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A campus-wide experiential learning expo

FEATURING
A FALL SHOWCASE OF
UNDERGRADUATE RESEARCH

PRESENTED BY

THE UNIVERSITY OF TENNESSEE
KNOXVILLE
OFFICE OF UNDERGRADUATE RESEARCH & FELLOWSHIPS
Interested in Additional Opportunities to Pursue and Present Undergraduate Research?

The Office of Undergraduate Research & Fellowships funds and coordinates several on-campus undergraduate research programs, such as Semester Research Assistantships, Summer Research Internships, and the Summer Research Scholars Program, as well as campus-wide research exhibitions, including EURêCA. We also support students interested in off-campus research experiences and conferences. Looking to take your undergraduate research to the next level? Consider working with our staff to:

- apply for a nationally-competitive research award, such as the Goldwater, Amgen, Fulbright, DAAD RISE, or an NSF REU or Graduate Research Fellowship
- explore research opportunities with the UT Graduate School of Medicine and Oak Ridge National Lab
- secure travel funding to present at a research conference in your field or at NCUR, Posters at the Capitol, or Posters on the Hill

Visit our "Find Opportunities" page for more information
POSTERS

1
The Effects of Climate Change on Infectious Diseases in Immature Sea Turtles
Megan Cox – Animal Science (Pre-Veterinary Medicine)
Faculty Mentor: Dr. Deb Miller – Forestry, Wildlife and Fisheries

2
Microscopic Identification and PCR Detection of *Cytauxzoon felis* in Wild Bobcat and Ocelot Populations in South Texas
Jessica Kern – Animal Science (Pre-Veterinary Medicine)
Faculty Mentor: Dr. Deb Miller – Forestry, Wildlife and Fisheries

3
Secrets Beneath the Surface: A GPR Analysis of Coan Hall
Keri Burge – Anthropology
Meghan Dadmun – Anthropology
Zaria Bowden – Biological Sciences
Faculty Mentor: Dr. Barbara Heath – Anthropology

4
Studying the Palisade at Coan Hall: Archaeological, Geophysical and Geomorphological Training and Analysis
Gracie Shepard – Anthropology
Marley Ziegler – Anthropology
Faculty Mentor: Dr. Barbara Heath – Anthropology

5
Housing in Late Antique Rome
Anderson Hirt – Architecture
Faculty Mentor: Dr. Gregor Kalas – Architecture
6
Reducing PNNs in a Female Mouse Model of Rett Syndrome Reduces Pup Retrieval Behavior
Miranda Blevins – Audiology & Speech Pathology
Faculty Mentors: Dr. Keerthi Krishnan & Dr. Billy Lau – Biochemistry & Cellular and Molecular Biology

7
Using deep learning to determine motor deficiencies in female mouse model of Rett Syndrome
Benjamin Bridges – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Keerthi Krishnan – Biochemistry & Cellular and Molecular Biology

8
Nuclear Movement in Growing Arabidopsis Root Hairs: A Complex Process that Depends on Both Microtubules and Microfilaments
Justin Brueggeman – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Andreas Nebenfuehr – Biochemistry & Cellular and Molecular Biology

9
Vaccine Hesitancy Among Pregnant Women
Sara Burnette – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Samantha Ehrlich – Public Health

10
Forward Genetic Screen on Arabidopsis Thaliana erl2
Erik Cazares – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Elena Shpak – Biochemistry & Cellular and Molecular Biology

Denotes virtual-only presentation, accessible via Discovery Day 2021 Symposium site
11
Investigating the role of pyruvate kinase M2 in adipogenesis
Jenna Demeter – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Ahmed Bettaieb – Nutrition

12
Effect of Ethylene on Root Colonization of *Azospirillum brasilense*
Lauren Donnelly – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Brad Binder – Biochemistry & Cellular and Molecular Biology

13
Developing a recombinant murine cytomegalovirus
Ashley Fulmer – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Tim Sparer – Microbiology

14
ApoE & peptide competitive inhibition
Jalen Humphreys – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Jonathan Wall – UT Graduate School of Medicine

15
Isolation and characterization of the suppressors of *seilpex30* double mutant
Claire Kaple – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Amit Joshi – Biochemistry & Cellular and Molecular Biology

