

The University of Oklahoma
Honors College
proudly presents:

Undergraduate Research Day

Saturday,
April 8, 2017

Thurman White Forum Building

Anthropology

- Ryan Frome and Brittany Bingham, with Dr. Brian Kemp, "Carbon and Nitrogen Isotopic Analysis of Humans and Animals in the American Southwest"
- Kathryn Jerome, with Dr. Samuel Duwe, "Coalescence and Transition: the Wiyo Black-on-White Pottery at Palisade Ruin"
- Joy Li and Pouya Tavakoli, with Dr. Brian Kemp, "DNA Barcoding of Rockfish (*Sebastes* spp.)"
- Daniel Quintela, with Dr. Samuel Duwe, "The Lithics of Late Coalition Period Tewa Pueblos: Cultural Coalescence in the Rio Chama Valley, New Mexico"
- Husayn Ramji, with Dr. Courtney Hofman, "Acquiring a Novel Way to Preserve Remains"
- Leah Tanner, with Dr. Kermyt G. Anderson, "International Fertility Patterns"

Biology I

- Max Daniels, with Dr. Douglas Gaffin, "Paired-Wheel Scorpion Testing Apparatus"
- Weslie Connor Howard, with Dr. Douglas Gaffin, "Insect-Inspired Navigation Techniques to Accurately Track Indoor Novel Paths without the Assistance of Radio Signaling"
- Kendall Hughes, with Dr. Douglas Gaffin, "Deciphering sensory processing in the pectines of the striped bark scorpion"
- Matthew Keyzer, with Dr. Douglas Gaffin, "Visualization of scorpion sensorineural architecture"
- Samuel Wang, with Dr. Richard Broughton, "Natural selection on the oxidative phosphorylation genes of marine fish with different levels of aerobic performance"

CEES, Computer Engineering

- Ben Johnson, with Dr. Kianoosh Hatami, "Sensor Enabled Geogrids: Finding the Most Consistent Curve"
- Matthew Judy and Ashley Palmer, with Dr. Mark Yeary, "A Ground-Based Radar to Enable the Next Generation of Atmospheric Measurements"
- Adella Kuster, with Dr. Kianoosh Hatami, "Influence of Fabrication Methods on Quality and Consistency of SEG Samples and Data"
- Maggie Zhang, with Dr. K.K. Muraleetharan, "Consequences of Increased Seismicity and Oil Storage Facilities: A Cushing, Oklahoma Case Study"

Chemistry I

- Casey Cai, with Dr. Anthony Burgett, "Metabolomic Analysis of OSW-1-Treated Cancer Cells using Mass Spectrometry"
- Stephen Dunne, with Dr. Anthony Burgett, "Analysis of OSBP-EGFP fusion protein"
- Dejie Lu and Bianca Moreno, with Dr. Robert Cichewicz, "Determining the therapeutic effects of fungi extracts to traumatically injured *Artemia salina*"
- Morgan Mann, with Dr. Si Wu, "Active Enzyme Characterization using Two-Dimensional Activity-Correlated Quantitative Proteomics Platform (2D-ACPP)"

Chemistry I (cont.)

- Andrea Nguyen, with Dr. Robert Cichewicz, "Nature's Medicine Cabinet: Isolation and Identification of Secondary Metabolites from a Citizen Science Soil Sample"

Geology, Geophysics I

- Miriam Clark, with Dr. Michael Soreghan, "The Variation of Neothauma shells within Lake Tanganyika, Africa: Implications for Recent Sedimentation and Origin of the Shell Beds"
- Maggie Martin, with Dr. R. Douglas Elmore, "Dating hypothesized hydrothermal alteration in the Antirim Shale"
- Addison Self, with Dr. Ze'ev Reches, "Wear and Surface Evolution of Experimental Bimaterial Faults"
- Tanner Shadoan, with Dr. Brett Carpenter and Dr. Ze'ev Reches, "Acoustic Emission Radiation During Shear Along Experimental Bimaterial-Faults"
- Jordan Sylvester, with Dr. Megan Elwood Madden, "Technical Evaluation of Raman Spectroscopy for Produced Brine Analysis"

History and Social Issues

- Danya Majeed, with Dr. Kathleen Crowther, "Prophetic Medicine"
- Daniella Royer, with Dr. Michael Givel, "How Happy is Oklahoma?"
- Emma Sullivan, with Dr. Andreana Prichard, "Misconceptions in International Advocacy: The Case of Amina Lawal"

