

UNDERGRADUATE RESEARCH DAY 2019

The 10th Annual CNAS Undergraduate Research Day was held on Friday, May 3. There were 85 poster presentations in a variety of categories. Pictures and abstracts of all presentations will be posted at <http://science.missouristate.edu/Undergraduate-Research-Day.htm>. The following CNAS Faculty mentored the student projects this year:

- Toby Dogwiler (GGP)
- Rohit Dua (EGR)
- Paul Durham (BIO)
- Kevin Evans (GGP)
- Krista Evans (GGP)
- Deb Finn (BIO)
- Katy Frederick-Hudson (BIO)
- Kartik Ghosh (PAMS)
- Razib Iqbal (CSC)
- Nancy Kageyama (HL)
- Kyoungtae Kim (BIO)
- La Toya Kissoon-Charles (BIO)
- Laszlo Kovacs (BIO)
- Day Ligon (BIO)
- Chris Lupfer (BIO)
- Matt McKay (GGP)
- Sean Maher (BIO)
- Alicia Mathis (BIO)
- Bob Mayanovic (PAMS)
- Gary Meints (CHM)
- Judy Meyer (GGP)
- Gary Michelfelder (GGP)
- Babur Mirza (BIO)
- Tayo Obafemi-Ajayi (EGR)
- Bob Pavlowsky (GGP)
- Les Reid (MTH)
- Cyren Rico (CHM)
- Mark Rogers (MTH)
- Ridwan Sakidja (PAMS)
- Alan Schick (CHM)
- Matthew Siebert (CHM)
- Pat Sullivan (MTH)
- Sanjay Tewari (EGR)
- Thomas Tomasi (BIO)
- Alexander Wait (BIO)
- Adam Wanekaya (CHM)
- Fei Wang (CHM)
- Keiichi Yoshimatsu (CHM)
- Songfeng Zheng (MTH)

2019 AWARD WINNERS

Biology: Ecology, Conservation and Wildlife

1st place – Anthony Grate

ASSESSING FERTILITY PATTERNS IN A CAPTIVE BREEDING POPULATION OF ALLIGATOR SNAPPING TURTLES.

Faculty Advisor: Dr. Day Ligon

Co-author: Denise Thompson

2nd place – Trang Tran

TOXICITY OF SILVER NANOPARTICLES IN AN AQUATIC ENVIRONMENT.

Faculty Advisor: Dr. La Toya Kissoon-Charles.

Coauthor: Jordan Heiman.

Biology: Cellular, Microbiology and Genetics

1st place – Husref Rizvanovic

EFFECTS OF ALTERNATIVE CHEMOTHERAPEUTIC AGENTS ON THYROID CANCER

Faculty Advisor: Dr. Kyoungtae Kim

Coauthor: Hanna Williams

2nd place – Cody Likens

DIETARY SUPPLEMENTATION WITH GRAPSEED EXTRACT PREVENTS DEVELOPMENT OF TRIGEMINAL SENSITIZATION AND INHIBITS PAIN SIGNALING IN A PRECLINICAL CHRONIC TMD MODEL.

Faculty Advisor: Dr. Paul L. Durham.

Coauthors: Lauren Cornelison, Sara Woodman, Chloe Keyes

Chemistry

1st place – Chad Lakin II

CELL PHONE ASSISTED DETECTION OF METAL IONS IN WATER BY PAPER-BASED ANALYTICAL DEVICES.

Faculty Advisor: Dr. Keiichi Yoshimatsu

2nd place – Koby Ljunggren

NMR ANALYSIS OF THE EFFECT OF G-T MISMATCHES IN DIFFERENT SEQUENCE CONTEXTS ON $^1\text{H}/^{31}\text{P}$ CHEMICAL SHIFTS AND NOE INTENSITIES.

Faculty Advisor: Dr. Gary A. Meints.

Computer Science

1st place – Connor Jansen

AUTOMATED GRAPE LEAF PATHOGEN DETECTION AND QUANTIZATION USING CANNY EDGE DETECTION ALGORITHM AND CONTOUR MAPPING.

Faculty Advisors: Dr. Razib Iqbal and Dr. Laszlo Kovacs.

Coauthors: Kyle Sargent, Alex Wilson, Colton Eddy, Emily Box

2nd place – Elliott Campbell

PORTABILITY AND PERSONALIZATION OF ELECTRONIC HEALTH RECORD.

Faculty Advisor: Dr. Tayo Obafemi-Ajayi

Cooperative Engineering

1st place – Damien Burbage

GOOD VIBRATIONS, OR HOW I LEARNED TO STOP WORRYING AND LOVE ANALOG.

Faculty Advisors: Dr. Rohit Dua, Dr. Tayo Obafemi-Ajayi

Coauthors: Anna Buckthorpe, Chase Ruggeri.

2ND place – Ethan Hill

MEGA WIMP-51 PROCESSOR CONSTRUCTION.

Faculty Advisor: Dr. Rohit Dua

Coauthors: Scott Kirsch, Jeffrey Mason, Patrick Toplikar, Dustin Whittaker.

GGP: Geology

1st place – Bailey D. Pfitzner

DETERMINING THE EFFECT OF GCP QUANTITY ON DEM ACCURACY IN SUAS-BASED STRUCTURE-FROM-MOTION PHOTOGRAMMETRY.

Faculty advisor: Dr. Toby Dogwiler.

2nd place – Mo Holley

BRINGING FOSSILS TO LIFE: THREE-DIMENSIONAL FOSSIL IMAGING.

