NEWS FROM THE



UNDERGRADUATE RESEARCH CENTER

TABLE OF CONTENTS

CONGRATS, SENIORS | P. 1

Congrats to our seniors

SENIOR PROFILES | P. 2-6

Check out our graduating seniors and where they are headed

WORLD CONGRESS ON UNDERGRADUATE

RESEARCHP | P. 7-8

Eight stellar undergraduate researchers travel to England to share their research

NATIONAL CONFERENCE ON UNDERGRADUATE

RESEARCH | P. 9-13

MTSU cohort travels to the University of Wisconsin-Eau Claire to present their research

FEATURED SOAR STUDENT | P.14

Alexa Summerstill

GRADUATION DISTINCTION | P. 15

Congrats to our seniors graduating with distinction and scholar distinction

URECA SUMMER AWARDS | P. 16-20

Congrats to our Summer 2023 recipients & thank you to committee

INTERNSHIPS & RESEARCH OPPS | P. 21-22

US Dept of Energy, Oakridge, and several other opportunities

Congrats, Seniors!

As the saying goes, all good things must come to an end. In this edition of our newsletter, we bid farewell to a *truly exceptional* group of students who are taking the next steps in making their dreams become a reality. Many are headed to top notch grad schools and medical schools, while others are taking a gap year or entering the "real world" (check out their profiles on pages 2-6 to see where they are headed next). All the blood, sweat, and tears these seniors have put into their coursework, research, and extracurriculars have paid off exponentially, and we could not be more proud. Congratulations on all your accomplishments!

Seniors, it has been a sincere joy to watch you grow into such wonderful, young scholars who will persevere in making the world a better place. You will be missed tremendously, but we wish you great happiness and know you will be successful in the adventures that lie ahead.

And finally, a special thank you to our outstanding faculty mentors who invested massive amounts of time and energy into developing and mentoring these students. Without you, an exceptional undergraduate research experience would not be possible.

Farewell, seniors - onward and upward!

URC'S MISSION

The Undergraduate Research Center's (URC) mission is to be the central hub for communication about undergraduate research grant programs and other related opportunities on and off campus, to distribute university funds for undergraduate research and creative projects, and to promote dissemination of results through travel grants and by offering opportunities for students to present their research findings.

HIGHLIGHTING GRADUATING SOAR MEMBERS AND RESEARCHERS





HUNTER BRADY

Major: Biology

Faculty Mentor: Dr. Anthony Newsome **Post-graduation plans:** Hunter will be attending medical school at Lincoln Memorial University-DeBusk College of Osteopathic Medicine in Knoxville, TN.



YASEEN GINNAB

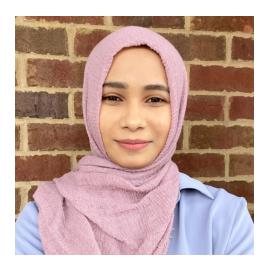
Major: Biology and Psychology

Faculty Mentor: Dr. Frank Bailey

Post-graduation plans: Yaseen will attend a year-long fellowship with the

Land Trust Alliance. After this, I'm

planning to pursue a Master's then a Ph.D.



MARZEA AKTER

Major: Psychology

Faculty Mentors: Dr. Tiffany Rogers

Post-graduation plans: Marzea will be

attending the dental school at The

University of Tennessee Health Science

Center in Memphis, TN.

HIGHLIGHTING GRADUATING SOAR MEMBERS AND RESEARCHERS





LACON PARTON

Major: Biochemistry

Faculty Mentor: Dr. Rebecca Seipelt-Thiemann

Post-graduation plans: Lacon's plan after

graduation is to go to medical school to pursue a career as a physician in Emergency Medicine. In the meantime, she will continue volunteering as a first responder and working as a Patient Care

Technician!



JESSE SCOBEE

Major: Biology

Faculty Mentor: Dr. April Weissmiller **Post-graduation plans:** Jesse is taking a gap year to go through the application process for Physician Assistant programs.



JANNA ABOU-RAHMA

Major: Biochemistry

Faculty Mentor: Dr. Kevin Bicker

Post-graduation plans: Janna is planning to take a gap year before applying to medical school and considering a masters degree

program during her gap year.

HIGHLIGHTING GRADUATING SOAR MEMBERS AND RESEARCHERS





SAMAN KITTANI

Major: Psychology

Faculty Mentor: Dr. Tom Brinthaupt and Dr.

