their research topic and its significance in just three minutes and with a single slide.

1ST

Elena Palomino (76); Mentor, Myles Landers, Marketing, Quantitative Analysis, and Business Law

Hail State and Tip Your Server: The Interplay Between Tip Framing Techniques and Social Identity to Influence Restaurant Tip Choices

2ND

Catherine Kalmbach (219); Mentor, Brian Rude, Animal and Dairy Sciences

Solubility and Degradation of Human Fertility-Promoting Molecules in a Rumen Environment

PEOPLE'S
CHOICE

Emma Palmer (249); Mentor, Natraj Krishnan, Biochemistry, Molecular Biology, Entomology, and Plant Pathology

Increased Levels of MMPs Impair Motor Function in a Fly Model of Spinocerebella Ataxia Type 1

BIOMEDICAL RESEARCH

Sponsored by the Departments of Agricultural & Biological Engineering and
Comparative Biomedical Sciences

This competition is for students in the life sciences and/or engineering who have conducted research related to preventing, diagnosing, or treating a human medical condition (i.e., illness, injury, or disease).

Madelyn Hunter (213); Mentor, Natraj Krishnan, Biochemistry, Molecular Biology, Entomology, & Plant Pathology

Circadian Locomotory Activity Patterns Exhibit Sexual Dimorphism in a Drosophila Model of Spinocerebellar Ataxia Type 1

1ST

Austen Breland (2); Mentor, Steven Elder, Agricultural and Biological Engineering
In Silico Insights into the Inhibition of ADAMTS-5 by Punicalagin and Ellagic Acid for the Treatment of Osteoarthritis

2ND

Tanner Jones (23); Mentor, Lauren Priddy, Agricultural and Biological Engineering
Replication of Impact Parameters from Cadaveric Lumbar Interbody Fusion Using a Benchtop Device

3RD

CALS & MAFES UNDERGRADUATE RESEARCH SCHOLARS PROGRAM

Sponsored by the College of Agriculture & Life Sciences and the MS Agriculture & Forestry Experiment Station

The Mississippi Agricultural and Forestry Experiment Station, along with the College of Agriculture and Life Sciences, hosts an awards program for all students in the 2023-2024 CALS/MAFES Undergraduate Research Scholars Program.

1ST

Jadyn Bowen (109); Mentor, Amanda Conrad, Food Science, Nutrition, and Health Promotion

C.O.N.N.E.C.T: Communities Overcoming Need through Nutrition Education, Collaboration and Training

2ND

Jordan Wilburn (267); Mentor, Richard Baird, Biochemistry, Molecular Biology, Entomology, & Plant Pathology

Untargeted Metabolomic Analysis of the Impact of Selenium Supplementation and SELENOH Formation on Polar Liver Metabolites

3RD
TIE

Trevor Haney (207); Mentor, Brandi Karisch, Animal and Dairy Sciences

Gastrointestinal Parasite Reinfection in Dewormed Beef Steers Over a 90-d Grazing Period

Tyler Barlow (169); Mentor, Brandi Karisch, Animal and Dairy Sciences

Effect of arrival fecal egg count on growth and performance on stocker steers during a 90-d grazing period

HONORABLE
MENTIONS

Jillian Robinette (257); Mentor, Te-Ming Tseng, Plant and Soil Sciences

Improved Herbicide Selectivity in Tomato by Safening Action of Benoxacor, Fenclorim, Melatonin, and 2,4,6-Trichlorophenoxyacetic Acid

Kristen Johnson (216); Mentor, Jean Feugang, Animal and Dairy Sciences

Discriminating Highly Resilient Spermatozoa During Long-term Chilled Storage

Seth Givens (197); Mentor, Mary Love Tagert, Agricultural and Biological Engineering

Effect of Cropping System and Soil Moisture on Iron Deficiency Chlorosis (IDC) in Soybean: 2023 Results

ENGINEERING RESEARCH

Sponsored by the Bagley College of Engineering

Projects completed under the supervision of a faculty member in the Bagley College of Engineering are eligible to receive a Bagley College of Engineering Undergraduate Research Award.

