

Research Experiences for Undergraduates Symposium

Alexandria, VA • October 28–29, 2018



Council on Undergraduate Research
Washington, DC



About the cover (clockwise): Students from University of Wisconsin–Madison’s Integrated Biological Sciences Summer Research Program tour the West Madison Agricultural Research Station (photo by John Greenler); Karolina Kodin, a student from an REU program at University of Idaho, analyzes bean varieties (photo by USDA ARS); Tommy Franklin from Appalachian State University checks samples during his REU at the UNC Institute of Marine Sciences (photo by E. Woodward, UNC Institute of Marine Sciences); REU students from University of Alabama at Birmingham work on identifying indigenous species in the Cahaba River (photo by U.S. Environmental Protection Agency).

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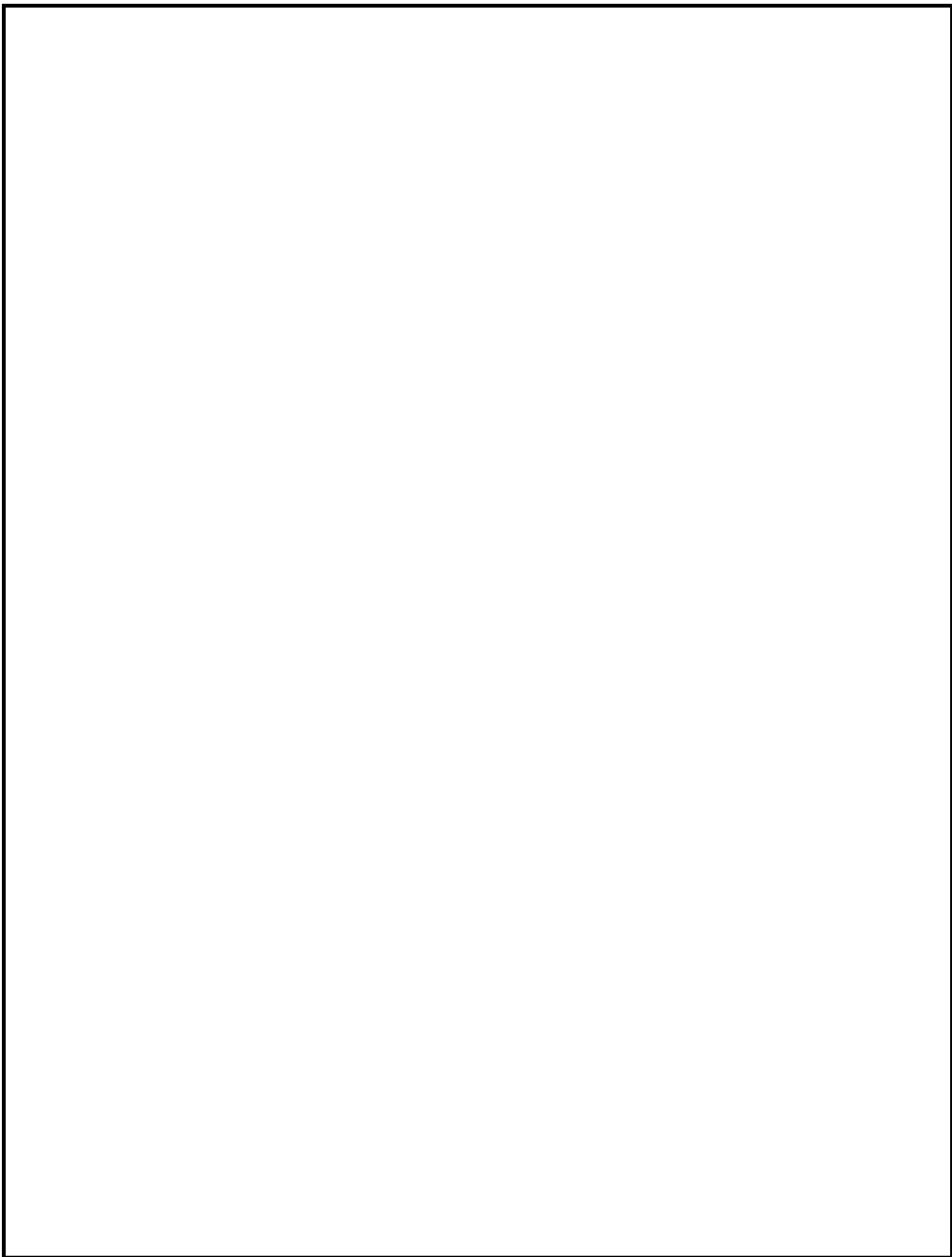


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Planning Committee

Liljana Babinkostova, associate professor
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Office Coordinator

2018 REU Symposium Schedule

Westin Alexandria—October 28–29, 2018

Sunday, October 28

11:00 am–1:00 pm Registration and Check-in
Location: Edison A-D

1:30 pm–3:00 pm Welcome Lunch and Keynote Panel
Location: Edison A-D

Elizabeth L. Ambos, Executive Officer,
Council on Undergraduate Research

Keynote Panel:

Irene Aninye, Senior Program Associate, Research Competitiveness
Program, American Association for the Advancement of Science
(AAAS)

Lujendra Ojha, Research Associate and Blaustein Postdoctoral Fellow,
Morton K. Blaustein Department of Earth and Planetary Sciences,
Johns Hopkins University

3:00 pm–3:15 pm Break

3:15 pm–3:45 pm Orientation to the next day's activities
Location: Edison A-D

3:45 pm–5:45 pm Networking session/Graduate Program share table
Location: Edison A-D

5:45 pm–7:00 pm Faculty Reception
Location: Whitney

7:00 pm– Dinners—explore Alexandria (students will have the opportunity to
join groups for dinner—sign up during registration and check-in)

Monday, October 29

7:00 am–8:00 am Breakfast and orientation to the day’s activities

8:30 am–9:30 am Group 1 Posters

Group 1 sets up for 8:30 am start, group 2 attends poster session.
Switch at 9:30 am.

9:30 am–9:45 am Switch Groups/Break

9:45 am–10:45 am Group 2 Posters

Group 2 sets up for 9:45 am start, group 3 attends poster session.
Switch at 10:45 am.

Faculty for groups 3, 4, and 5 attend R. Corby Hovis presentation

10:45 am–11:00 am Switch Groups/Break

11:00 am–12:00 pm Group 3 Posters

Group 3 sets up for 11:00 am start,
group 4 attends poster session.
Switch at 12:00 pm.

12:00 pm–12:15 pm Switch Groups/Break

12:15 pm–1:15 pm Group 4 Posters

Group 4 sets up for 12:15 pm start
Group 5 attends poster session.
Switch at 1:15 pm.

Faculty for groups 1, 2, 3, and 4 attend Jill Singer presentation

1:15 pm–1:30 pm Switch Groups/Break

1:30 pm–2:30 pm Group 5 Posters

2:45 pm–3:15 pm Closing Session

Lunch to be served on a “grab-and-go basis” (i.e., boxed lunches) to ensure that everyone has a chance to eat. Will be open for several hours to accommodate all.

Student Poster Sessions—Monday, October 29, 2018

Westin Alexandria / Edison E, F, G

8:30 am–9:30 am | Session 1

Physics; Engineering 1; International Science and Engineering

9:45 am–10:45 am | Session 2

Computer and Information Science and Engineering; Engineering II;
Mathematical Sciences; Cyberinfrastructure

11:00 am–12:00 pm | Session 3

Astronomical Sciences; Biological Sciences I; Materials Research; Earth Science

12:15 pm–1:15 pm | Session 4

Atmospheric Sciences and Geospace; Biological Sciences II; Chemistry

1:30 pm–2:30 pm | Session 5

Ocean Sciences; Social, Behavioral, and Economic Sciences; Education and Human
Resources

Student/Faculty Sessions—Monday, October 29, 2018

Westin Alexandria

Session 1 | 9:00 am–10:00 am

Student Session A:

Applying for Graduate School Support from NSF: The Graduate Research Fellowship Program (GRFP)—Ty Mitchell, Program Officer, Graduate Research Fellowship Program, National Science Foundation

Room: Banneker

Faculty Session A:

NSF REU Program Update—R. Corby Hovis, Program Director, Education and Human Resources

Room: Wright

Session 2 | 10:15 am–11:15 am

Student Session B

Fellowship and Internship Programs Panel—John Mateja, President, Barry Goldwater Scholarship and Excellence in Education Foundation; Karen Carter, Program Specialist, Smithsonian

Room: Banneker

Faculty Session B: Visits to NSF. Please schedule directly with your program director.

Session 3 | 11:45 pm–12:45 pm

Student Session C

Applying for Graduate School Support from NSF: The Graduate Research Fellowship Program (GRFP)—Ty Mitchell, Program Officer, Graduate Research Fellowship Program, National Science Foundation

Room: Banneker

Faculty Session C: Visits to NSF. Please schedule directly with your program director.