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16 Tuning in to the Radio to Understand Ultrasonic Vocalizations in Mice
Hannah Lee – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Breanna Ceesay – Neuroscience
Francesca Size – Biological Sciences
Benjamin Bridges – Biological Sciences
Sami Isaac – Chemical Engineering
Faculty Mentor: Dr. Keerthi Krishnan – Biochemistry & Cellular and Molecular Biology

17 Structure-Function Relationship of Mouse Ins1 & Ins2
Connor Long – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Thanh Do – Chemistry

18 Investigating role of dysferlin in lipid droplet biogenesis
Liliane Nguyen – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Amit Joshi – Biochemistry & Cellular and Molecular Biology

19 A pilot study investigating a novel biomarker to predict metabolic dysfunction during pregnancy
Brittany Okweye – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Jill Maples – UT Graduate School of Medicine

20 Campylobacter jejuni Sirtuin-like Protein Mediates Interactions with Neutrophils
Mary Wakim – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Jeremiah Johnson – Microbiology

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21
How the Changes in Provisioning Behaviors from Heat Stress Affect Offspring Growth
Mary Williams – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Elizabeth Derryberry – Ecology & Evolutionary Biology

22
Biochemical role of *Arabidopsis thaliana* GCN2-eIF2α module in mRNA ribonucleoprotein particle homeostasis
Lindsey Young – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Albrecht von Arnim – Biochemistry & Cellular and Molecular Biology

23
Characterization of Different Pulses as Sources of Food Ingredients for Agricultural and Food Sustainability
Lorren Politano – Biological Sciences (Ecology & Evolutionary Biology)
Abby Rodriguez – Food Science
Faculty Mentor: Dr. Vermont Dia – Food Science

24
Metabolic Plasticity of Three Species of Dung Beetles in Response to Greater Temperature Variation
Andrew Tucker – Biological Sciences (Ecology & Evolutionary Biology)
Faculty Mentor: Dr. Kimberly Sheldon – Ecology & Evolutionary Biology

25
Effect of Climate Change on Salamander Body Sizes
Timothy Meidl – Biological Sciences (Ecology & Evolutionary Biology); Philosophy
Faculty Mentor: Morgan Fleming – Ecology & Evolutionary Biology

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26
Novel Ultraviolet light technologies for the inactivation of murine hepatitis virus, a SARS-CoV-2 surrogate
Alexia Angelos – Biological Sciences (Microbiology)
Faculty Mentor: Dr. Doris D’Souza – Food Science

27
Friend, Enemies, Frenemies? Microbial Interactions at the Ocean’s Surface
Sarah Cathey – Biological Sciences (Microbiology)
Faculty Mentor: Dr. Erik Zinser – Microbiology

28
Effects of an ant chemical on common plant rhizobacteria and multiple plant pathogens
Alana Messier – Biological Sciences (Microbiology)
Faculty Mentor: Dr. Kim Gwinn – Entomology and Plant Pathology

29
Identifying Medically Vulnerable Areas in TN
Caroline Parker – Biological Sciences (Microbiology)
Faculty Mentor: Dr. Kristina Kintziger – Public Health

30
The effects of PNNs on micro-movements in maternal approach of mice
Trinity Shultz – Biological Sciences; Anthropology
Faculty Mentor: Dr. Keerthi Krishnan – Biochemistry & Cellular and Molecular Biology

31
Isolation of Environmental Listeria Phages in Eastern Tennessee
Michelle Claxton – Biomedical Engineering
Faculty Mentor: Dr. Thomas Denes – Food Science

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32
Effect of Processing Parameters on Microhardness of Additively Manufactured 15-5 Stainless Steel
Ethan Connor – Biomedical Engineering
Faculty Mentor: Dr. Eric Lass – Materials Science and Engineering

33
Investigating the Effects of Thrombolytic Drugs on Blood Clot Mechanical and Histological Properties
James Corbitt – Biomedical Engineering
Faculty Mentor: Dr. Bryan Good – Mechanical, Aerospace, and Biomedical Engineering