Elizabeth Dyer

Post-graduation plans: Saman will be attending Vanderbilt University to pursue a graduate degree in Computer Science.



CHARLOTTE DAIGLE

Major: English

Faculty Mentor: Dr. Rhonda McDaniel

Post-graduation plans: Charlotte will be working

for Care Management Consultants as an Administrative Specialist. CMC works with nurses and attorneys representing clients who were seriously injured due to malpractice. She is also contemplating graduate school.



CHEYENNE JONES

Major: Biology

Faculty Mentor: Dr. April Weissmiller

Post-graduation plans: Cheyenne will be attending Duke University to pursue her doctorate in Cancer

Biology.

HIGHLIGHTING GRADUATING SOAR MEMBERS AND RESEARCHERS





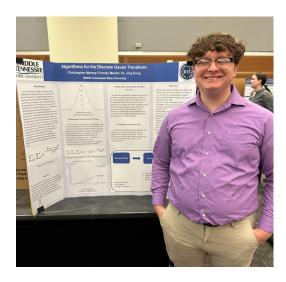
CASEY TOMLIN

Major: Forensic Science

Faculty Mentors: Dr. Yangseung Jeong

Post-graduation plans: Casey is planning to get a job as a crime lab technician working in

a local crime lab.



CHRIS MEHERG

Major: Physics & Astronomy

Faculty Mentor: Dr. Jing Kong
Post-graduation plans: Chris is

attending Georgia State University in Atlanta to start a PhD in theoretical

nuclear physics.



FORAM PATEL

Major: Computer Science

Faculty Mentor: Dr. Josh Phillips
Post-graduation plans: Foram is

starting her M.S in Data Science at MTSU.

HIGHLIGHTING GRADUATING SOAR MEMBERS AND RESEARCHERS





LUKE GORMSEN

Major: Professional Physics & Aerospace

Technology

Faculty Mentors: Dr. William Robertson & Dr.

David Butler

Post-graduation plans: Luke will be working

as a Radar Modeling Engineer for Dynetics.



ZIHAN ZHANG

Major: Actuarial Science

Faculty Mentor: Dr. Don Hong

Post-graduation plans: Zihan will be attending

Ohio State University to pursue a Masters of Actuarial and Quantitative Risk Management.

Congratulations MAY GRADUATES

We are so proud of you and all that you have accomplished during your time at MTSU! You will be sincerely missed, but we know you will be successful in the adventures that lie ahead.

WORLD CONGRESS ON UNDERGRADUATE RESEARCH

WORLDCUR

Coventry, UK

March 31-April 7

Eight MTSU students were selected to attend the joint World and British Congress on Undergraduate Research at the University of Warwick in Coventry, England. Students presented their research to an interdisciplinary audience and engaged with student researchers from all around the world.

MTSU Cohort: Brooke Busbee, Leslie Gonzalez, Yaseen Ginnab, Jessee Scobee, Marzea Akter, Janna Abou-Rahma, Ross Sibley, and Hunter Brady, with faculty representative Dr. Jamie Burriss.



The WorldCUR cohort was able to explore London before travelling to the University of Warwick.

Morld Congress on Andergraduate Research Mniversity of Marwick Coventry, England

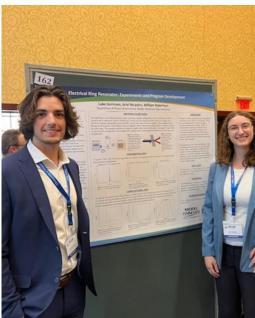


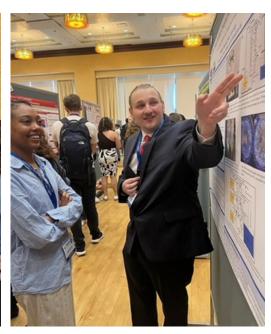
URC NEWS May 2023

NATIONAL CONFERENCE ON UNDERGRADUATE RESEARCH

MTSU undergraduate researchers travel to Wisconsin to present their research with 4,000+ students







What is NCUR?

UNIVERSITY OF WISCONSIN - EAU CLAIR

The National Conference on Undergraduate Research is a gathering of student scholars from all institutions of higher learning and from all corners of the academic curriculum. Through this annual conference, NCUR creates a unique environment for the celebration and promotion of undergraduate student achievement; provides models of exemplary research, scholarship, and creative activity; and helps to improve the state of undergraduate education.