Session 4 | 1:15 pm–2:15 pm

Student Session D

Preparing for Professional Life: Resume Building and Networking—

Rebecca M. Jones, George Mason University

Room: Wright

Faculty Session D:

Assessment of REU Programs: EvaluateUR Approach—

Jill Singer, Director, EvaluateUR program, SUNY Buffalo State

Room: Wright

Poster Session 1
Location: Edison E, F, G
NSF Division: Engineering

1_1

Title: Mechanical Properties of Colored ABS Filaments

Presenter(s): Roshni Patnayakuni

REU Site: Advanced Materials and Processes for a Resilient Society

Host Institution: Worcester Polytechnic Institute

Grant #: 1659524

Principal Investigator / Faculty Mentor: Aaron Richard Sakulich | Amy Peterson

1_2

Title: Disruptive Potential of Illicit Supply Chain Members

Presenter(s): Haley Marini

REU Site: Security Printing and Anti-Counterfeiting Technology (SPACT) REU Site

Host Institution: South Dakota School of Mines and Technology

Grant #: 1560421

Principal Investigator / Faculty Mentor: Saurav Kumar Dubey | Grant Crawford

1_3

Title: Proteomic Analysis of Pancreatic Extracellular Matrix

Presenter(s): Margaret Blystone

REU Site: Undergraduate Research Experience in Biomedical Translational Science and Technology Development

Host Institution: Binghamton University, SUNY

Grant #: 1757846

Principal Investigator / Faculty Mentor: Kaiming Ye | Sha Jin

1_4

Title: Fabrication of Synthetic Vascular Grafts Using Citrate-Based Fluorescent Polymers

Presenter(s): John W. Tierney

REU Site: Penn State Cardiovascular Research: Engineering a Translational Experience (CREATE)

Host Institution: The Pennsylvania State University

Grant #: 1560064

Principal Investigator / Faculty Mentor: Keefe B. Manning | Jian Yang

1_5

Title: Local Delivery of Stem Cell-Recruiting Factor and Skeletal Muscle Maturation Factor for In-Situ Skeletal Muscle Regeneration

Presenter(s): Rawdah Elbahrawi

REU Site: Engineering New REU Approaches to Challenges in MultiTERM

Host Institution: Wake Forest University School of Medicine

Grant #: 1659663

Principal Investigator / Faculty Mentor: Anthony Atala | Ji Hyun Kim

1_6

Title: Flow Separation Control of an Overexpanded Rocket Nozzle Using Microjets

Presenter(s): John Wylie

REU Site: Multi-Physics of Active Systems and Structures
Host Institution: Florida State University
Grant #: 1560337
Principal Investigator / Faculty Mentor: Chiang Shih | Rajan Kumar

1_7

Title: Biomechanics in Caregivers Using a Robotic Assisted Transfer Device Compared to a Hoyer Lift: A Single-Subject Analysis
Presenter(s): Sara Hackett
REU Site: American Student Placements in Rehabilitation Engineering
Host Institution: University of Pittsburgh | Human Engineering Research Laboratories
Grant #: 1560174
Principal Investigator / Faculty Mentor: Rory A. Cooper

1_8

Title: Processed Natural Bamboo for High-Performance Structural Materials
Presenter(s): Jovani Occomy
REU Site: Innovative Engineering Using Renewable Resources
Host Institution: The University of Alabama
Grant #: 1559867
Principal Investigator / Faculty Mentor: Susan Burkett | Feng Yan

1_9

Title: MEMS-Based Beam Steering for Holographic LIDAR Systems
Presenter(s): Cameron Perl
REU Site: Research in Optics
Host Institution: College of Optical Sciences, University of Arizona
Grant #: 1460723
Principal Investigator / Faculty Mentor: R. John Koshel | Yuzuru Takashima

1_10

Title: Autonomous Navigation of UAVs in the Indoor Environment for Search-and-Rescue Missions
Presenter(s): Sania Esa
REU Site: Research Experience for Undergraduates in UAV Technologies
Host Institution: California State Polytechnic University, Pomona
Grant #: 1560478
Principal Investigator / Faculty Mentor: Subodh Bhandari

1_11

Title: Novel Clay-Based Absorbents for Ammonia Sequestration from Poultry Litter
Presenter(s): Christine T. Brockman
REU Site: Interdisciplinary Research Experiences in Materials Science and Engineering
Host Institution: Oklahoma State University
Grant #: 1460943
Principal Investigator / Faculty Mentor: Pankaj Sarin

1_12

Title: Evaluating Biomarkers for Stress and Learning in Architectural Virtual-Reality Environments
Presenter(s): Pamela Banner
REU Site: Neurotechnologies to Help the Body Move, Heal, and Feel Again

Host Institution: University of Houston
Grant #: 1757949
Principal Investigator / Faculty Mentor: Jose Luis Contreras-Vidal

1_13

Title: Solving the Mystery of the Absence of Bacterial Growth on Cellulose Nanofibrils
Presenter(s): Ariana Tai Kedoin
REU Site: Explore it! Building the Next Generation of Sustainable Forest Bioproduct Researchers
Host Institution: University of Maine
Grant #: 1757529
Principal Investigator / Faculty Mentor: Douglas J. Gardner | Caitlin Howell

1_14

Title: Development of Wi-Fi Communication Channel for Wireless Charging
Presenter(s): Firehiwot Gurara
REU Site: Summer Engineering Research Experiences in Transportation Electrification
Host Institution: University of Maryland–College Park
Grant #: 1559845
Principal Investigator / Faculty Mentor: Arun Sankar

1_15

Title: Machine Learning for Iron-Based Nanocrystalline Soft Magnetic Alloys
Presenter(s): Omar Laris
REU Site: Multifunctional Materials
Host Institution: Texas A&M University | Department of Materials Science & Engineering
Grant #: 1461202
Principal Investigator / Faculty Mentor: Ibrahim Karaman

1_16

Title: Effect of Carbon Tail Length on the Nanoscale Structure and Mobility of Ionic Liquids Near Electrodes
Presenter(s): Sara J. Jorgenson
REU Site: Electrochemical Engineering—Harnessing Electrons to Run Processes
Host Institution: Case Western Reserve University
Grant #: 1659394
Principal Investigator / Faculty Mentor: Daniel J. Lacks

1_17

Title: Impact of Size on Cytoplasmic Mobility of Nanoparticles
Presenter(s): Christian Figueroa-Espada
REU Site: Frontiers in Biomedical Imaging
Host Institution: University of Illinois at Urbana–Champaign
Grant #: 1757837
Principal Investigator / Faculty Mentor: Andrew M. Smith

1_18

Title: Development of a 3D-Printed Composite Bone Scaffold
Presenter(s): Alyson March
REU Site: Cellular Bioengineering—From Biomaterials to Stem Cells
Host Institution: Biomedical Engineering, Rutgers, The State University of New Jersey

Grant #: 1559968

Principal Investigator / Faculty Mentor: David I. Shreiber

1_19

Title: Development of a Platform for Rapid Antibiotic Screening

Presenter(s): Garrett Soler

REU Site: E-REU—A Multidisciplinary, Entrepreneurial Research and Education Experience for Undergraduates

Host Institution: University of Connecticut

Grant #: 1560072

Principal Investigator / Faculty Mentor: Daniel D. Burkey

1_20

Title: Computational Modeling and Simulation of Shock Wave Lithotripsy

Presenter(s): Megan Ogle

REU Site: Research Experience for Undergraduates for Meeting the Grand Challenges in Engineering

Host Institution: Pratt School of Engineering, Duke University

Grant #: 1659615

Principal Investigator / Faculty Mentor: Carmen Rawls | John Dolbow

1_21

Title: Digital Print Additive Manufacturing of Optical Fiber Interconnects

Presenter(s): Coleman Tolliver

REU Site: REU in Functional Materials and Manufacturing at University of South Florida

Host Institution: University of South Florida

Grant #: 1560303

Principal Investigator / Faculty Mentor: John Kuhn

1_22

Title: Comparison of Site-Directed Mutagenesis and Site-Saturated Mutagenesis to Explore the Effects of Amino Acids on AAV Behavior

Presenter(s): Belen Torres

REU Site: Nanotechnology REU with a Focus on Community Colleges

Host Institution: Rice University

Grant #: 1461248

Principal Investigator / Faculty Mentor: Carolyn Nichol

1_23

Title: Acceleration of the Trailing Limb on a Split-Belt Treadmill to Induce Locomotor Adaptation

Presenter(s): Rachel Marbaker

REU Site: Dare to BE FIRST

Host Institution: University of Delaware

Grant #: 1460757

Principal Investigator / Faculty Mentor: Xin Lu | Fabrizio Sergi

1_24

Title: Neutron Production from Laser Irradiation of Deuterated Palladium Nanowires

Presenter(s): Joshua A. Stackhouse

REU Site: Engineering Applications of Extreme Ultra-Violet (EUV) Laser Light

Host Institution: Colorado State University
Grant #: 1461231
Principal Investigator / Faculty Mentor: Jorge J. Rocca | Reed Hollinger

NSF Division: Physics

1_25

Title: Characterization of InGaN Electronic Structure Using Linear Spectroscopy
Presenter(s): Haley Reid
REU Site: Summer Undergraduate Research Experience in Physics at the University of Michigan
Host Institution: University of Michigan
Grant #: 1559988
Principal Investigator / Faculty Mentor: Myron Campbell | Stephen Cundiff

1_26

Title: Probing Additional Gravitational Lensing Effects of Supernova iPTF16geu
Presenter(s): David Zegeye
REU Site: Physics and Astronomy at University of Minnesota
Host Institution: University of Minnesota
Grant #: 1757388
Principal Investigator / Faculty Mentor: Alex Kamenev

1_27

Title: Doping Cubic Boron Nitride
Presenter(s): Sean Paul Russell
REU Site: REU Site in Physics at Howard University
Host Institution: Howard University
Grant #: 1659224
Principal Investigator / Faculty Mentor: Prabhakar Misra | Pratibha Dev

1_28

Title: Propagation of Vortex Beams Diffracted with Circular and Triangular Apertures
Presenter(s): Harrison Siegel
REU Site: Accelerator and Nuclear Physics
Host Institution: Old Dominion University
Grant #: 1659177
Principal Investigator / Faculty Mentor: Gail E. Dodge | Shukui Zhang

1_29

Title: Quantifying Nitrogen-Vacancy Center Density in Diamond Using Magnetic Resonance
Presenter(s): Morgan Hamilton
REU Site: Center for Emergent Materials Research Experience for Undergraduates
Host Institution: The Ohio State University
Grant #: 1420451
Principal Investigator / Faculty Mentor: P. Chris Hammel

1_30

Title: Fewer Neutrons at the South Pole: What's Going On?
Presenter(s): Laura Rosen

REU Site: Research In Neutrino Astrophysics at the University of Wisconsin–River Falls

Host Institution: University of Wisconsin–River Falls

Grant #: 1757517

Principal Investigator / Faculty Mentor: Suruj Seunarine

1_31

Title: Growth and Characterization of Pyrochlore Thin Films

Presenter(s): Ellis Thompson

REU Site: Physics and Astronomy Research at Rutgers

Host Institution: Rutgers, The State University of New Jersey

Grant #: 1560077

Principal Investigator / Faculty Mentor: Andrew Baker | Jak Chakhalian

1_32

Title: Basins of Attraction in the Cost Landscapes of Models of Complex Systems

Presenter(s): Aiden V. Harbick

REU Site: PHY-Integrative Activities in Physics

Host Institution: Brigham Young University

Grant #: 1757998

Principal Investigator / Faculty Mentor: Jean-Francois Van Huele | Mark K. Transtrum