34
Determining the Adhesive Forces between Endovascular Devices and Blood Clots
Nick Munsie – Biomedical Engineering
Faculty Mentor: Dr. Bryan Good – Mechanical, Aerospace, and Biomedical Engineering

35
Generating Lower Limb Prostheses Simulations to Investigate Disabling Pain from Altered Walking Patterns
Tatum Perry – Biomedical Engineering
Faculty Mentor: Dr. Jeffrey Reinbolt – Mechanical, Aerospace, and Biomedical Engineering

36
Measuring the Effects of Thrombus Properties on Flow Pressures and Treatment Methods in an Acute Ischemic Stroke Model
Noah Robison – Biomedical Engineering
Faculty Mentor: Dr. Bryan Good – Mechanical, Aerospace, and Biomedical Engineering

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37
Effects of Lecithin on Eicosapentaenoic Acid Distribution in Rodent Model
  Jessie Li – Chemical and Biomolecular Engineering
  Faculty Mentor: Dr. Michael Karlstad – UT Graduate School of Medicine

38
Harnessing Modular Chassis Cell to Design Regulation Proteins to Relieve Carbon Catabolite Repression in Escherichia coli
  Gillian Castro – Chemical Engineering
  Faculty Mentor: Dr. Cong T. Trinh – Chemical and Biomolecular Engineering

39
Analysis of the UVA/UVB Degradation of Lotions with Additives through Raman Spectroscopy
  Isabelle Dancer – Chemistry
  Faculty Mentor: Dr. Bhavya Sharma – Chemistry

40
Ballistic characteristics of additively manufactured panels
  Dakota Landrie – Chemistry; Mathematics
  Faculty Mentor: Dr. Uday Vaidya – Mechanical, Aerospace, and Biomedical Engineering

41
Analysis of Alternate Binder Properties in Optimized Concrete
  Caleb Napper – Civil Engineering
  Faculty Mentor: Dr. John Ma – Civil Engineering

42
USDA Summer Food Service Program: Insights from the COVID-19 Distribution Response
  Ashlyn Anderson – College Scholars
  Faculty Mentor: Melissa Weissler – Operation Food Search

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43
Precarious Consumption in Knoxville, TN
Emily Morgan – College Scholars
Faculty Mentor: Dr. Nikki Luke – Geography

44
A Mixed Method Study of the Socio-Emotional Benefits of Reader’s Theatre
Denee Stewart Freeman – College Scholars
Faculty Mentor: Dr. Deborah Welsh – Psychology

45
Cultural Autonomy and Identity in Obstetric Care
Juliana Upchurch – College Scholars
Faculty Mentor: Dr. Susan Lawrence – History

46
Efficient Numerical Methods for Deep Generative Modeling
Lauren Proctor – Computer Science; Mathematics
Faculty Mentor: Dr. Yuanzhe Xi – Mathematics, Emory University

47
LASSO Feature Selection for Sepsis Prediction and Phenotype Classification in *E. coli*
Owen Queen – Computer Science; Mathematics
Faculty Mentor: Dr. Scott Emrich – Electrical Engineering and Computer Science

48
Understanding a $15 Minimum Wage in Tennessee
Marshall Summar – Economics
Faculty Mentor: Dr. Marianne Wanamaker – Economics

49
Big Ideas for the Big Orange Pantry
Giuliana Castillo – Economics; Global Studies
Faculty Mentors: Dr. Michelle Childs & Dr. Christopher Sneed – Retail, Hospitality, and Tourism Management

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50  Denotes virtual-only presentation, accessible via Discovery Day 2021 Symposium site

Urban Agriculture: Do Soils Tests Tell the Whole Story?
Rebecca Hughes – Environmental & Soil Sciences
Gabriella King – Plant Sciences
Allison Padovani – Biological Sciences (Ecology & Evolutionary Biology)
Faculty Mentors: Dr. Sharon Jean-Philippe – Forestry, Wildlife and Fisheries; Dr. Natalie Bumgarner – Plant Sciences

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Connection between Sleeping Habits and Academic Success in times of a Global Pandemic
Zachary Coover – Finance
Faculty Mentor: Dr. Lance Dean – English