Faculty Advisors: Damon Bassett and Dr. Toby Dogwiler

GGP: Geography, Geospatial & Planning

1st place – Michael Baird

GEOVISUALIZING JORDAN CREEK THROUGH TIME.

Faculty Advisor: Dr. Judith Meyer

2nd place – Margaret Alexander

ARE FISH SANCTUARIES MEETING THEIR INTENDED GOALS IN JAMAICA?

Faculty Advisor: Dr. Robert Pavlowsky

Hospitality Leadership

1st place – Kennedy Powell

COMPARING REASONS TO VISIT MARDI GRAS IN NEW ORLEANS BETWEEN PEOPLE WHO HAVE ATTENDED AND THOSE WHO HAVE NOT.

Faculty Advisor: Dr. Yoshimasa “Nancy” Kageyama.

Coauthors: Blake Woods, Darby Graham, Chris Cox, Jin Chang, Huan Ma

Mathematics

1st place – Gabriel Wallace

COLORING KNOTS WITH QUANDLES.

Faculty Advisor: Dr. Mark Rogers.

2nd place – Austin Beard

COLORABILITY OF SURFACES.

Faculty Advisor: Dr. Mark Rogers.

Physics, Astronomy & Material Science

1st place – Austin Bollinger

MOLECULAR DYNAMIC SIMULATIONS OF METALLIC SYSTEMS.

Faculty Advisor: Dr. Ridwan Sakidja

2nd place – Devon T. Romine

MOLECULAR DYNAMICS SIMULATIONS OF THE ANORTHITE-WATER MELT SYSTEM

Faculty Advisor: Dr. Robert A. Mayanovic

Coauthor: Robert Mayanovic

Einhellig Graduate Interdisciplinary Forum

50 graduate students from CNAS presented their results at the Graduate College Interdisciplinary Forum. All abstracts are posted at

<https://graduate.missouristate.edu/currentstudents/IDF.htm>.

The following CNAS Faculty mentored student projects this year.

- Albert Barreda (HL)
- David Cornelison (PAMS)
- Toby Dogwiler (GGP)
- Kevin Evans (GGP)
- Debra Finn (BIO)
- Kartik Ghosh (PAMS)
- Doug Gouzie (GGP)
- Melida Gutierrez (GGP)
- Kyoungtae Kim (BIO)
- Laszlo Kovacs (BIO)
- Day Ligon (BIO)
- Chris Lupfer (BIO)
- Sean Maher (BIO)
- Alicia Mathis (BIO)
- Matthew McKay (GGP)
- Robert Mayanovic (PAMS)
- Gary Meints (CHM)
- Gary Michelfelder (GGP)
- Kevin Mickus (GGP)
- Babur Mirza (BIO)
- Saibal Mitra (PAMS)
- Robert Pavlowsky (GGP)
- Xiaomin Qiu (GGP)
- Cyren Rico (CHM)
- Ridwan Sakidja (PAMS)
- Matthew Siebert (CHM)
- Alan Schick (CHM)
- Tom Tomasi (BIO)
- Ryan Udan (BIO)
- Alexander Wait (BIO)

CNAS Faculty served as a judge for the 2019 Einhellig InterDisciplinary Forum

- Tiglet Besara (PAMS)
- Jill Black (GGP)
- Kartik Ghosh (PAMS)
- Melida Gutierrez (GGP)
- Kyoungtae Kim (BIO)
- Bob Pavlowsky (GGP)
- Alan Schick (CHM)
- Tom Tomasi (BIO)
- Ryan Udan (BIO)

Outstanding Poster Presentation Awards to CNAS Students

Meagan Rippee-Brooks – BIO

Understanding Immune Signaling of FLU and Fungal Co-infections through Model Development

Faculty advisor – Chris Lupfer

Tyler Engelbart - GGP

Investigation of TUFA on the Spring River in Northern Arkansas

Faculty advisor – Doug Gouzie

Bennett Conway – GGP

Advancements in Agricultural Biomass Estimation Using sUAS-based Structure from Motion Photogrammetry

Faculty advisor- Toby Dogwiler

Sinjan Majumder-PAMS

Development of a CVD assisted PLD system for growing atomic monolayer

Faculty advisor – David Cornelison and Kartik Ghosh

Outstanding Oral Presentation Awards to CNAS Students

Abbigale Brown-Biology

Turn Down the Heat: Unlocking how NLRP12 Ticks

Faculty advisor- Chris Lupfer

Nathan Dorff- Biology

Stoneflies Grow Below the Flow in an Ozark Stream

Faculty Advisor- Deb Finn

Oluwasegun Abolade -Chemistry

Quality of Wheat Grains Generationally Exposed to Cerium Oxide Nanoparticles

Faculty advisor- Cyren Rico

Daniel Hostens -GGP

Determining the Effect of Mission Design and Processing Strategies on DEMs and Orthophotos Derived from UAS Imagery

Faculty advisor- Toby Dogwiler

Rajan Khadka-PAMS

Studying the Structural Properties of Amorphous Boron Carbide Using MD and HRMC

Faculty advisors- Ridwan Sakidja

Other Awards to CNAS Students and Faculty

Outstanding Graduate Mentor 2019 – Dr. Chris Lupfer (BIO)

Distinguished Thesis Award in Biological Science- Angeline Rodriguez (BIO)

Faculty advisor- Chris Lupfer

Distinguished Thesis Award in Math/Physical Sciences/Engineering-Wes Weichert (GGP)

MAGS Nominee

Faculty advisor- Kevin Evans