1_33

Title: Investigation of the Magnetic Properties of Co/Cu and Co/Al Multilayers

Presenter(s): Timothy Yoo

REU Site: NSF Summer Research for Undergraduates in Physics

Host Institution: Rensselaer Polytechnic Institute

Grant #: 1560266

Principal Investigator / Faculty Mentor: Peter Persans | G. C. Wang

1_34

Title: Comparison of Tetramesityl Porphyrin and Magnesium Tetramesityl Porphyrin Cations Using EPR and Computational Methods

Presenter(s): Rachel Blow

REU Site: NSF Summer Research for Undergraduates in Physics

Host Institution: Rensselaer Polytechnic Institute

Grant #: 1560266

Principal Investigator / Faculty Mentor: Peter Persans | K.V. Lakshmi

1_35

Title: Ephemeris Degeneration in TESS Targets

Presenter(s): Mallory Harris

REU Site: Research Experience for Undergraduates in Physics at Lehigh University

Host Institution: Lehigh University

Grant #: 1659833

Principal Investigator / Faculty Mentor: Volkmar Dierolf | Joshua Pepper

Poster Session 2

Location: Edison E, F, G

NSF Division: Computer and Information Science and Engineering

2_1

Title: Big Data Analytics for Historical Document Processing

Presenter(s): James Philip

REU Site: Software Testing and Analytics

Host Institution: East Carolina University

Grant #: 1560037

Principal Investigator / Faculty Mentor: Nasseh Tabrizi

2_2

Title: Recurrent Variational Autoencoders for Musical Style Transfer

Presenter(s): Adriena Cribb

REU Site: Computational Methods for Understanding Music, Media, and Minds

Host Institution: University of Rochester

Grant #: 1659250

Principal Investigator / Faculty Mentor: Ajay Anand | Sreepathi Pai

2_3

Title: Feature Map Augmentation in Neural Networks for Understanding How Invariance Is Learned

Presenter(s): Andrew Bevelhymmer

REU Site: Big Data Analytics at Oklahoma State University

Host Institution: Oklahoma State University

Grant #: 1659645

Principal Investigator / Faculty Mentor: Christopher Crick

2_4

Title: Decoding Brainwaves for Visual Attention to Faces and Scenes

Presenter(s): Taylor Berger

REU Site: Research Experiences in Computational Science, Engineering, and Mathematics

Host Institution: University of Tennessee

Grant #: 1659502

Principal Investigator / Faculty Mentor: Kwai Wong | Xiaopeng Zhao

2_5

Title: Analyzing Gaze and Dialogue of Reasoning Partners toward Visual-Linguistic Fusion and Content Annotation

Presenter(s): Regina Wang

REU Site: Computational Sensing

Host Institution: Rochester Institute of Technology

Grant #: 1559889

Principal Investigator / Faculty Mentor: Cecilia O. Alm

2_6

Title: Minimizing Cybersickness through Increased-Intensity Habituation

Presenter(s): Erin Neaton

REU Site: Research on Security of Mobile Devices and Wireless Network at NYIT

Host Institution: New York Institute of Technology
Grant #: 1559652
Principal Investigator / Faculty Mentor: Ziqian (Cecilia) Dong

2_7

Title: Feasibility of Using Automatic Speech Recognition with Voices of Deaf and Hard-of-Hearing Individuals
Presenter(s): Abraham Glasser
REU Site: Accessible Information and Computing Technologies
Host Institution: Gallaudet University
Grant #: 1757836
Principal Investigator / Faculty Mentor: Raja Kushalnagar

2_8

Title: Smart Walker for the Visually Impaired
Presenter(s): Jonathan Guilbe
REU Site: REU Site on Internet of Things
Host Institution: University of Central Florida
Grant #: 1560302
Principal Investigator / Faculty Mentor: Damla Turgut

2_9

Title: Quality and Fairness of Online Matching Algorithms for Kidney Exchange
Presenter(s): Kelsey Lieberman | William Macke
REU Site: Big Data Analytics
Host Institution: Washington University in St. Louis
Grant #: 1560191
Principal Investigator / Faculty Mentor: Sanmay Das | Chien-Ju Ho

2_10

Title: Single-Input Four-Output Synchronous DC-DC Converter
Presenter(s): Daniel Melendez
REU Site: Research Experience for Undergraduates in High-Efficiency Computing
Host Institution: IUPUI
Grant #: 1757636
Principal Investigator / Faculty Mentor: Euzeli D. Santos

2_11

Title: Ensuring Privacy in Connected Intelligent Transportation Systems
Presenter(s): Itzel Tapia
REU Site: Software Safety and Reliability: Research and Application
Host Institution: University of Texas at Dallas
Grant #: 1757828
Principal Investigator / Faculty Mentor: Eric Wong

2_12

Title: The Effect of the StartReact Response on Gross Hand Function after Human Spinal Cord Injury
Presenter(s): Morgan Rosser
REU Site: Scientific Computing for Structure in Big or Complex Datasets
Host Institution: University of Miami

Grant #: 1659144

Principal Investigator / Faculty Mentor: Monica A. Perez

2_13

Title: Exhaustive Heterogeneous Graphlet Counting for Network Alignment

Presenter(s): Kendrea Beers

REU Site: Data-Intensive Scientific Computing

Host Institution: University of Notre Dame

Grant #: 1560363

Principal Investigator / Faculty Mentor: Douglas Thain | Tijana Milenkovic

2_14

Title: The Effectiveness of Semi-Supervised Support Vector Machines on Intrusion Detection Data

Presenter(s): Deriech Cummings II

REU Site: Research Experiences for Undergraduates in Cyber Identity

Host Institution: North Carolina A&T State University

Grant #: 1460864

Principal Investigator / Faculty Mentor: Xiaohong Yuan

2_15

Title: History-Aware Free Space Detection for Efficient Autonomous Exploration Using Aerial Robots

Presenter(s): Ryan Fite

REU Site: Collaborative Human-Robot Interaction (CHRI)

Host Institution: University of Nevada, Reno

Grant #: 1757929

Principal Investigator / Faculty Mentor: David Feil-Seifer | Kostas Alexis

2_16

Title: Pedestrian Navigation for the Blind: Can We Do Better than Google Maps?

Presenter(s): Maxwell Alexander Sherman | David Allen Sheppard | Adwaya Sau

REU Site: Networked Cyber Physical Systems

Host Institution: Wichita State University

Grant #: 1659396

Principal Investigator / Faculty Mentor: Vinod Namboodiri

2_17

Title: A Manifold Summer

Presenter(s): Alexander Ortiz

REU Site: Computational and Mathematical Modeling of Complex Systems

Host Institution: Santa Fe Institute

Grant #: 1358567

Principal Investigator / Faculty Mentor: Cristopher Moore

2_18

Title: Efficient Learning in Computer-Aided Diagnosis through Label Propagation

Presenter(s): Sam Berglin

REU Site: NSF REU Program in Medical Informatics

Host Institution: DePaul University and University of Chicago

Grant #: 1659836

Principal Investigator / Faculty Mentor: Daniela Stan Raicu

2_19

Title: Multi-Sensor Arrays: Augmenting 3D Reconstruction Volumes for Mask-Based Computational Cameras

Presenter(s): Nicolas Deshler

REU Site: Summer Undergraduate Program in Engineering Research at Berkeley—Collecting and Using Big Data for the Public Good

Host Institution: University of California, Berkeley

Grant #: 1659833

Principal Investigator / Faculty Mentor: Laura Waller

2_20

Title: Study the Co-Occurrence Patterns of Metagenomics High-Throughput Sequencing Data

Presenter(s): John Clay Heern

REU Site: EAGER: Novel Algorithms for De Novo Transcriptome Assembly Using RNA-Seq Data and for Metagenome Assembly

Host Institution: Arkansas State University

Grant #: 1723529

Principal Investigator / Faculty Mentor: Xiuzhen Huang

NSF Division: Cyberinfrastructure

2_21

Title: Characterization of Numerical Relativity Simulations of Black Hole Collisions in Dense Stellar Environments

Presenter(s): Sarah Habib

REU Site: INCLUSION - Incubating a New Community of Leaders Using Software, Inclusion, Innovation, Interdisciplinary and Open-Science

Host Institution: University of Illinois at Urbana-Champaign

Grant #: 1659702

Principal Investigator / Faculty Mentor: Eliu Huerta

NSF Division: Mathematical Sciences

2_22

Title: Mathematical Modeling in Biological and Environmental Sciences with Application to the Ebola Epidemic

Presenter(s): Abigail Long

REU Site: Mathematical Modeling in Environmental, Biological, and Other Sciences

Host Institution: Bethune Cookman University

Grant #: 1755561

Principal Investigator / Faculty Mentor: Seenith Sivasundara

2_23

Title: Constrained Spline Estimation of the Particle-Particle Interaction in Nanostructured Tungsten Oxide

Presenter(s): Austin Ellingworth

REU Site: Diverse Undergraduate Research Experiences in Statistics

Host Institution: American Statistical Association / Colorado State University

Grant #: 1560332

Principal Investigator / Faculty Mentor: Julia Sharp

2_24

Title: Asymptotic Bounds for Extended Elliptic Pseudoprimes

Presenter(s): Philip Lamkin

REU Site: Complexity across Disciplines

Host Institution: Boise State University

Grant #: 1659872

Principal Investigator / Faculty Mentor: Liljana Babinkostova

2_25

Title: On the Domination Number of Permutation Graphs and an Application to Strong Fixed Points

Presenter(s): Daniel McGinnis | Michael Cory | Peter Gardner

REU Site: Research Challenges of Identifying Integer Sequences Using the OEIS

Host Institution: Muhlenberg College

Grant #: 1560019

Principal Investigator / Faculty Mentor: Eugene Fiorini | Joshua Harrington | James Hammer