INTERDISCIPLINARY RESEARCH WINNER

Khaoula Kamal (24); Mentor, Lauren Priddy, Agricultural and Biological Engineering

Mitigating Degradation of Additively Manufactured Porous Magnesium Scaffolds Using Hydroxyapatite Coating

VISUAL PRESENTATION WINNERS

Daniel Hogan (19); Mentor, David Van Den Heever, Agricultural and Biological Engineering

Redesign Omnipod Insulin Delivery

Kyler Smith (31); Mentor, Cindy Bethel, Computer Science and Engineering

Evaluating the Ability of a Robot to Communicate Emotion through Generated Audio

DATA SCIENCE RESEARCH

Sponsored by the Data Science Program

The MSU Data Science Program competition recognizes excellence in undergraduate research relevant to data science from any academic discipline.

OVERALL WINNER: DATA SCIENCE AREA AWARD

Zijie Chen (5); Mentor, Sungkwang Mun, Center for Advanced Vehicular Systems

Autoencoder-Based Denoising and Temperature Conversion for Infrared Camera Images in Additive Manufacturing

OUTSTANDING BASIC DATA SCIENCE RESEARCH PROJECT WINNER

Nick Gray (17); Mentor, Sathishkumar Samiappan, Geosystems Research Institute

Analyzing Energy Usage and Carbon Emissions from Training A Deep Neural Network On High-Resolution Imagery

OUTSTANDING USE-INSPIRED DATA SCIENCE RESEARCH PROJECT WINNER

Zijie Chen (5); Mentor, Sungkwang Mun, Center for Advanced Vehicular Systems

Autoencoder-Based Denoising and Temperature Conversion for Infrared Camera Images in Additive Manufacturing

HONORABLE MENTIONS

Marlee Turner (161); Mentor, Jessica Benson, School of Human Sciences

The AI AgriRevolution: The use of AI in Mississippi's Agricultural Service

Kennedy Keyes (26); Mentor, Daniel Carruth, Center for Advanced Vehicular Systems

Evaluating Computer Vision Algorithms in Snow-Filled Environments with MAVS

OUTSTANDING APPLIED DATA SCIENCE RESEARCH PROJECT WINNER

Jackson Koloc (46); Mentor, Torsten Clay, Physics and Astronomy

Utilizing Machine Learning Track Stitching Methods to Reconstruct Fragmented Proton Tracks from the Jefferson Labs TDIS Experiment

HONORABLE MENTIONS

Shisir Baral (167); Mentor, Vitor Martins, Agricultural & Biological Engineering

Semantic Segmentation of Satellite Imagery for Land Cover Classification Using an Unet model

Caleb Bowman (37); Mentor, Boniface Fosu, Geosciences

Quantifying the Climate Impact of Land Use and Cover Changes in the Southern US: Insights from CMIP-LUMIP

Gregory Crotty (117); Mentor, Jarrod Moss, Psychology

An Analysis of the Effect of Cognitive Reflection on Insight Problem-Solving Behavior

Shelby Carpenter (181); Mentor, Peixin Fan, Animal and Dairy Sciences

The Colostrum Microbiota of Dairy Cattle and its Potential Influence on Calf Gut Microbiota Development

Erin Jones (135); Mentor, Jarrod Moss, Psychology

Machine Learning to Detect and Predict Cognitive Restructuring

HONORABLE MENTION FOR PROJECTS THAT CONTRIBUTE TO DATA QUALITY AND AVAILABILITY

Madeline Fredrick (11); Mentor, Christopher Hudson, Center for Advanced Vehicular Systems

Testing the Accuracy of LIDAR-based Mapping and Localization on an Unmanned Ground Vehicle

Renae Leighton (230); Mentor, Garrett Street, FWRC -Wildlife Fisheries & Aquaculture

The Trouble with Time: Beware of Time Drift in On-Board Data Loggers in Wildlife Research

Catelyn Dill (188); Mentor, Priyadarshini Basu, Biochemistry, Molecular Biology, Entomology, & Plant Pathology

Creating a Pollen Nutritional Database for North America

Emma Blake U'Ren (264); Mentor, Priyadarshini Basu, Biochemistry, Molecular Biology, Entomology, & Plant Path.