Join us in 2024!

We will be travelling to Long Beach, California for NCUR 2024.





JANNA ABOU-RAHMA

Faculty Mentor: Kevin Bicker

Presentation Title: Mechanism of Action of

Antifungal Peptoids



MARZEA AKTER

Faculty Mentor: Tiffany D. Rogers

Presentation Title: Effect of acute oxytocin administration on social behavior in male and

female mice



HUNTER BRADY

Faculty Mentor: Anthony Newsome

Presentation Title: Chlorine Dioxide Gas as an Antiviral Agent: Development, Optimization, and Application, of an Antiviral Assay based on the MS2

Bacteriophage



BROOKE BUSBEE

Faculty Mentor: Jamie Burriss

Presentation Title: READY (Research Experience Activity Designed for Youth) to SOAR Program and

its Impact on Area High School Students





CASEY TOMLIN

Faculty Mentor: Yangseung Jeong

Presentation Title: Sex and age estimation using

CT images in Forensic Anthropology



CONNOR PRIM

Faculty Mentor: Michael Arndt

Presentation Title: Musicianship Explored Through

Mahler's Fifth Symphony

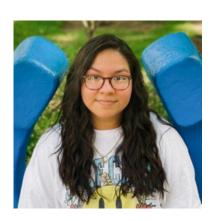


YASEEN GINNAB

Faculty Mentor: Frank Bailey

Presentation Title: Analyzing the Ability of

Astragalus Tennesseensis to Accumulate Selenium



LESLIE GONZALEZ

Faculty Mentor: Jamie Burriss; Yangseung Jeong **Presentation Title:** Sex and age estimation using CT images in Forensic Anthropology; READY (Research Experience Activity Designed for Youth) to SOAR Program and its Impact on Area High School Students





GRETI MULLER

Faculty Mentor: Mary Evins

Presentation Title: Pionír: An Illustrated Novella Inspired by the Historical Pioneering Heritage of a

Family from Transylvania



FORAM PATEL

Faculty Mentor: Joshua L. Phillips

Presentation Title: Scaling GPA* for complex

protein folding pathway simulations



ROSS SIBLEY

Faculty Mentor: Kevin Bicker

Presentation Title: Synthesis and Characterization

of Cyclic Peptoids Against Cryptococcus

neoformans and Candida albicans



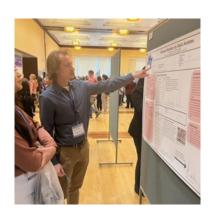
LINDSEY TRAN

Faculty Mentor: Daniel Erenso

Presentation Title: Creation of electro-magnetic assisted "Star-like" formation from cancer cells using

laser trapping technology





BENJAMIN MATTHEWS

Faculty Mentor: Scott Handy

Presentation Title: Carbonyl Allylation by Allylic

Acetates



ARIEL NICASTRO

Faculty Mentor: William Robertson

Presentation Title: Electrical ring resonator:

Experiments and program development



WESTON WILLIAMS

Faculty Mentor: Seockmo Ku

Presentation Title: Rapid Foodborne Pathogen

Detection via Tangential Flow Nano/Microfilter

Bioseperation System



LUKE GORMSEN

Faculty Mentor: William Robertson

Presentation Title: Electrical ring resonator:

Experiments and program development

FEATURED SOAR STUDENT

ALEXA SUMMERSILL

Student Organization for the Advancement of Research

Major: Psychology

Faculty Mentor: Liz Barnes

Current Research Focus:

Black undergraduate biology students and their community's attitudes, behaviors, communication habits, and knowledge of COVID19 and COVID19 vaccines

Project Description:

This study focuses on black undergraduate biology students and their communities' perceptions of COVID19 and COVID19 vaccines. I am working with two other undergraduate researchers on this project. We are interviewing students to understand their personal experiences during the COVID19 pandemic. With this study, we hope to improve understanding of the black communities' attitudes towards the pandemic and how educators can make COVID19 classroom discussions more inclusive.

Why does this topic interest you?

I am interested in research that aims to help make biology education more inclusive, especially when covering more controversial scientific topics. COVID19 and climate change are rarely spoken on in my field of study as a psychology major. I think that understanding student perceptions and communication habits on these topics can lead to undergraduate students both in and out of the science community having a better overall understanding of these topics.

What are your professional aspirations?