2_26

Title: Matrix Analysis of Climate Feedbacks

Presenter(s): Carina DiChello

REU Site: Interdisciplinary Scientific Computation at Ohio Wesleyan University

Host Institution: Ohio Wesleyan University

Grant #: 1658998

Principal Investigator / Faculty Mentor: Craig Jackson

2_27

Title: ASU Campus Energy Response Curve: Crafting Methodology Using Data Analysis to Analyze Efficiency of Air Conditioning Systems

Presenter(s): Trevor Reckell

REU Site: Applied Mathematics and Computational Modeling in the Greater Phoenix Area

Host Institution: Arizona State University

Grant #: 1757663

Principal Investigator / Faculty Mentor: Wenbo Tang | Alex Mahalov

2_28

Title: Directed Random Walks

Presenter(s): Alejandro Becerra

REU Site: REU in Discrete and Applied Mathematics

Host Institution: Michigan State University

Grant #: 1559776

Principal Investigator / Faculty Mentor: Robert W. Bell | Jeffrey Schenker

NSF Division: Engineering II**2_29**

Title: The Overall Impact of Compost on Net Greenhouse Gas Emissions Associated with Food Waste Disposal

Presenter(s): Ameyalli Santibanez

REU Site: Environmental Engineering Solutions for Pollution Prevention

Host Institution: University at Buffalo, SUNY

Grant #: 1559989

Principal Investigator / Faculty Mentor: John D. Atkinson

2_30

Title: Processing of Left Ventricular Flow Data for Reconstruction

Presenter(s): Nafisa Habib

REU Site: Advancing California Community College Students through Engineering Research

Host Institution: University of California, Berkeley

Grant #: 1461157

Principal Investigator / Faculty Mentor: Jeffrey Bokor | Lea K Marlor | Shawn Shadden

2_31

Title: Dependable Automatic Mechanical Exfoliation of Two-Dimensional Materials

Presenter(s): Catherine Arndt

REU Site: REU Site: Nano-, Bio-, and Quantum Photonics at University of Rochester

Host Institution: University of Rochester

Grant #: 1659539

Principal Investigator / Faculty Mentor: Anthony Nick Vamivakas | Jaime Cardenas

2_32

Title: Hippocampal Inhibition after Traumatic Brain Injury

Presenter(s): Gabriel Nah

REU Site: Injury Science REU Site

Host Institution: The Children's Hospital of Philadelphia

Grant #: 1460927

Principal Investigator / Faculty Mentor: Thomas Seacrist

2_33

Title: Integrative Analysis of Gene Expression in Smooth Muscle Cells

Presenter(s): Nicholas Garza

REU Site: Multi-Scale Systems Bioengineering

Host Institution: University of Virginia

Grant #: 1560282

Principal Investigator / Faculty Mentor: Timothy E. Allen | Mete Civelek

2_34

Title: Small-Scale Local Energy Harvesting for Bycatch Reduction Technology

Presenter(s): Jacquelyn Schmidt

REU Site: Sensor, Signal and Information Processing (SenSIP) Devices and Algorithms

Host Institution: Arizona State University

Grant #: 1659871

Principal Investigator / Faculty Mentor: Jennifer Blain Christen

Poster Session 3

Location: Edison E, F, G

NSF Division: Astronomical Sciences

3_1

Title: Dissecting the Motions of Stellar Populations in M31

Presenter(s): Olivia Cooper

REU Site: An Inclusive REU Program in Physics and Astronomy at the University of Utah

Host Institution: University of Utah • **Grant #:** 1659494

Principal Investigator / Faculty Mentor: Jordan Gerton | Anil Chandra Seth | Gail Zasowski

3_2

Title: Prototype Design of an Online Catalog for Research Projects' Data Management at the Arecibo Observatory

Presenter(s): Krystal Medina Rios

REU Site: Research in Radio/Radar Astronomy and Atmospheric Sciences at Arecibo Observatory

Host Institution: Universidad Metropolitana

Grant #: 1559849

Principal Investigator / Faculty Mentor: Andres Diaz | Jorge L. Herrera

3_3

Title: Experimental Demonstration of a 3-Sided, Reflective Pyramid Wavefront Sensor

Presenter(s): Dominic Francisco Sanchez

REU Site: Astronomy in Hawai'i

Host Institution: Institute for Astronomy, University of Hawai'i-Mānoa

Grant #: 1560413

Principal Investigator / Faculty Mentor: Nader Haghighipour | Mark Chun

NSF Division: Biological Sciences

3_4

Title: Investigating the Contributions of Visual Similarity and Sleep to Statistical Learning

Presenter(s): Gianna Perez

REU Site: Princeton Neuroscience Institute Summer Internship Program

Host Institution: Princeton Neuroscience Institute

Grant #: 1757554

Principal Investigator / Faculty Mentor: Edwin Clayton | Kenneth Norman

3_5

Title: Characterization of Photosynthetic Microbes and Their Viruses

Presenter(s): Yelimar Jimenez

REU Site: Indigenous America to Indigenous Mekong (Vietnam/Thailand)—Adventures in Biology and Biodiversity

Host Institution: University of Arkansas

Grant #: 1659858

Principal Investigator / Faculty Mentor: Ruben Michael Ceballos

3_6

Title: Diatom Voucher Flora of Timberlake Biological Field Station, Texas

Presenter(s): Kevin Dong

REU Site: Restoring Cattle Ranches for Sustainable Land and Water Resources

Host Institution: Tarleton State University / Timberlake Biological Field Station

Grant #: 1658984

Principal Investigator / Faculty Mentor: Victoria Chraibi | Christopher Higgins

3_7

Title: Lakota and Arikara Historical Ecology of the Great Plains and Missouri River Region

Presenter(s): Abby Vidmar

REU Site: Sustainable RIVER (Remediating Invasives to Encourage Resilience)

Host Institution: University of South Dakota

Grant #: 1560048

Principal Investigator / Faculty Mentor: Meghann Elizabeth Jarchow | David Posthumus

3_8

Title: Developing MoTe2 Devices for Photocurrent and Topology

Presenter(s): Marissa Romanelli

REU Site: Integrated Science for Society

Host Institution: Boston College

Grant #: 1560200

Principal Investigator / Faculty Mentor: Kenneth Stephen Burch

3_9

Title: Accuracy of Phage Genome Annotation Methods

Presenter(s): Alicia Salisbury

REU Site: Mechanisms of Evolution

Host Institution: University of Nevada, Las Vegas

Grant #: 1757316

Principal Investigator / Faculty Mentor: Philippos Tsourkas

3_10

Title: Investigating Susceptibility and Virulence Factor Interactions in a Plant-Virus Infection

Presenter(s): Ellie Tiley

REU Site: Research Experiences in Plant Science at the Danforth Center

Host Institution: Donald Danforth Plant Science Center

Grant #: 1659812

Principal Investigator / Faculty Mentor: Shannon G. Rapp | James Carrington

3_11

Title: Intermolecular Interactions of Keratin/Cellulose Biocomposites

Presenter(s): Karleena Rybacki

REU Site: Computational Biology Summer Research Experience at Rutgers–Camden

Host Institution: Rutgers University–Camden

Grant #: 1559868

Principal Investigator / Faculty Mentor: David Salas-de la Cruz

3_12

Title: Investigating Stress Responses and Survival Strategies in the Opportunistic *Bacteria A. Baumannii*

Presenter(s): Elizabeth Wainwright | Sean Byrne

REU Site: Teamwork in Biology Inquiry: From Molecules to Organisms

Host Institution: Northeastern University

Grant #: 1757443

Principal Investigator / Faculty Mentor: Wendy Smith | Edward Geisinger | Veronica Godoy | Win Chai

3_13

Title: Discovering Proteins Interacting with MRF in *Mycobacterium Tuberculosis*

Presenter(s): Caroline Peeples

REU Site: Networked Projects in Cell and Molecular Biology at the Wadsworth Center

Host Institution: Wadsworth Center

Grant #: 1757170

Principal Investigator / Faculty Mentor: Matthew Kohn | Anil Ohja

3_14

Title: Cs-137 Whole Body Burdens and Plasma Biochemistry Profiles of *Nerodia Floridana* Occupying a Former Nuclear Cooling Reservoir

Presenter(s): Kaiya Cain

REU Site: Radioecology

Host Institution: University of Georgia's Savannah River Ecology Laboratory

Grant #: 1460940

Principal Investigator / Faculty Mentor: Tracey D. Tuberville

3_15

Title: The Role of Sensors and Effectors in Protein-Protein Interactions: A Systematic Study

Presenter(s): Jenea Adams

REU Site: TECBio REU @ Pitt

Host Institution: University of Pittsburgh

Grant #: 1659611

Principal Investigator / Faculty Mentor: Joseph C. Ayoob | Ivet C. Bahar

3_16

Title: *Angiostrongylus Cantonensis* Transmission in Suburban Environments across a Rainfall Gradient

Presenter(s): Vida Echaluse

REU Site: Environmental Biology for Pacific Islanders

Host Institution: University of Hawai'i at Mānoa

Grant #: 1659889

Principal Investigator / Faculty Mentor: Matthew C. Ikaika Medeiros

3_17

Title: Comparing Detritus Breakdown Rates with and without Detritivores in Subalpine Ponds with Different Hydroperiods

Presenter(s): Grace O'Malley

REU Site: REU Supplement to Base Grant: RUI: Consequences of Climate-Induced Range Shifts on Multiple Ecosystem Functions

Host Institution: Allegheny College—Work Conducted at RMBL

Grant #: 1557015

Principal Investigator / Faculty Mentor: Scott A. Wissinger

3_18

Title: Chaperone Mediated Protein Aggregation

Presenter(s): Eyoel Demissie

REU Site: Molecular Biophysics

Host Institution: Princeton University

Grant #: 1659726

Principal Investigator / Faculty Mentor: Jannette Carey | Jason Puchalla

3_19

Title: Division of Labor among Nurse Bees Increases Honey Bee Health: Experimental and Modeling Evidence