Pollen Identification Database in the Southeast Region for Pollinator Research

FORESTRY & WILDLIFE RESEARCH

Sponsored by the College of Forest Resources and the Forest & Wildlife Research Center

Undergraduate research projects completed under the supervision of or in association with a faculty member in the College of Forest Resources are eligible to be recognized with a College of Forest Resources/Forest and Wildlife Research Center Undergraduate Research Award.

Curtis Coleman (183); Mentor, Garrett Street, FWRC -Wildlife Fisheries & Aquaculture

Characterization of Body Acceleration Data Signals for Remote Sensing of Complex Animal Behaviors

1ST

Renae Leighton (230); Mentor, Garrett Street, FWRC -Wildlife Fisheries & Aquaculture

The Trouble with Time: Beware of Time Drift in On-Board Data Loggers in Wildlife Research

2ND

Olivia Burdine (178); Mentor, Christine Fortuin, FWRC-Forestry

Investigating Plant-Pollinator Network Associations in Northeast Mississippi and Alabama

3RD

GULF COAST RESEARCH

Sponsored by The Gulf Scholars Program

The Gulf Coast Research award highlights projects that address issues facing the Gulf Coast, such as (but not limited to) community health and resilience, environmental protection and stewardship, and energy safety and sustainability.

WINNER

Shawn Mackey (85); Mentor, Leah Kemp, Architecture

Preserving the Past, Securing the Future: Safeguarding Historic Structures in Tornado-Prone Communities

WINNER

Tony Owens (141) Mentor; Shrinidhi Ambinakudige, Geosciences

An Investigation into Social Vulnerability and Flood Risks in the Yazoo-Mississippi Delta

HUMANITIES RESEARCH

Sponsored by The Institute for the Humanities

The humanities competition recognizes outstanding student work that highlights the insights and values of humanities scholarship.

WINNER

Michael Herndon (60); Mentor, Silvina Lopez Barrera, Architecture

Community Resilience: Disaster Relief Practices and Informing Better Built Environments

MOVEMENT SCIENCES & HEALTH RESEARCH

Sponsored by the Department of Kinesiology

Movement Sciences and Health is multidisciplinary studies on human movement that discusses and applies the dimensions of wellness related to personal and public health.

Faith Hagan (84); Mentor, Harish Chander, Kinesiology
Comparing Lead Leg Joint Kinematics During Obstacle Negotiation in Real and Virtual Reality Environments

1ST

Hasini Yamagowni (93) Starkville High School; Mentor, Harish Chander, Kinesiology
Pressure Pain Threshold Before and After a Physiological Workload

2ND

Raegan Adams & Hartleigh Schambeau (79); Mentor, Chih-Chia Chen, Kinesiology
The Effects of Adapted Physical Activity Program on Balance and Quality of Life for Young Adults With Intellectual Disabilities

3RD
TIE

Agatha Taquino (90) Starkville High School; Mentor, Harish Chander, Kinesiology
The Virtual Moving Room Paradigm: Reloaded

MSU LIBRARIES RESEARCH

Sponsored by the Mitchell Memorial Library

The MSU Libraries Research Award is designed to recognize undergraduate student research that incorporated the use of library resources and/or services.

WINNER

Will White (57); Mentor, Eric Vivier, English

Tamburlaine's Victims: The Other Side of Religious Violence

PUBLIC HEALTH RESEARCH

Sponsored by the Department of Food Science, Nutrition, & Health Promotion

Public Health Research Competition is designed to highlight the important work that undergraduate students at MSU are doing in public health research related to promoting and protecting the health of people and communities.

1ST | **April Guo-Yue (205); Mentor, Juan Mendoza, Biochemistry & Molecular Biology, U of Chicago Pritzker School of Molecular Engineering**
Exploring a Novel Immune Modulation Approach for Monomeric Interferon Gamma (IFN γ) Design

2ND | **Rachel Adair (98); Mentor, Holli Seitz, Communication**
Using Diffusion of Innovation Theory Attributes to Predict Intention to Click, Try, and Share HappyHealthy Physical Activity Posts on Facebook

3RD | **Jadyn Bowen (109); Mentor, Amanda Conrad, Food Science, Nutrition, and Health Promotion**
C.O.N.N.E.C.T: Communities Overcoming Need through Nutrition Education, Collaboration and Training

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