I would like to pursue a PhD in clinical psychology and become a therapist for adolescents and young adults. I am specifically interested in looking into men's mental health and body image. Overall, my goal is to help reduce the stigma associated with mental health.



Do you have any advice for future researchers?

I am fortunate that I had the opportunity to start my research journey early in my academic career. It was beneficial to me in a variety of ways, including making connections and helping me become more comfortable with public speaking. I recommend starting as early as you can and do not be afraid to ask questions!

Check out more SOAR profiles here!

MTSU.EDU/URC/SOAR-PROFILE/

UNDERGRADUATE RESEARCH GRADUATION DISTINCTION



LEVELS OF RECOGNITION

Distinction in Undergraduate Research

· Students receive a dark blue, light blue, and white cord

Scholar Distinction in Undergraduate Research

• Students receive a dark blue, light blue and white cord AND a medallion (see image to the right)

Congrats to our 2022-23 recipients!

Dalton Lewis, Scholar Distinction Saman Kittani, Scholar Distinction Jesse Scobee, Scholar Distinction Charlotte Daigle, Scholar Distinction Casey Tomlin, Scholar Distinction Leslie Gonzalez Salazar, Scholar Distinction Yaseen Ginnab, Scholar Distinction Luke Gormsen, Scholar Distinction Garrett Tessmer, Scholar Distinction Marzea Akter, Scholar Distinction Foram Patel, Scholar Distinction Teckanous VanTrease, Scholar Distinction Chevenne Jones, Scholar Distinction Catheryn Bolick, Scholar Distinction Kate Matthews, Distinction Hunter Brady, Scholar Distinction

ASSISTANT AWARDS

Madona Aziz - Pharmacologically targeting the proliferation of protein aggregates in a model of Huntington's Disease in Drosophila

Faculty Mentor: Kiel Ormerod, Biology

Halle Brandt - Assessing the Predictive Validity of the Short Form Vaping Consequences

Questionnaire: Positive Reinforcement Subscale.

Faculty Mentor: James Tate, Psychology

Emilie Conners - The Body Positivity Movement: Bettering College Women's Body Image and Health

Faculty Mentor: Lucy Matthews, Marketing

Eli Neville - 3D Imaging of the Weed Cell Structure for UV and Infrared based Weed Control

Faculty Mentor: Hongbo Zhang, Engineering Technology

Rose Gutierrez - Spectroscopy and Fluorescence Analysis of Neuroblastoma Cells in a Laser Trap with Magnetic Beads??

Faculty Mentor: Daniel Erenso, Physics and Astronomy

Ayleen Iguera - Researching Food Markets in Singapore and Malaysia to Better Understand Cultural Preferences in Terms of Food Availability, Prices, and Popularity Faculty Mentor: Ida Leggett, Sociology and Anthropology

Christopher Keiningham- Artificial Intelligence-Driven Snake Game Faculty Mentor: Xin Yang, Computer Science

Jack Kelly - Use of Natural Word Processing in Transformers to Analyze Electronic Medical Records (EMR)

Faculty Mentor: Khem Poudel, Computer Science

Gavin Liles - How Can Contrastive Learning be applied to improve the accuracy and speed of medical diagnosis and treatment?

Faculty Mentor: Khem Poudel, Computer Science

ASSISTANT AWARDS

Wesley Mitchell - Applying Induced Set Attention to Transformers for Object Detection Faculty Mentor: Joshua Phillips, Computer Science

Aaron Vongprachanh- Predicting and Mapping Environmental Health Index Through Google Street View Images

Faculty Mentor: Arpan Sainju, Computer Science

SILVER AWARDS

Catherine Bright - An Integration of Movement to the Screen Faculty Mentor: Jade Treadwell, Theater and Dance

Jillian DeGrie - Breaking the Stigma around Autism: an Interactive Art Exhibition

Faculty Mentor: Kathleen O'Connell, Art and Design

Madalyn Dye - Visual-Spatial Processing Differences Among Those with Dyslexia and Those Without Dyslexia

Faculty Mentor: Tim Odegard, Psychology

Sammi Hamdan - Identifying Alzheimer's Disease from EEG Data Using an AE-SVM Classifier

Faculty Mentor: Khem Poudel, Computer Science

Javier Hernandez - How Marketing Influenced the Success of the Top 20 Box Office Films of 2022

Faculty Mentor: Michael Peasley, Marketing

Francesca Mallia - People with Antisocial Personality Disorder and Psychopathic Traits and their Self-Talk

