

2022 CNAS Virtual Undergraduate Research Symposium Winners

Biology: Ecology, Wildlife and Conservation

1st Place: *Courtney Duncan*

CARBARYL SENSITIVITY IN GRAPEVINE

Faculty Advisor: Dr. Laszlo Kovacs

2nd Place: *Malachai Frisby, Daphne Miles*

METAL CONTAMINATION DECREASES MACROINVERTEBRATE ABUNDANCE IN BIG RIVER OF SOUTHEAST MISSOURI

Faculty Advisor: Dr. La Toya Kissoon-Charles

Biology: Cellular, Microbiology and Genetics

1st Place: *Seth Harris*

ML-1 THYROID CANCER CELLS ARE MORE RESISTANT TO PLATINUM-BASED CHEMOTHERAPEUTIC AGENTS

Faculty Advisor: Dr. Kyoungtae Kim

2nd Place: *Tarkesia Blakley*

THE EFFECTS OF HYPOCHLOROUS ACID AGAINST INFECTIOUS MICROBES

Faculty Advisor: Dr. Chris Lupfer

Chemistry and Biochemistry

1st Place: *Krusha Bhakta*

BIOPHYSICAL STUDIES OF DNA BACKBONE INTERCONVERSION AND DYNAMIC PROPERTIES VIA NMR

Faculty Advisor: Dr. Gary Meints

2nd Place: *Cassidy Soard*

SENSITIVE DETECTION OF EBOLA VIRUS USING FUNCTIONAL NANOSENSOR

Faculty Advisors: Dr. Tuhina Banerjee

Computer Science

1st Place: *Selma Bouraoui*

DETECTION OF MALICIOUS CONTENT IN COMPRESSED FILES USING DEEP CONVOLUTIONAL NEURAL NETWORKS

Faculty Advisor: Dr. Mohammed Y, Belkhouche

2nd Place: *Hung Nguyen*

AUTONOMOUS CONTROL OF FIXED-WING AIRCRAFT USING DEEP REINFORCEMENT LEARNING

Faculty Advisors: Dr. Siming Liu

Cooperative Engineering

1st Place: *Matt Bowie, Jeremy Long, Bronson Tavenner, Aaron Ivie*
AUTOMATED SOLAR TRACKING SYSTEM
Faculty advisors: Dr. Tayo Obafemi-Ajayi

2nd Place: *Grant Shaver, Austin Atkins, Isaac Hargrave, Samuel Whittington*
PID FLUID TEMPERATURE CONTROLLER
Faculty Advisors: Dr. Tayo Obafemi-Ajayi

Geology

1st Place *Ramona Gomez*
WATER QUALITY MONITORING OF FIVE SPRINGS IN POLK COUNTY, MISSOURI, TO DETERMINE CONTAMINATION RISKS TO THE SPRINGFIELD AQUIFER
Faculty advisor: Dr. Melida Gutierrez

2nd Place: *Dorian DeHart*
BUILDING A RATING CURVE FOR STREAMS IN SPRINGFIELD, MISSOURI
Faculty Advisors: Dr. Doug Gouzie

Geography, Geospatial and Planning

1st Place: *Hannah Lowery, Allison Gargus*
WATER QUALITY ANALYSIS IN BLUEFIELDS BAY, JAMAICA DURING MARCH 2022
Faculty advisor: Dr. Robert Pavlowsky

2nd Place: *CJ Moore, Gavin Moore, Dylan Berndt*
DATA COLLECTION INFRASTRUCTURE FOR FEATURE SIMILARITY ANALYSIS IN SATELLITE IMAGES OF ARCTIC SEA ICE
Faculty Advisors: Dr. Xin Miao

Physics, Astronomy and Materials Science

1st Place: *Cory Padgett*
ESTIMATING THE DEGREE OF ATMOSPHERIC JEANS ESCAPE FROM TERRESTRIAL EXOMOONS
Faculty Advisor: Dr. Sarah Morrison

2nd Place (tie): *Jessica Fink*
FABRICATION OF 2D HETEROSTRUCTURE OF GRAPHENE AND TRANSITION METAL OXIDES
Faculty Advisor: Dr. Kartik Ghosh

2nd Place (tie): *Amira Bezine*
THE ORBITAL DRIFT OF CRYOVOLCANIC MATERIAL FROM ENCELADUS WITHIN SATURN'S E RING
Faculty Advisor: Dr. Sarah Morrison