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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Council on Undergraduate Research
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Planning Committee

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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 I; 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 am–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
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
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: Jose Luis Contreras-Vidal

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: Douglas J. Gardner | Caitlin Howell

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: David I. Shreiber

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
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 Bevelhymer
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
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
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

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

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

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

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

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 Owhoso
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 #: 1650990
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 Tsige

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 *Glucanacetobacter 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 Oxyrine-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 Luminoxyscapes 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’ hooniil, 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 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.
SECOND FLOOR
1. EDISON BALLROOM
2. WRIGHT
3. BANNEKER
4. WHITNEY
5. CARVER
6. BELL
7. CURS
8. HOPKINS BOARDROOM
9. HOPKINS BOARDROOM
   PRIVATE Foyer
10. PREFUNCTION

LOBBY LEVEL
1. LOBBY
2. TANGENT
3. TRADEMARK