Faculty Mentor: Thomas Brinthaupt, Psychology

Weston Williams - Domestic Penicillin Production via Bioreactor Fermentation Processing Faculty Mentor: Tony Johnston, Agriculture

GOLD AWARDS

Amy Brown - Molecular Guided Design and Synthesis of Novel Autotaxin Inhibitors for Applications in Chemotherapy

Faculty Mentor: Souvik Banerjee, Chemistry

Rawan Haj-Hussein - Exploring the Behavioral Impacts of Neuronal, Huntingtin Aggregates on Adult drosophila melanogaster Faculty Mentor: Kiel Ormerod, Biology

Andrew Michael - Uncovering Components of the Excitation-Contraction Coupling Machinery Using a Cell-Specific Approach in Drosophila melanogaster Faculty Mentor: Kiel Ormerod, Biology

PLATINUM AWARDS

Elliot Certain - A Trip to DC: An Endeavor in Pursuit of Scholarly and Professional

Development

Faculty Mentor: Roberta Chevrette, Communications Studies

Priscilla Hammermeister - Financial Success Based on Maslow's Hierarchy of Needs:

Survey-Based Evidence

Faculty Mentor: Murat Arik, Business and Economic Research Center

Tadros Hana - Conducting a genetic screen to identify novel enhancers and suppressors of Huntington's Disease pathogenicity using GWAS-acquired targets

Faculty Mentor: Kiel Ormerod, Biology

Gracie Johnson - The Exchange of Nanoparticles and Peptoids

Faculty Mentor: Mengliang Zhang, Chemistry

Matthew Johnson - Characterization of Antifungal Peptoid Dendrimers

Faculty Mentor: Kevin Bicker, Chemistry

Benjamin Matthews - Asymmetric Carbonyl Allylation by Allylic Acetates

Faculty Mentor: Scott Handy, Chemistry

PLATINUM AWARDS

Patrick McAtee - Classical genetic approach to enable the economical utilization of plant lignocellulosic hydrolysates for bioethanol production Faculty Mentor: Elliot Altman, Biology

Hailey Simmons - Conducting Research with Traditional Specialists to Better Understand the Local Culture's uses to Aid and Cure Ailments in Singapore Faculty Mentor: Ida Leggett, Sociology and Anthropology

Clay Stalzer - Fungal-fungal interactions on the skin of reptiles Faculty Mentor: Donald Wakler, Biology

Lindsey Tran - Creation of New Energy Source from Electro-magnetic assisted "Star-Discovery in Red Blood Cells using Laser-Trapping Technology Faculty Mentor: Daniel Erenso, Physics and Astronomy

TEAM AWARDS

Emma Gresham, Lance Harbour, Drew Lacy, Zach Legaux, Andy Belcher, Audrey Roberts, Sarah Vaupel, Carter Holland, Elvis Hurtado, Sean Kangas, Josh Mahan, Bailey Moore, and Natalie Rapier - Half Dead Animated Short Film Faculty Mentors: Corey Reece, Media Arts

Jesse Adair, Christopher Cooper, Kaley Eaton, and Sarah Hall - The Farm Theatre College Collaboration Project- New Play Workshop in NYC Faculty Mentors: Lauren Shouse, Theater and Dance

Holden Ayers, Seth Martinez, and Megan Wagner - Relationship Between Sinkhole Flooding and Geology in Grassy Cove, TN Faculty Mentors: Mark Abolins, Geoscience

Beth Harless and Taylor Sholtz - Clemmie Unfiltered Faculty Mentors: Tom Neff, Media Arts

Thank you to our 2022-23 MRECA Committee

Tricia Farwell, Chair, Journalism Tiffany Rogers, Psychology Hanna Terletska, Physics and Astronomy Sean Foley, History Keely O'Brien, Agriculture Yixiang Wu, Mathematics Kim Evert, Educational Leadership Yi (Vanessa) Liu, Health and Human Performance Bridget Donnelly, English

OPPORTUNITIES

Check out the following opportunities for summer research!

