

2023 CNAS UNDERGRADUATE RESEARCH SYMPOSIUM WINNERS WITH FACULTY ADVISORS

Biology: Ecology, Wildlife and Conservation

1st Place: *Taylor Hiers*

A NOVEL APPROACH TO SCORING RHYTHMIC VARIATION IN EVOLVING WHITE-THROATED SPARROW (*ZONOTRICHIA ALBICOLIS*) SONGS

Faculty Advisor: Dr. Jay McEntee

2nd Place: *Gabriela Rivero*

THE PHENOLOGY OF A FEMALE CAROLINA WREN CALL HELPS ELUCIDATE ITS FUNCTION

Faculty Advisor: Dr. Jay McEntee

Biology: Cellular, Microbiology and Genetics

1st Place: *Emma Braun*

BIOCHEMICAL STUDY OF CHARACTERIZING THE INTERACTION BETWEEN QUANTUM DOTS AND ACTIN

Faculty Advisor: Dr. Kyoungtae Kim

2nd Place: *Daniel Garten, Sophia Antonopoulos, Sara Woodman.*

DIETARY GRAPE SEED EXTRACT SUPPLEMENTATION INHIBITS NOCICEPTION AND MEDIATES GABAERGIC CHANGES IN A PRECLINICAL MODEL OF CHRONIC TMD

Faculty Advisor: Dr. Paul Durham

Chemistry and Biochemistry

1st Place: *Maximo Reyes, Jessica Linson, Preston Clubb, Martin Winburn, Barry Cheung.*

EFFECTS OF ATMOSPHERIC PLASMA TREATMENT ON THE TOXICITY OF POLYSTYRENE NANOPLASTICS IN WHEAT (*TRITICUM AESTIVUM* L.)

Faculty Advisor: Dr. Cyren Rico

2nd Place: *Krusha Bhakta*

STUDIES OF BACKBONE INTERCONVERSION AND DYNAMIC PROPERTIES IN DNA VIA NMR.

Faculty Advisors: Dr. Gary Meints

Computer Science

1st Place: *Gavin Moore, C.J. Moore*

AN EVOLUTIONARY MULTI-AGENT POLICY OPTIMIZATION FRAMEWORK USING SELF-ADVERSARIAL TRAINING SCENARIOS

Faculty Advisor: Dr. Siming Liu

2nd Place: *Nathan Hartzler, Brenna Dove, Nat Thompson, Joshua Stevens, Ingrid Perkins*

COMBINING MULTIPLE DEEP LEARNING MODELS FOR ONLINE SARCASM DETECTION

Faculty Advisors: Dr. Mohammed Y. Belkhouche

Cooperative Engineering

1st Place: *Joshua Cox*

THE EFFECT OF TEMPERATURE ON ELECTROCHEMICAL REDUCTION OF CARBON DIOXIDE AND FORMATE PRODUCTION

Faculty advisors: Dr. Daniel Moreno

2nd Place: *Stephen Davis, Austin Crabtree, Justin Leuthauser*

AUTO LAWN: WEBPAGE CONTROLLED YARD DEVICES

Faculty Advisors: Dr. Rohit Dua

Geology

1st Place *Oluchi Nweke*

SEQUIOTA CAVE SPRING AND POND INFLUENCE ON WATER QUALITY IN GALLOWAY BRANCH, SE SPRINGFIELD, MO

Faculty advisor: Dr. Bob Pavlowsky and Hannah Bieser (OEWRI RA)

2nd Place: *Abby Momberg*

CAN BOOKS BE TOXIC? AN XRF ANALYSIS OF ARSENIC CONTENT IN BOOK COVERS FROM MEYER LIBRARY SPECIAL COLLECTIONS

Faculty Advisors: Dr. Doug Gouzie

Geography, Geospatial and Planning

1st Place: *Genevieve Stark, Katherine Rudolph*

WHO WELCOMES REFUGEES? REFUGEE RESETTLEMENT AGENCIES AND THIRD SECTOR ORGANIZATIONS IN THE SOUTHEASTERN U.S.

Faculty advisor: Dr. Emily Frazier

2nd Place: *Allison Gargus*

BEACH EROSION TRENDS AT CRAB POND POINT SEA TURTLE NESTING SITE,

SOUTHWEST COAST, JAMAICA

Faculty Advisors: Dr. Bob Pavlowsky and Hannah Lowery (OEWRI RA)

Hospitality Leadership

1st Place: *Madison Smith, Alyson Morgans, Jake Boaz, Dodgle Schapeler*

DESTINATION IMAGE OF KANSAS CITY FROM THE PERSPECTIVE OF GENERATION Z

Faculty Advisor: Dr. Nancy Kageyama

Mathematics

1st Place: *Grace Herbold, Jake Gabbert*

DEVELOPING FRACTION-AS-MEASURE CONCEPTIONS TO SUPPORT GROWTH IN STUDENTS' ALGEBRAIC REASONING CAPACITIES IN MATH 101

Faculty Advisor: Dr. Patrick Sullivan

Physics, Astronomy and Materials Science

1st Place: *Matthew Bruenning*

IMPLEMENTATION OF A HOUGH TRANSFORM ON A FIELD PROGRAMMABLE GATE ARRAY

Faculty Advisor: Dr. Tiglet Besara

2nd Place: *Rachel Lee*

DEVELOPMENT OF ARTIFICIAL INTELLIGENCE-BASED FORCEFIELDS TO MODEL TUNNEL BARRIERS IN SUPERCONDUCTIONG QUBITS

Faculty Advisor: Dr. Ridwan Sakidja