52
Characterization of Different Pulses as Sources of Food Ingredients for Agriculture and Food Sustainability
Avery Ollis – Food Science
Laila Martin – Nutrition
Faculty Mentor: Dr. Vermont Dia – Food Science

53
Characterization of Different Pulses as Sources of Food Ingredients for Agricultural and Food Sustainability
Joshua Saad – Food Science
Isabella Gregg – Advertising
Saydie Hillis – Plant Sciences
Faculty Mentor: Dr. Vermont Dia – Food Science

54
Quillaja saponaria bark extract prevents Salmonella enterica serovar Typhimurium Sal54 attachment on Vero Cells
Halia Walrond – Food Science
Faculty Mentor: Dr. Doris D’Souza – Food Science
55
Polyextremophile brine ecosystems in Antarctica as models for life on Enceladus
Kristen Holbrook – Geology and Environmental Studies
Faculty Mentor: Dr. Jill Mikucki – Microbiology

56
The Beliefs, Knowledge and Attitudes of Latinos in the Knoxville Area about COVID-19 and the Vaccines
Andrea Linares – Kinesiology
Faculty Mentor: Dr. Cristina Barroso – Nursing

57
Hemocompatibility of Nitinol
Eli Christoph – Materials Science and Engineering
Faculty Mentor: Dr. Bryan Good – Mechanical, Aerospace, and Biomedical Engineering

58
Effects of Processing Parameters on Density of AM 15-5 PH Stainless Steel
Mary Hagemeyer – Materials Science and Engineering
Faculty Mentor: Dr. Eric Lass – Materials Science and Engineering

59
Within Host Mathematical Modeling of Influenza A and B Viral Dynamics
John Maddox – Mathematics
Faculty Mentor: Dr. Vitaly Ganusov – Microbiology

60
Exploring Racism in the Context of K-12 Educational Institutions’ Social Media Posts
Tayla Thomas – Mathematics
Faculty Mentor: Dr. Joshua Rosenberg – Theory and Practice in Teacher Education

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A Camera-Based System for Noninvasive Monitoring in the Neonatal Intensive Care Unit

Samantha Bell – Mechanical Engineering
Jordan Grant – Biomedical Engineering
Michael Palmaccio – Aerospace Engineering
Gabrielle McClarin – Nursing

Faculty Mentors: Dr. Xiaopeng Zhao – Mechanical, Aerospace, and Biomedical Engineering; Dr. Tami Wyatt – Nursing

Transition and turbulence modeling of a NASA 93-10 flared cone

Spencer Dixon – Mechanical Engineering

Faculty Mentor: Dr. James Coder – Mechanical, Aerospace, and Biomedical Engineering

Rainbow Garden: Cultivating Community

Alenna Fletcher – Modern Foreign Languages & Literatures (LWB Hispanic Studies)
Bear Moran – Computer Science; Mathematics
Spencer Wood – Economics

Faculty Mentors: Dr. Sharon Jean-Philippe – Forestry, Wildlife and Fisheries; Dr. Natalie Bumgarner – Plant Sciences

Creating a Backyard Buzz: Using Video to Communicate Information and Increase Awareness About Mosquito Populations and Diseases in TN

Caroline Barnes – Neuroscience

Faculty Mentor: Dr. Rebecca Trout Fryxell – Entomology and Plant Pathology

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65
Investigating Microglial Cell Function in the Suprachiasmatic Nucleus
Kara Holt – Neuroscience
Faculty Mentor: Dr. Rebecca Prosser – Biochemistry & Cellular and Molecular Biology

66
Effects of Social Dominance Status on Responses to Social Defeat Stress and Activity of Medial Amygdala Androgen Receptor-Expressing Neurons
Josh King – Neuroscience
Faculty Mentor: Dr. Matthew Cooper – Psychology

67
Novel Microfluidic Device Used to Maintain Brain Tissue and Quantify Excitotoxicity
Jimin Lee – Neuroscience
Faculty Mentor: Dr. Rebecca Prosser – Biochemistry & Cellular and Molecular Biology

68
A Chinese Olive Branch to the United States
Peibo Li – Neuroscience
Faculty Mentor: Dr. Wonjae Hwang – Political Science