Presenter(s): Mohamad Omar Ani

REU Site: Mathematical Biology at the University of North Carolina at Greensboro

Host Institution: University of North Carolina at Greensboro

Grant #: 1659646

Principal Investigator / Faculty Mentor: Olav Rueppell | Jonathan T. Rowell

3_20

Title: Seasonal Diversity and Efficiency of the Scavenger Guild at the Cary Institute of Ecosystem Studies

Presenter(s): Kerste Milik

REU Site: Translational Ecology for Undergraduates

Host Institution: Cary Institute of Ecosystem Studies

Grant #: 1559769

Principal Investigator / Faculty Mentor: Alan R. Berkowitz

NSF Division: Materials Research

3_21

Title: Co-extruded Composite Polymer Electrolytes for Solid-State Batteries

Presenter(s): Nafisa Aden Ibrahim

REU Site: Nanoscale Materials Science and Engineering at Vanderbilt University

Host Institution: Vanderbilt University

Grant #: 1560414

Principal Investigator / Faculty Mentor: Clare McCabe | Kelsey Hatzell

3_22

Title: Growth and Characterization of Free-Standing, Three-Dimensional Carbon Nanotube (CNT) Structures

Presenter(s): Cole Love-Baker

REU Site: Creative Approaches to Materials Design and Processing

Host Institution: University of Missouri–Columbia

Grant #: 1757936

Principal Investigator / Faculty Mentor: Heather K. Hunt | Matthew Maschmann

3_23

Title: Lead-Free Perovskites for Optoelectronic Applications

Presenter(s): Fiki Owoso

REU Site: UMN MRSEC REU in Nanomaterials

Host Institution: University of Minnesota MRSEC

Grant #: 1559833

Principal Investigator / Faculty Mentor: Phil J. Engen | Lee Penn | Russell Holmes

3_24

Title: Magnetomechanics of Magnetic Shape Memory Micropumps

Presenter(s): Annika Thomas

REU Site: Materials for Society

Host Institution: Boise State University • **Grant #:** 1658076

Principal Investigator / Faculty Mentor: Rick Ubic | Peter Müllner

3_25

Title: Characterization of Environmentally Sustainable and Degradable Epoxy Resins

Presenter(s): Cristian Oviedo

REU Site: Research Experiences and Exploration in Materials Science (REEMS) for Houston Community College Science and Engineering Students

Host Institution: Houston Community College

Grant #: 1460564

Principal Investigator / Faculty Mentor: Bartlett M. Sheinberg

3_26

Title: Development and Testing of Bio-Replicated Cell Culture Substrates

Presenter(s): Ana Witkowski

REU Site: Interactive Biomaterials

Host Institution: Syracuse University

Grant #: 1757749

Principal Investigator / Faculty Mentor: James H. Henderson | Eric Finkelstein

3_27

Title: Polystyrene Monolayer Template Synthesis and Applications

Presenter(s): Amanda L. Loutris

REU Site: Renewable Energy Generation and Storage

Host Institution: Binghamton University, SUNY

Grant #: 1658990

Principal Investigator / Faculty Mentor: Jeffrey M. Mativetsky | Tara Dhakal

3_28

Title: Development of Cellulose-Based Oxygen Scavenging Films for Olive Oil Packaging Applications: Photo-Oxidation Study

Presenter(s): Andrew Freiburger

REU Site: Collaborative Proposal: Center for Bioplastics and Biocomposites

Host Institution: Washington State University

Grant #: 1560362

Principal Investigator / Faculty Mentor: Vikram Yadama | Mohammadali Azadfar | Michael Wolcott

3_29

Title: Multifunctional Graphene-Polyvinyl Alcohol-Based Fiber Composites

Presenter(s): Brandon Mishler

REU Site: Summer Bridge Program in Experimental Physics

Host Institution: Department of Physics, University of Arizona

Grant #: 1757878

Principal Investigator / Faculty Mentor: Krishna Muralidharan

3_30

Title: Understanding InP Synthesis via Microwave Heating and Ionic Liquid Additives

Presenter(s): Eric Riesel

REU Site: MRSEC Molecular Engineering Materials Center

Host Institution: University of Washington

Grant #: 1719797

Principal Investigator / Faculty Mentor: Brandi Cossairt | Daniel Gamelin

3_31

Title: The Effect of Synthetic Impurities on the Self-Assembly of Cyclic Diblock Copolymer

Presenter(s): Jessie Troxler

REU Site: Summer Materials Research @ Tulane SMART

Host Institution: Tulane University

Grant #: 1460637

Principal Investigator / Faculty Mentor: Henry S. Ashbaugh

3_32

Title: Structure of Water on Model Surfaces

Presenter(s): Kevin Feezel

REU Site: Polymer Science and Engineering at the University of Akron

Host Institution: The University of Akron

Grant #: 1359321

Principal Investigator / Faculty Mentor: Mesfin Tsigie

3_33

Title: Programmed Self-Assembly of Magnetic Handshake Materials

Presenter(s): Richard Liebert

REU Site: Interdisciplinary Materials Research for Undergraduates (REU) and Teachers (RET) in Materials

Host Institution: Cornell University

Grant #: 1757420

Principal Investigator / Faculty Mentor: Katja Carola Nowack | Itai Cohen

NSF Division: Earth Sciences

3_34

Title: Cloning and Expression of CowN from *Gluconacetobacter diazotrophicus*

Presenter(s): Andrea Hernandez

REU Site: Summer Undergraduate Research Fellowships in Earth and Environmental Sciences (SURFEES)

Host Institution: Chapman University

Grant #: 1757991

Principal Investigator / Faculty Mentor: Cedris P. Owens

Poster Session 4

Location: Edison E, F, G

NSF Division: Atmospheric and Geospace Sciences

4_1

Title: Climate Change Perceptions in the Tampa Bay Region

Presenter(s): Leah Finegold

REU Site: Weather, Climate and Society: An Interdisciplinary Approach Integrating Physical and Social Sciences

Host Institution: University of South Florida

Grant #: 1659754

Principal Investigator / Faculty Mentor: Jennifer Collins | Rebecca C. Zarger | Shawn Landry

4_2

Title: Analysis of Land Surface Temperature Over Urban Landcover Types Using Satellite Remote Sensing and Ground-Based Applications

Presenter(s): Makini Valentine

REU Site: Research Experiences for Undergraduates in Satellite and Ground-Based Remote Sensing at NOAA-Crest: Expanded Opportunities

Host Institution: New York City College of Technology, CUNY

Grant #: 1560050

Principal Investigator / Faculty Mentor: Reginald Blake

NSF Division: Biological Sciences

4_3

Title: Using a Light Trap to Study Seasonal Ichthyoplankton Dynamics in Nearshore Long Island Sound

Presenter(s): Sydney Stark

REU Site: Collaborative Research: Investigating the Consequences of Global Change on Marine Animals and Their Ecosystems

Host Institution: Mystic Aquarium

Grant #: 1658663

Principal Investigator / Faculty Mentor: Tracy Romano | Hannes Baumann

4_4

Title: A Functional Module for a Response to Low Nutrients in *Arabidopsis*

Presenter(s): Muntathar Alshimary

REU Site: Molecular Genetics and Cell Biology

Host Institution: The University of Chicago

Grant #: 1659490

Principal Investigator / Faculty Mentor: Aaron Paul Turkewitz | Jean Greenberg

4_5

Title: Effect of Pan Trap Size on Catch: Determining Protocol for Pollinator Monitoring

Presenter(s): Alina Osborn

REU Site: Synergistic Studies of Honey Bees in the Republic of Turkey

Host Institution: University of Central Oklahoma

Grant #: 1560389

Principal Investigator / Faculty Mentor: John M. Hranitz | John F. Barthell | Victor H. Betancourt Gonzalez

4_6

Title: Vibrational Properties of Residues in Protein Cores

Presenter(s): Zoe Aridor

REU Site: Interdisciplinary Research Training across Biology, Physics, and Engineering

Host Institution: Yale University

Grant #: 1755494

Principal Investigator / Faculty Mentor: Corey O'Hern

4_7

Title: The Mechanism of Plasma glycoprotein Protein S (PS)-Mediated Inhibition on the Plasma Coagulation Factor IX (FIX) Pathway

Presenter(s): Aliyah Pierre

REU Site: Research Experience for Underrepresented Minority Undergraduates in Genetic and Biochemical Mechanisms of Prokaryotic and Eukaryotic Organisms

Host Institution: Louisiana State University Health Sciences Center

Grant #: 1659752

Principal Investigator / Faculty Mentor: Allison Augustus-Wallace | Fern Tsien

4_8

Title: Mir-52 Is Necessary for Male Fertility in *Caenorhabditis elegans*

Presenter(s): Madison Lucas

REU Site: Interdisciplinary Undergraduate Summer Research in Biology

Host Institution: Marquette University

Grant #: 1659595

Principal Investigator / Faculty Mentor: Allison Abbott

4_9

Title: Mix and Match: Transplanting Symbiotic Fungal Partners across Elevational Gradients to Gauge Responses in Migrating *Elymus* Hosts

Presenter(s): Katherine Anderson

REU Site: Research Training in Place-Based Field Research

Host Institution: Rocky Mountain Biological Laboratory

Grant #: 1755522

Principal Investigator / Faculty Mentor: Jennifer Reithel | Jennifer Rudgers

4_10

Title: Evidence for Admixture between Remnant and Transplanted Individuals in Mead's Milkweed (*Asclepias meadii*)

Presenter(s): David N. Bellangue

REU Site: Botany and Conservation Biology Research at the Missouri Botanical Garden

Host Institution: Missouri Botanical Garden

Grant #: 1559962

Principal Investigator / Faculty Mentor: Wendy L. Applequist | Christine Edwards

4_11

Title: Genome-Wide Identification of *P. Syringae* Virulence Genes Essential for Plant Infection by Transposon Sequencing (Tn-seq)

Presenter(s): Rachel Eckmann

REU Site: Training in Redox Biology

Host Institution: University of Nebraska-Lincoln

Grant #: 1757951

Principal Investigator / Faculty Mentor: Donald Becker | James Alfano

4_12

Title: Stomatal Density of Drought Tolerant versus Drought Intolerant *Pinus edulis*