Physics, Astronomy, Mathematics

- Philip Bretz, with Dr. Mathew Gluck, "Mathematical Modeling of Crowd Flow"
- Erik R. Flom, with Dr. Eric Abraham, "Investigating Mode Purity of Laguerre-Gaussian Beams"
- Will Kirkpatrick, with Dr. Arne Schwettmann, "Propellantless Propulsion: The Future of Interstellar Space Travel"

Social Sciences

- Robert Bellafiore, with Dr. Abhisekh Moulick, "Knowledge and transaction costs in the sharing economy"
- Hunter Harwood and Ian Pratt, with Dr. Jenel Cavazos, "Should I Stay or Should I Go? Retention in First-Generation College Students"
- Suzanne Knuppel and Megan Gage, with Dr. Scott Gronlund, "Role of Variability in Lineups and Showups"
- Jonathan Russell, with Dr. Aparna Mitra, "Effects of Extracurricular Activities on the Physical and Mental Development of Underserved Youth in Oklahoma"

Biology II

- Stephanie Amorim, with Dr. J.P. Masly, "Investigating ATF6 as a mediator between the UPR and TOR signaling pathways"
- Jake Khoussine, with Dr. James N. Thompson, Jr. "Using DGRP sequenced genomes to identify modifiers of cell death in *Drosophila* eyes"
- Hannah Kraemer, with Dr. Barbara Safiejko-Mroczka, "The Effects of *Porphyromonas gingivalis* Lipopolysaccharide and Platelet-Derived Growth Factor on Human Gingival Fibroblast Motility, Behavior and in vitro Wound Healing"
- Marie Labonte, with Dr. Cameron Siler, "Development of a Novel Species Detection Method for Oklahoma Amphibians"
- Elizabeth Marhanka, with Dr. Cameron Siler, "Preliminary Screening for Ranavirus in Southeast Oklahoma"
- Shelby McMillan, with Dr. Cameron Siler, "Seasonality in Ranavirus Detection in Central Oklahoman Amphibians"

Chemistry, Chemical Engineering

- Sonali Demla, with Dr. Sharukh Khajotia, "Esterase Immersion and Contact Angle"
- Sabrina Garner, with Dr. Edgar O'Rear, "Antimicrobial Effects of Metal and Amine Oxides in Dental Composites"
- Mary Hoover, with Dr. Vassilios Sikavitsas, "Tendon Tissue Engineering: The Effect of Mechanical Stimulation Regimens on the Cellular and Mechanical Properties of a Cell-Seeded Umbilical Vein Scaffold"
- Tekenari Tienabeso and Hank Unterschuetz, with Dr. Indrajeet Sharma, "Synthetic Access to Pseudo-tin Core via a Diazo-OH Insertion/Conia-Ene Cascade"
- Rachel Tran and Johanna Masterson, with Dr. Shanteri Singh, "Synthesis and characterization of alkyl/prenyl pyrophosphate analogues"
- Dat Truong and Jessica Knobbe, with Dr. Adam Duerfeldt, "Screening Marine Extracts for Novel ClpP Activators: A Search for New Antibacterials"

Environmental Sustainability, Paleontology

- Kirby Mills, with Dr. Thomas Neeson, "Predicting Locations of Informal Barriers in Oklahoma Waterways"
- Eric Mudra, with Dr. Steve Westrop, "Middle Cambrian trilobites from the Langston Formation, southern Idaho"
- Ryan Totten, with Dr. Rick Lupia, "Palynology of the Permian Flowerpot Formation"

Geology, Geophysics II

- Elijah Defferari, with Dr. Andy Elwood-Madden, "Investigating Cr(III) Release from Central Oklahoma Aquifer Rocks"
- Thomas Givens, with Dr. Gerilyn Soreghan, "Quantitative Analysis of Grain Shapes of Fluvial Sands as a Potential Climate Proxy"
- Kourtney Lewis, with Dr. Andrew Elwood-Madden, "Size-Dependent Reactivity of Hematite Nanoparticles Using Field-Compatible Laboratory Methods"

Geology, Geophysics II (cont.)