69
Development of Boronic Acid-Functionalized Liposome Formulations
Aidan Melton – Neuroscience
Faculty Mentor: Dr. Deidra Mountain – UT Graduate School of Medicine

70
Identifying functional biomarkers of senescence via machine learning
Deanna Riley – Neuroscience
Faculty Mentor: Dr. Jude Phillip – The Institute of NanoBioTechnology, Johns Hopkins University

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Effect of Alzheimer’s Aβ and tau initial toxicity on tissue viability and peptide release in the SCN
Christiane Alvarez – Neuroscience
Faculty Mentor: Dr. Rebecca Prosser – Biochemistry & Cellular and Molecular Biology

Investigating whisker-based tactile deficits in a female mouse model of Rett Syndrome
Olivia Fleenor – Neuroscience; Psychology
Alexandra McBryar – University Exploratory
Sarah Perez – Biological Sciences (Biochemistry & Cellular and Molecular Biology)
Faculty Mentor: Dr. Keerthi Krishnan – Biochemistry & Cellular and Molecular Biology

Differences Between College Males’ and Females’ Coping Mechanisms in Relation to the COVID-19 Pandemic
Margaret Tasket – Nursing
Faculty Mentor: Dr. Allyson Neal – Assistant Dean of Graduate Programs for Nursing

Creating Superconducting Interfaces
Mitchell Compton – Physics
Faculty Mentor: Dr. Hanno Weitering – Physics & Astronomy

Quantum Transport in Low-dimensional Semiconductors
Cory Cravens – Physics
Faculty Mentor: Dr. Joon Sue Lee – Physics & Astronomy

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Measuring the efficiency of proton detection
William Greene – Physics
Faculty Mentor: Dr. Nadia Fomin – Physics & Astronomy

Creating Analytic tools for CHIMERA
Daniel Lamphere – Physics
Faculty Mentor: Dr. William Hix – Physics & Astronomy

Realizing Atomic Flatness for Epitaxial Growth
Alexander Sizemore – Physics
Faculty Mentor: Dr. Jian Liu – Physics & Astronomy

Rivet Analyses of High Energy Collisions
Adam Tilley – Physics
Faculty Mentor: Dr. Christine Nattrass – Physics & Astronomy

Conserving the imperiled Atlantic White-cedar: A population genetics perspective
Zane Smith – Plant Genetics and Biotechnology
Faculty Mentor: Dr. Denita Hadziabdic Guerry – Entomology and Plant Pathology

Discovering Racial and Gender Patterns within Political Ads
Tena Beard – Political Science
Faculty Mentor: Dr. Leah Christiani – Political Science

Single-Molecule Studies on DNA Bending by Transcription Factor Protein Sox2
Chandni Naidoo – Political Science
Faculty Mentor: Dr. Rajan Lamichhane – Biochemistry & Cellular and Molecular Biology

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83
Puberty and the Development of Perineuronal Nets in the Medial Amygdala
Raneem Ammar – Psychology
Faculty Mentor: Dr. Kalynn Schulz – Psychology

84
A Moderation of Intimate Partner Violence-Linked Drug Use by Family of Origin Violence and Depression
Mary Jensen – Psychology
Faculty Mentor: Dr. Gregory Stuart – Psychology

85
Merchandising Strategies for the Big Orange Pantry
Madison Morgan – Retail, Hospitality and Tourism Management
Faculty Mentors: Dr. Michelle Childs & Dr. Christopher Sneed – Retail, Hospitality, and Tourism Management

86
Ijams Community Weaving Project
Isabella Killius – Sociology
Faculty Mentors: Dr. Nikki Luke – Geography; Dr. Mike McKinney – Earth and Planetary Sciences

87
Assessment of Physiological Markers in PET/CT Images to Identify Infiltration
Nikhil Chatra – Statistics
Faculty Mentor: Dr. Dustin Osborne – UT Graduate School of Medicine

88
Secondary seed dispersal in Pisgah National Forest
Holly Whited – Wildlife & Fisheries Science
Faculty Mentor: Dr. Charles Kwit – Forestry, Wildlife and Fisheries

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7TH ANNUAL DISCOVERY DAY
8.31.21

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