Presenter(s): Kayla Madera

REU Site: Human Impacts on the Colorado Plateau: Place-Based Research and Training

Host Institution: Northern Arizona University

Grant #: 1461295

Principal Investigator / Faculty Mentor: Amy Whipple

4_13

Title: Several Toxicants Increase Retention of Triglycerides in *Daphnia Magna* and Human Liver Cells

Presenter(s): Tanachia Williams

REU Site: From Genomes to Phenomes—Integrating Function across Scales

Host Institution: Clemson University

Grant #: 1460895

Principal Investigator / Faculty Mentor: Victoria Corbin | William Baldwin

4_14

Title: Measuring Secretion Titer of the *S. enterica* Type III Secretion System Following Native Substrate Knockouts

Presenter(s): Jinan Oubaid

REU Site: Synthetic Biology (SynBREU)

Host Institution: Northwestern University

Grant #: 1757973

Principal Investigator / Faculty Mentor: Danielle Tullman-Ercek

NSF Division: Chemistry

4_15

Title: Harnessing Macrophage Polarization for Platinum-Based Immunochemotherapy

Presenter(s): Sarine McKenzie

REU Site: Liquid Crystals and Advanced Materials

Host Institution: Kent State University

Grant #: 1659571

Principal Investigator / Faculty Mentor: Yaorong Zheng | Torsten Hegmann

4_16

Title: Disrupting the Pheromone Detection System of Insect Pest: A Structural and Functional Comparison of Pheromone Binding Proteins

Presenter(s): Allyson Rose

REU Site: An REU Site in Interdisciplinary Chemistry at Oklahoma State University

Host Institution: Oklahoma State University

Grant #: 1559874

Principal Investigator / Faculty Mentor: Smita Mohanty

4_17

Title: Trapping Guest Molecules in MOF-5 with Bulky Capping Groups

Presenter(s): Katherine Fossum

REU Site: Membrane Biochemistry and Bioinspired Synthesis

Host Institution: Worcester Polytechnic Institute

Grant #: 1659529

Principal Investigator / Faculty Mentor: Arne Gericke | Shawn Burdette

4_18

Title: Structural Determination of 19F Labeled KIX Via Disulfide Tethering

Presenter(s): Raquel Reilly

REU Site: Challenges of the 21st Century

Host Institution: University of Minnesota

Grant #: 1359181

Principal Investigator/ Faculty Mentor: Steven R. Kass | William Pomerantz

4_19

Title: Synthesis and Characterization of Biopolymer-Capped Mesoporous Silica Nanomaterials Loaded with Toluidine Blue Dye

Presenter(s): Cecelia Kinane

REU Site: Advancing Polymer Materials by Integrating Chemistry and Chemical Engineering

Host Institution: Colorado School of Mines

Grant #: 1460712

Principal Investigator/ Faculty Mentor: Stephen Boyes

4_20

Title: Ru-catalyzed Oxidation of Silyl Ethers to Silyl Esters in a Oxyridine-Promoted Biphasic System

Presenter(s): Alisha M. Weinhofer

REU Site: An Undergraduate Research Incubator Site at Furman University

Host Institution: Furman University

Grant #: 1757706

Principal Investigator/ Faculty Mentor: Karen L. Buchmueller | Sarah Goforth

4_21

Title: Synthesis of N-Adamantyl Triazole Palladium Complexes as Catalysts for Classic Cross-Coupling Reactions

Presenter(s): Nikolas Robert Burton

REU Site: An REU Site in Interdisciplinary Chemistry at Oklahoma State University

Host Institution: Oklahoma State University

Grant #: 1559874

Principal Investigator/ Faculty Mentor: Smita Mohanty

4_22

Title: Sensitive, Selective, and Quantitative Copper Sensor Using Click-Chemistry with Gold Nanoparticles

Presenter(s): Joseph Holbrook

REU Site: Research Experiences for Undergraduates in Chemistry at the University of Cincinnati

Host Institution: University of Cincinnati

Grant #: 1659648

Principal Investigator/ Faculty Mentor: Anna D. Gudmundsdottir | Laura Sagle

4_23

Title: Purification and Crystallization of *Porphyromonas gingivalis* NFeoAB

Presenter(s): Julia Miller

REU Site: Research Experience for Undergraduates in Advanced Chemical Sensing and Imaging

Host Institution: University of Maryland–Baltimore County

Grant #: 1460653

Principal Investigator/ Faculty Mentor: Aaron T. Smith | Zeev Rosenzweig

4_24

Title: Synthesis and Characterization of Polyureas for Controlled Ammonia Release

Presenter(s): John M. Migliore

REU Site: INFEWS: N/P/H₂O: Materials Innovation at the Intersection of Food-Energy-Water Systems (MII-FEWS)

Host Institution: Virginia Polytechnic and State University

Grant #: 1560240

Principal Investigator/ Faculty Mentor: Timothy E. Long

4_25

Title: Translational Diffusion and Unstable Conformer Trapping in Glassy Isopentane at 77 K

Presenter(s): Emily E. Williford

REU Site: Sunshine Institute for the Interaction of Light with Matter

Host Institution: Department of Chemistry and Biochemistry, Florida State University

Grant #: 1659661

Principal Investigator/ Faculty Mentor: Edwin F. Hilinski | Jack Saltiel

4_26

Title: Synthesis and Structural Tuning of Thermometric ⁵⁹Co NMR Sensors

Presenter(s): Bailey Rhodes

REU Site: Chemistry Applied to Real-World Problems—Chemical Sciences at CSU

Host Institution: Colorado State University

Grant #: 1461040

Principal Investigator/ Faculty Mentor: Martin McCullagh | Joseph Zadrozny

4_27

Title: Transition-Metal Complexes for Olefin Aziridination and Cyclopropanation: Toward Asymmetric N- and C- Transfer Catalysts

Presenter(s): Ashlee Bartlett

REU Site: INFEWS: Food, Energy, and Water Security

Host Institution: Mississippi State University

Grant #: 1659830

Principal Investigator/ Faculty Mentor: Joseph P. Emerson

4_28

Title: The Development of Molecular Devices for Sensing Application

Presenter(s): Mark William Joseph

REU Site: Integrated Experimental and Computational REU Site at Northern Illinois University

Host Institution: Northern Illinois University

Grant #: 1659548

Principal Investigator/ Faculty Mentor: James Horn | Irina Nesterova

4_29

Title: Utilization of UV Activated Nanoparticles In Vitro Treatment on Tumor Cells

Presenter(s): Joseph Ametepe

REU Site: Research Experiences for Community Colleges and Four-Year Undergraduate Institutions at Georgia State University

Host Institution: Georgia State University

Grant #: 1757933

Principal Investigator/ Faculty Mentor: Suri Saranathan Iyer | Hamed Laroui

4_30

Title: Development of a Bacterial Expression System for the Acyl Serine Esterase Notum

Presenter(s): Meaghan Lee Burrows

REU Site: Undergraduate Research in Chemistry at Syracuse University

Host Institution: Syracuse University

Grant #: 1659775

Principal Investigator/ Faculty Mentor: Michael Bradley Sponsler | James Hougland

4_31

Title: Synthesis and Characterization of p-Chlorobenzylidene Acetal Protected Glucosamine Derivatives as Organogelators

Presenter(s): Mary Olson

REU Site: Undergraduate Research Opportunities in Chemistry for Community College Students in Old Dominion University

Host Institution: Old Dominion University

Grant #: 1659476

Principal Investigator/ Faculty Mentor: Guijun Wang

4_32

Title: Localized Temperature in a Gold Nanostructure

Presenter(s): Victoria Diaz

REU Site: Clean Energy to Bridge Research

Host Institution: University of Washington

Grant #: 1559787

Principal Investigator/ Faculty Mentor: David Masiello

4_33

Title: Chokeberry Extract Antioxidant Analysis and Application

Presenter(s): Anna Kjellson

REU Site: Utilizing Plants for Innovative Research (UPIR)—Cultivating the Next Generation of Scientists and Engineers

Host Institution: Kettering University

Grant #: 1560169

Principal Investigator/ Faculty Mentor: Lihua Wang | Michelle Ammerman | Cheryl Samaniego | Jonathan Wenzel

Poster Session 5

Location: Edison E, F, G
NSF Division: Ocean Sciences

5_1

Title: Acoustical Analysis of Bottlenose Dolphin Signature Whistles Off Ocean City, Maryland

Presenter(s): Elizabeth Grzyb

REU Site: Research Experiences for Undergraduates in Estuarine Science

Host Institution: Maryland Sea Grant/UMCES

Grant #: 1756244

Principal Investigator/ Faculty Mentor: Michael R. Allen | Helen Bailey

5_2

Title: Nitrogen Solubility in Magma Oceans

Presenter(s): Ian Ocampo

REU Site: Natural History Research Experiences

Host Institution: National Museum of Natural History, Smithsonian Institution

Grant #: 1560088

Principal Investigator/ Faculty Mentor: Colin Jackson | Elizabeth Cottrell

5_3

Title: Expression Patterns of Gut Genes during Development in Tardigrades

Presenter(s): Paula Nolte

REU Site: Research Experience for Undergraduates in Coastal Biology on Florida's First Coast

Host Institution: University of North Florida

Grant #: 1560213

Principal Investigator/ Faculty Mentor: Matthew R. Gilg | Frank Smith

5_4

Title: Changes in Luminoxscapes of Four Invertebrate Larval Species in the Southern California Bight

Presenter(s): Shailja Gangrade

REU Site: Scripps Undergraduate Research Fellowship

Host Institution: Scripps Institution of Oceanography, UC San Diego

Grant #: 1659793

Principal Investigator/ Faculty Mentor: Jane L. Teranes | Brice Semmens

5_5

Title: Estimating the Effort Required for Collecting Photo-Identification Data on the Nassau Grouper, *Epinephelus Striatus*: Recommendations for Potential Mark and Recapture Studies

Presenter(s): Joseph Molina

REU Site: Scripps Undergraduate Research Fellowship

Host Institution: Scripps Institution of Oceanography, UC San Diego

Grant #: 1659793

Principal Investigator/ Faculty Mentor: Jane L. Teranes | Brice Semmens

5_6

Title: The Abiotic and Biotic Responses to Spatial Variation in a Restored Eelgrass (*Zostera marina*) Meadow