- Elizabeth Sullivan, with Dr. Andrew Elwood-Madden, "The Effect of Dolomite and Manganese Oxides on Toxic Hexavalent Chromium Levels in the Central Oklahoma Aquifer"
- Cassidy Wion, with Dr. Gerilyn Soreghan, "Grain Size and Geochemistry of Atmospheric Dust from Metal and Plastic Traps in the Wichita Mountains, Oklahoma"

Industrial, Mechanical, Aerospace Engineering

- Ann Broostin and Jelena Milisavljevic, with Dr. Janet Allen and Dr. Farrokh Mistree, "Concurrent Design of Mechanical and Control Systems of Multistage Manufacturing"
- Megan Harju and Emily Vittitow, with Mr. Abhishek Yadav, Dr. Farrokh Mistree and Dr. Janet Allen, "Developing a Sustainability Model for Off-Grid Solar Power in Rural Villages in India"
- Pranav Mohan, with Anand Balu Nellippallil, Dr. Janet Allen and Dr. Farrokh Mistree, "A goal-oriented, inverse decision based design exploration of a multistage hot rod rolling system"
- Emily Sarbacker, with Mr. Jackson Autrey, Dr. Zahed Siddique, and Dr. Farrokh Mistree, "Tracking Individual Student Learning in a Project-Based Design Course"

Linguistics

- Rebecca I. Ash, with Dr. Marcia Haag, "An Analysis of the Registers of People in Service Positions in Mainland China"
- Nour Kayali, with Dr. Mark Norris, "Ethnically, I Feel Awkward in General: Identity and Heritage Languages in the United States"
- Kaitlin McMahan, with Dr. Marcia Haag, "Attitudes Towards American Dialects"
- Tamah Minnis, with Dr. Toni Tsatoke, "A Historical Analysis on Kiowa Culture: Trail of Tears to Present"
- Campbell Nilsen, with Dr. Marcia Haag, "Revisiting the Historical Analysis of some Menominee Morphophonological Rules"
- Catherine Wahpeconiah, with Dr. Mark Norris, "Campfire Verses and Vampire Curses: Metathesis as a Phonological Device"

Microbiology, Plant Biology

- Maaz Khan, with Dr. Bradley S. Stevenson, "Antibiotic Production from Bacterial Predator-Prey Interactions"
- Clayton Matthews, with Dr. Bradley S. Stevenson, "Effects of Inhibitory Dyes on the Isolation of *Mxyobacteria*"
- Jessica Murphree, with Dr. Phil Gibson, "Seed Ecology and Germination in Oklahoma Plants"
- Sneha Sibimon, with Dr. Marielle Hoefnagels, "Nurturing a Growth vs. Fixed Mindset through Instruction: A Comparative Study"
- Alec Thompson, with Dr. Bradley S. Stevenson, "The effects of sub-inhibitory concentrations of antibiotics on the secondary metabolite production of *Myxococcus fulvus*"
- Andrew Willoughby, with Dr. Ben Holt III, "The Role of NF-Y Transcription Factors in Floral Development"

Session I 8:30 - 10:00

Physics, Astronomy, Mathematics Room A1	Anthropology Room A2
Dr. Vincent Whiteside, Postdoctoral Research Associate, Physics and Astronomy	Dr. Karl Rambo, Associate Professor of Anthropology
Biology I Room A3	Geology, Geophysics I Room A4
Dr. Cameron Siler, Assistant Professor of Biology	Mr. Richard J Brito, PhD Candidate in Geology
Chemistry I Room A5	CEES, Computer Engineering Room B4
Dr. Zhibo Yang, Assistant Professor of Chemistry	Dr. Farrokh Mistree, Professor of Aerospace and Mechanical Engineering
Social Sciences Room B5	History, Social Issues Room B6
Dr. Dan Mains, Assistant Professor of the Honors College	Dr. Amanda Minks, Associate Professor of the Honors College

Session II 10:30-12:00

Microbiology, Plant Biology Room A1	Biology II Room A3
Dr. Heather McCarthy, Assistant Professor of Plant Biology	Dr. Katie Marshall, Assistant Professor of Biology
Geology, Geophysics II Room A4	Chemistry, Chemical Engineering Room A5
Ms. Baylee Kushner, MS Student in Geology	Dr. Janet Allen, Professor of Industrial and Systems Engineering
Industrial, Mechanical, Aerospace Engineering Room B4	Environmental Sustainability, Paleontology Room B5
Mr. Arun Balakrishan, PhD Candidate in Aerospace and Mechanical Engineering	Dr. Andreana Prichard, Assistant Professor of the Honors College
Linguistics Room B6	
Dr. Dylan Herrick, Associate Professor of Linguistics	

Special thanks to the Office of the Provost for supporting the Undergraduate Research Opportunities Program; and to Phi Beta Kappa and Phi Kappa Phi for sponsoring awards for distinguished undergraduate research.

Established in 1897, the Honor Society of Phi Kappa Phi recognizes and honors excellence in all academic disciplines. Membership is by invitation only to the top 10 percent of seniors and graduate students and 7.5 percent of juniors. Faculty, professional staff, and alumni who have achieved scholarly distinction also qualify. The Society's mission is "To recognize and promote academic excellence in all fields of higher education and to engage the community of scholars in service to others."

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