MHIR Summer Undergraduate Research Program - MaineHealth Institute for Research

• The 2023 MaineHealth Institute for Research Summer Undergraduate Research Program application is now live on the MHIR website. The application deadline is January 31, 2023. During the summer months MaineHealth Institute for Research (MHIR) provides undergraduates with an opportunity for a paid research internship through the ten week MHIR Summer Undergraduate Research Program. Research at MHIR covers a broad spectrum of biomedical and health sciences including cardiovascular biology, stem cell biology, developmental biology, neurobiology, metabolic and hormonal regulation, health services and population health, and clinical research. Students attend weekly research lectures delivered by MaineHealth faculty and clinicians, as well as professional development and networking activities led by MaineHealth leaders and social and networking events when possible. Students enrolled in an undergraduate college program or community college program, or high school seniors at least 18 years of age are eligible to apply. Participants must be eligible to be employed in the United States. Contact us with any questions and please share with anyone who might be interested in the program!

Motion Planning Lab REU - Clemson University

• The Motion Planning Lab at Clemson is soliciting strong applicants for an REU program located at Clemson University's Zucker Campus in Charleston, SC. Students interested in Human-Robot Interaction (HRI) and/or motion planning are encouraged to apply. Specific projects include improving existing methods of tracking HRI and implementing new local steering controllers into the Robot Operating System (ROS) stack running on our robots (Turtlebot 2). Students applying should have significant coursework related to computer programming and have demonstrated abilities to work within a team and contribute to the completion of a large-scale project. Ideally, applicants should also have experience with robotics and ROS, and/or computer vision, and/or computer graphics, although this is not a requirement. The Research Experiences for Undergraduates (REU) program supports active research participation by undergraduate students in any of the areas of research funded by the National Science Foundation. REU projects involve students in meaningful ways in ongoing research programs or in research projects specifically designed for the REU program. Total pay for the entire 10-week program is \$8000. Eligibility: Undergraduate student participants in either REU Sites or REU Supplements must be U.S. citizens, U.S. nationals, or permanent residents of the United States. Applicants must also not planning to graduate before the end of Summer 2023

<u>Translational Biomedicine - University of Missouri</u>

• As part of the University of Missouri's NextGen Precision Health Initiative, the School of Medicine has developed a new Translational Biosciences PhD training program. This training program seeks to recruit highly motivated and creative young scientists who are interested in developing innovative solutions to difficult problems in biology and medicine. The purpose of this 9-week, full-time summer research program is to provide undergraduates with an intensive research experience that emphasizes interdisciplinary and translational approaches across the bench-to-bedside continuum. Students will conduct research full-time, attend a weekly Translational Biomedicine seminar, and have the option of attending an additional weekly professional development seminar. TBM interns will participate in the larger summer program at Mizzou, including evening seminars, social events, and orientation. At the end of the summer students will present their research at a poster Forum.

OPPORTUNITIES

Check out the following opportunities for spring & summer research!

Oak Ridge Institute for Science and Education

AMMTO is seeking talented and passionate ORISE Fellows that can support technical, programmatic, strategic, and policy efforts that will meet clean energy goals and drive innovation in U.S. manufacturing. Fellows will collaborate closely with AMMTO staff – including several former Fellows – and will develop a broad understanding of the potential of new technologies as well as the barriers to technology deployment. With guidance from a mentor, you will learn how to: Utilize scientific expertise to support decision-makers in the areas of energy efficiency policy, planning, research, development, and communication. Read more here

<u>U.S. Department of Energy Community College Internships (CCI) Program - U.S. Department of Energy</u>

• Are you a community college student pursuing a degree in science, technology, engineering, or math? Do you want to develop and hone your technical skills at a national laboratory while learning from some of our nation's best scientists, engineers, and technicians? Then the Community College Internships (CCI) program is for you. As a CCI participant, you'll gain valuable hands-on experience in a technical project and build your professional network under the guidance of a mentor. You will also have opportunities to present your work to your mentors and peers, join in social activities, and engage in a variety of professional development activities to enhance your career skills. Read more here

<u>U.S. Department of Energy Science Undergraduate Laboratory Internships (SULI) Program - U.S. Department of Energy</u>

Are you an undergraduate student pursuing a degree in science, technology, engineering, or math
 (STEM) or recent graduate who completed an associate's degree or bachelor's degree in STEM? Do you
 want to develop and hone your research skills at a national laboratory while learning from some of
 our nation's best scientists and engineers? Then the Science Undergraduate Laboratory Internships
 (SULI) program is for you. As a SULI participant, you'll gain valuable hands-on research experience and
 build your professional network while collaborating on an exciting project under the guidance of a
 mentor. You will also have opportunities to present your research to your mentors and peers, join in
 social activities, and engage in a variety of professional development activities to enhance your career
 skills. Read more here