Presenter(s): Kylor Kerns | Elizabeth Daly

REU Site: LTER Network

Host Institution: University of Virginia

Grant #: 1237733

Principal Investigator/ Faculty Mentor: Karen McGlathery

NSF Division: Social, Behavioral, and Economic Sciences

5_7

Title: The Perception of a Secure Base, Behavioral Disengagement, and Posttraumatic Stress Symptomatology

Presenter(s): Erin Meyer

REU Site: Collaborative Research: REU Site—Training Diverse Undergraduate Teams of Veterans and Non-Veterans to Conduct Trauma Research with Veterans

Host Institution: Syracuse University
Grant #: 1559793
Principal Investigator/ Faculty Mentor: Brooks B. Gump | Adam Fay

5_8

Title: Examining the Social Correlates of School-Age Children's Narrative Language
Presenter(s): London Dixon
REU Site: The Science of Language and the Language of Science
Host Institution: The Ohio State University
Grant #: 1757020
Principal Investigator/ Faculty Mentor: Kathryn Campbell-Kibler | Monique Mills

5_9

Title: Consistency in Motivations and Barriers for Change in Behavioral Risk for Alcohol-Exposed Pregnancies
Presenter(s): Kelly Walls
REU Site: Social-Behavioral Research Training in American Indian Community-Based Projects
Host Institution: Sanford Research
Grant #: 1559899
Principal Investigator/ Faculty Mentor: Arielle Deutsch

5_10

Title: Can Personality Influence How You Manage a Social Network?
Presenter(s): Kyle J. Barrentine
REU Site: Computational Social Science
Host Institution: University of Notre Dame
Grant #: 1560089
Principal Investigator/ Faculty Mentor: Paul R. Brenner

5_11

Title: The Interpretation of African American English within Standard American English Counseling Sessions and Its Effects on the Client
Presenter(s): Deonna Williams
REU Site: Talking College: Increasing Diversity in the Linguistic Sciences through Research on Language and Social Mobility
Host Institution: University of California, Santa Barbara
Grant #: 1757654
Principal Investigator/ Faculty Mentor: Mary Bucholtz | Anne Charity Hudley

5_12

Title: Testing Mediation Pathways between Childhood Maltreatment and Intimate Partner Violence
Presenter(s): Valerie L. Velasco
REU Site: Treatment-Related Research for Youth with Social, Emotional, and Behavioral Problems
Host Institution: Ohio University
Grant #: 1659455
Principal Investigator/ Faculty Mentor: Fran A. Wymbs | Brian Wymbs

5_13

Title: Interaction between Land Use, Wild Rice, and Stream Sedimentation
Presenter(s): Kirsten Ondris | Naomi Albert

REU Site: LAKES REU
Host Institution: University of Wisconsin–Stout
Grant #: 1659791
Principal Investigator/ Faculty Mentor: Arthur Kneeland

5_14

Title: The Role of Early Life Abuse in Altering Emotion Processing by the *Basolateral Amygdala*
Presenter(s): Sarah D. Martin
REU Site: REU in Neural Science
Host Institution: New York University
Grant #: 1460880
Principal Investigator/ Faculty Mentor: Chiye York Aoki

5_15

Title: Investigating Weaning at the 7-5th Century BCE Greek Colony of Himera Using Stable Isotope Analysis
Presenter(s): Abigail Gancz
REU Site: Immersive Research in the Bioarchaeology of Greek Colonization, Sicily, Italy
Host Institution: University of Georgia
Grant #: 1560227
Principal Investigator/ Faculty Mentor: Laurie Reitsema | Britney Kyle

5_16

Title: Explaining the Counterintuitive Effect of Repetition on Recognition Memory: It's Not What We Thought
Presenter(s): Rochelle Hall
REU Site: The Brooklyn College Psychology and Neuroscience REU Program
Host Institution: Brooklyn College, CUNY
Grant #: 1461099
Principal Investigator/ Faculty Mentor: Laura Rabin | Matthew Crump

5_17

Title: Pragmatic Dialogue Agents for Negotiation
Presenter(s): Nicholas Tomlin
REU Site: Language, Cognition and Computation
Host Institution: Stanford University
Grant #: 1659585
Principal Investigator/ Faculty Mentor: Michael C. Frank | Christopher Potts

5_18

Title: Ukraine-Specific Risk Factors for Intermittent Explosive Disorder
Presenter(s): Charlotte Fowler | Alfonso Martinez | Christine Johnson
REU Site: Effects of Political Upheaval and Ethnic Discord on the Mental Health of a Population
Host Institution: Dordt College
Grant #: 1560078
Principal Investigator/ Faculty Mentor: Nathan L. Tintle | Luralyn M. Helming

5_19

Title: Operation Streamline: Documenting Mass Prosecutions in the U.S. Southwest
Presenter(s): Zaira Martin

REU Site: Collaborative Research: Immigration Policy and Border Community REU Site Program
Host Institution: New Mexico State University and University of Texas–El Paso
Grant #: 1659195
Principal Investigator/ Faculty Mentor: Neil Harvey

5_20

Title: Positive Transfer in the Comprehension Skills of Russian-English and Hebrew-English Bilingual Preschoolers
Presenter(s): Daniella Shimonov
REU Site: Intersection of Linguistics, Language, and Culture
Host Institution: Long Island University Brooklyn
Grant #: 1659607
Principal Investigator/ Faculty Mentor: Isabelle Barriere

5_21

Title: Manipulation of Self-Other Differences in EEG Mu-Suppression through Hypnotic Suggestions
Presenter(s): Blake Piper
REU Site: Hojooba' bee la' hoonil, Undergraduate Studies into the Social Psychophysiology of Compassion
Host Institution: Northern Arizona University
Grant #: 1659888
Principal Investigator/ Faculty Mentor: Chad Woodruff

5_22

Title: Health Management in the Home: A Qualitative Study of Pregnant Women and Their Caregivers
Presenter(s): Hannah Huth
REU Site: Program for Access to Training in Health Informatics (REU-PATHI)
Host Institution: Vanderbilt University Medical Center
Grant #: 1757644
Principal Investigator/ Faculty Mentor: Kim Unertl | Gretchen Jackson

NSF Division: Education and Human Resources

5_23

Title: Rapid Desktop Inkjet Printing of an Inexpensive and High-Resolution Electrocorticogram Electrode Array
Presenter(s): Alana Tillery
REU Site: Summer Research in Neural Systems Engineering
Host Institution: University of Minnesota
Grant #: 1560247
Principal Investigator/ Faculty Mentor: Theoden Netoff | Suhasa Kodandaramaiah

5_24

Title: Rubric Development: Characterizing Introductory Physics for Life Sciences Curricula
Presenter(s): Aeowynn Coakley
REU Site: Growing Up STEM: Interdisciplinary Research in Undergraduate STEM Education
Host Institution: North Dakota State University
Grant #: 1560142
Principal Investigator/ Faculty Mentor: Warren Christensen

5_25

Title: Helping Third Graders Interpret and Make Sense of Word Problems

Presenter(s): Zoe Siers | Taylor Frederick

REU Site: Preparing Aspiring Teachers to Hypothesize Ways to Assist Young Students (PATHWAYS)

Host Institution: Salisbury University

Grant #: 1658968

Principal Investigator/ Faculty Mentor: Randall E. Groth

Speaker Biographies

Alphabetical by surname

Elizabeth L. Ambos is executive officer for the international nonprofit Council on Undergraduate Research (CUR), which supports and facilitates high-quality undergraduate student-faculty collaborative research and scholarship. More than 700 institutions and 13,000 individuals belong to CUR. Prior to becoming CUR's executive officer in May 2012, Ambos served for six years as assistant vice chancellor for research initiatives and partnerships for the 23-campus California State University system. A geophysicist by training, Ambos has also held several appointments at California State University, Long Beach, including associate vice president for research and external support, graduate dean, associate dean, and professor of geological sciences in the College of Natural Sciences and Mathematics. She holds a bachelor's degree in geology from Smith College, as well as master's and doctoral degrees in marine geology and geophysics from University of Hawai'i at Mānoa.

Irene O. Aninye is a senior program associate at the American Association for the Advancement of Science (AAAS) and affiliate faculty of biology at Loyola University Maryland. Hailing from the Washington, DC, area, she attended the University of Maryland Baltimore County (UMBC). As a Meyerhoff Scholar, she participated in undergraduate research programs across the country and in the United Kingdom. She earned a bachelor's degree in biochemistry and molecular biology and went on to complete her PhD in molecular and integrative physiology at the University of Illinois at Urbana-Champaign, during which she characterized novel inhibitors of progesterone receptor action in breast cancer. As a postdoctoral fellow at Johns Hopkins Medical Institute, Aninye continued to investigate steroid hormone action in development, metabolism, and reproduction. Later, at the National Institutes of Health (NIH/NIDDK), Aninye transitioned from bench research to STEM program administration. She worked with the Foundation for Advanced Education in the Sciences at the NIH to develop and implement biotech training programs and curricula for biomedical scientists and emerging scholars. Now at the AAAS Research Competitiveness Program, Aninye designs and leads strategy teams to evaluate STEM research programs and initiatives. She also manages proposal review competitions and facilitates workshops to build research capacity and competitiveness in the United States and abroad. Committed to the national charge to diversify STEM and increase the involvement of underrepresented minorities in the sciences, she remains actively engaged in the scientific community through academic service, outreach, and teaching.

Liljana Babinkostova is a professor in the Department of Mathematics at Boise State University. Her research efforts concern problems in topology, game theory, and cryptography, ranging from highly theoretical to the most practical of efforts. She routinely engages undergraduate students in her research. Babinkostova is one of the lead faculty members who developed the Idaho Conference on Undergraduate Research as well as an undergraduate research program at her institution. She

currently serves as a councilor in the Mathematics Division of AAAS-PD and the Mathematics and Computer Science Division of CUR. She is also involved in the Idaho Diversity Network established by Idaho EPSCoR as part of its efforts in supporting STEM in Idaho. Babinkostova is the principal investigator for the NSF REU Site Complexity across Disciplines (CAD), a program in interdisciplinary mathematics research.

Karen Carter has served as a program specialist in the Smithsonian's Office of Fellowships and Internships since May 2013. Her focus is on outreach and recruitment for internships and fellowships with a particular emphasis on diversity, and she chairs the Smithsonian's Academic Appointment Diversity and Publicity Taskforce (AADAPT). Prior to the Smithsonian, Carter worked for almost 20 years at George Mason University where she taught an undergraduate interdisciplinary degree program in the School of Integrative Studies (SIS), as well as in the Women and Gender Studies Program. Carter served as director of experiential learning where she oversaw Mason's Center for Field Studies and the Internship Program. She also served as the associate director of Mason's Women and Gender Studies Program. Carter holds a BA in psychology and an MA in liberal studies with an emphasis on philosophy and museum studies from Mason. She is a doctoral candidate in Mason's Cultural Studies Program.

R. Corby Hovis is a senior program director in the Directorate for Education and Human Resources at the National Science Foundation (NSF) in Arlington, VA, where he has worked since 1997. At NSF, Hovis is the NSF-wide coordinator for the Research Experiences for Undergraduates (REU) program, the federal government's oldest and largest grant program supporting research experiences for students. He also coordinates the participation of community colleges in NSF's programs supporting cybersecurity education such as the Advanced Technological Education (ATE) program, which sponsors four major centers for cybersecurity education. Before coming to NSF, he served on the faculty of Valparaiso University in Indiana and as science editor at *Encyclopædia Britannica* in Chicago. He received his BA in physics and English from Wake Forest University and his PhD from Cornell University in both astronomy and the history and philosophy of science. From September 2009 through August 2010, he served on special assignment from NSF as an American Council on Education (ACE) Fellow in the Office of the President at The Ohio State University.

John M. Hranitz is a professor in the Department of Biological and Allied Health Sciences at Bloomsburg University of Pennsylvania. In 2013, he worked with faculty and administration to create the Center for Undergraduate Research at Bloomsburg University and has served three years as its director. Hranitz also served as an interim director of the Office of Research and Sponsored Programs at Bloomsburg University for three years. Prior to joining Bloomsburg University, Hranitz was in the Department of Biology at the University of Central Oklahoma for nine years, where his collaborations led to his participation in NSF-REU Site grants for 10 years. He earned bachelor's and master's degrees in biology from Bloomsburg University and a doctorate in zoology from Mississippi State University.

Rebecca M. Jones, a former undergraduate researcher at The Ohio State University, earned her PhD in inorganic chemistry from the University of Cincinnati, and joined the faculty of Austin Peay State University in 2004. While earning tenure at APSU, she created the Office of Undergraduate Research (OUR) in 2010 and was appointed director. She relocated to George Mason University in January 2012 to become the assistant director of OSCAR, where she administered student programs such as the Undergraduate Research Scholars Program and the Undergraduate Student Travel Fund. In September 2015, she transitioned to a term associate professorship in chemistry at GMU and program lead for the STEM Accelerator initiative. She serves as secretary for the Mason chapter

of Sigma Xi and is an active member of the American Chemical Society, AAAS, and the Council on Undergraduate Research.

John Mateja, president of the Goldwater Foundation, earned his bachelor's and PhD degrees from the University of Notre Dame in nuclear physics in 1972 and 1976 respectively. Throughout his career, he has been a staunch advocate for the involvement of undergraduates in research, serving as president of the Council on Undergraduate Research in 1993. He has held faculty and administrative positions at Tennessee Technological University and Murray State University. In addition, he has held administrative positions at Argonne National Laboratory, the Department of Energy, and the National Science Foundation. Mateja has been named a Fellow of the Council on Undergraduate Research and of the American Physical Society for his work to reform undergraduate education.

Ty Mitchell was born in New Orleans and attended New Orleans Public Schools until enrolling at Dillard University in New Orleans, where he received a BA degree in chemistry. Subsequently, he received a MS degree in organic chemistry from the University of Pittsburgh and a PhD degree in polymer chemistry from Rensselaer Polytechnic Institute in Troy, NY. He worked 25 years at General Electric Co. where he coauthored 16 technical publications; he holds more than 25 U.S. patents in the areas of organosilicon chemistry, polymer chemistry, and the synthesis of adhesion promoters for use in silicone sealants. After GE, he joined Corning Incorporated where his work there involved the development of new coatings for optical fibers. He held a number of management positions at Corning Incorporated where his responsibilities included seeking new technology that could impact Corning's research and development activities. This included helping to establish university interactions and working proactively to monitor and maintain these relationships. He has served on the Board of Directors of the National Organization for the Professional Advancement of Black Chemists and Chemical Engineers, and he has served on the Chemistry Section Committee of the American Association for the Advancement of Science. In January 2006, he was inducted as a Fellow in the American Association for the Advancement of Science. Mitchell retired from Corning Incorporated in 2001 and is now an NSF program director, associated with the Graduate Research Fellowship Program.

Lujendra Ojha is a Nepalese-American planetary scientist who, as an undergraduate researcher under the direction of planetary geologist Alfred McEwen, discovered in the 2010s compelling evidence that water on Mars includes current, seasonal, surface liquid brine flows. He completed his PhD in planetary science at Georgia Institute of Technology and is currently a research scientist at Johns Hopkins University. An NSF GRFP recipient, his other honors and awards include the Blaustein Postdoctoral Fellowship at Johns Hopkins and CUR's Honorary Fellowship and Posters on the Hill award. He has also played in the heavy metal band Gorkha.

Jill Singer, professor of earth sciences at SUNY Buffalo State, received her BA in geology from Buffalo State (1979) and her MA (1982) and PhD (1987) degrees in geology from Rice University. She joined the faculty at Buffalo State in 1986. In 1998, she initiated and coordinated several campus-wide undergraduate research programs and in 2003, she was appointed director of the college's newly established Office of Undergraduate Research. Singer is the recipient of Buffalo State's President's Award for Excellence as an Undergraduate Research Mentor (2007) and the SUNY Chancellor's Award for Scholarship and Creative Activities (2008). From 2001 to 2003 and 2007 to 2009, she served as a program director in the Division of Undergraduate Education (DUE) at the National Science Foundation. She was elected a Geological Society of America Fellow and CUR Fellow in 2016. Singer teaches geosciences courses, including sedimentology, oceanography, and environmental geology, and she maintains an active research program in applied sedimentology.

She mentors undergraduates in class, laboratory, and field research projects and has mentored/co-mentored more than 75 students in the past 20 years. Over the last decade, Singer and her research collaborators have developed at Buffalo State EvaluateUR, an evaluation method to measure undergraduate researchers' skills and knowledge development. With funding from the NSF WIDER program, Singer currently is leading the scaling up and national dissemination of the Buffalo State evaluation model, in partnership with SERC (Science Education Research Center at Carleton College) and CUR.

Valentin Soloiu is the Allen E. Paulson Distinguished Chair and professor at Georgia Southern University. He has 30 years of teaching and research in higher education and has authored more than 100 papers, 30 technical studies, and nine textbooks and instruction manuals. His research is in combustion instabilities, emissions, and NVH in internal combustion and jet engines.

Jennifer Swift is a professor in the Department of Chemistry at Georgetown University in Washington, DC. Her research interests at the intersection of chemistry and material science focus on understanding the growth, phase changes and physical properties of molecular crystals. Over the past 20 years, Swift has mentored 50 undergraduate and 20 graduate students in her in lab. She is the recipient of a number of professional awards, including the NSF CAREER Award (2001), Camille Dreyfus Teacher-Scholar Award (2004), American Crystallography Association Margaret C. Etter Award (2005), and College Dean's Award for Excellence in Teaching (2005). Swift was also co-director of an NSF-REU Program from 2006 to 2016. She earned her bachelor's degree in 1991 from Bowdoin College and her doctorate from Yale University in 1997. Swift, an active member of CUR, served as a Chemistry Councilor from 2015 to 2018.

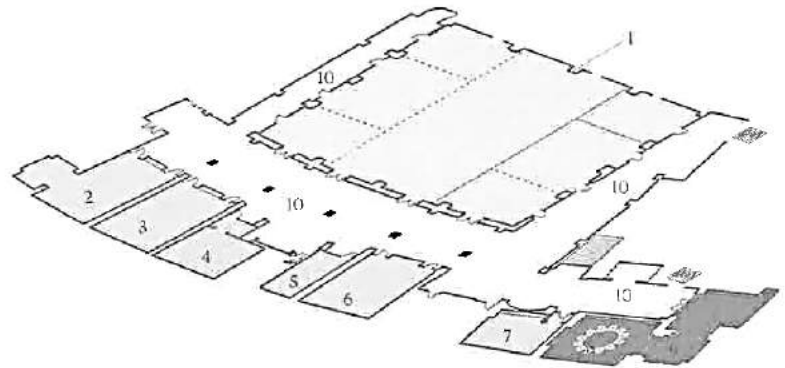
MEETING SPACE OVERVIEW

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THE WESTIN
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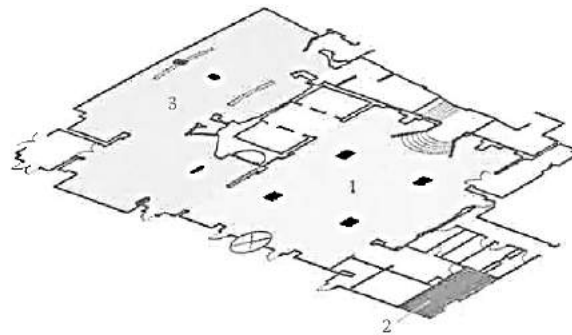
SECOND FLOOR

1. EDISON BALLROOM
2. WRIGHT
3. BANNEKER
4. WHITNEY
5. CARVER
6. BELL
7. CURIE
8. HOPKINS BOARDROOM
9. HOPKINS BOARDROOM
PRIVATE FOYER
10. PREFUNCTION



LOBBY LEVEL

1. LOBBY
2. TANGENT
3. TRADEMARK



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