2018 Summer Undergraduate Research Symposium

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A message from Dr. John Fritch,

DEAN, COLLEGE OF HUMANITIES, ARTS AND SCIENCES

WELCOME TO THE SUMMER UNDERGRADUATE RESEARCH SYMPOSIUM!

Today recognizes and celebrates the work of UNI undergraduate researchers this summer. We, as a college, are exceptionally proud of the work of these students. While many students are working at odd jobs to earn money over the summer and some are enjoying their time off from classes, these students are putting forth hours of work to develop themselves through hands-on research in a laboratory or field setting. Their summers have been filled exploring questions in which they are interested and working closely with UNI faculty. They have learned a variety of lessons: how to formulate questions, how to develop answers to those questions, how to work with faculty and peers, and how to break (and repair!) instrumentation. Today we celebrate the work of these students, and we thank those who made their work possible. Many of the students are supported by generous gifts from alums and friends of UNI; others are supported by the hard-earned grants of the faculty with whom they work. I am grateful to the donors and faculty for their support of these students.

Please enjoy the day.
PARTICIPANTS & POSTER LOCATIONS

(1) **JEREMY ABELS, SELENA RICHARDSON, DR. NATHAN BIRD (BIOLOGY)**
Histological Anatomy and Evolutionary Change in Four Major Cypriniform Weberian Apparatus Morphotypes

(2) **SELENA RICHARDSON, JEREMY ABLES, DR. NATHAN BIRD (BIOLOGY)**
Histological Morphology and the Development of Structural Integration in the Zebrafish Weberian Apparatus

(3) **ANISSA FORERO, DR. KENNETH ELGERSMA (BIOLOGY)**
The Effects of Varying Nitrogen Amounts on the Growth and Leaf Morphology of Cattail Species

(4) **CODY WELCHER, DR. KENNETH ELGERSMA (BIOLOGY)**
Collecting Carbon: An Analysis of Soil Carbon in Conservation Reserve Program Fields and Agricultural Fields

(5) **OLIVIA WILLOUGHBY, DR. AI WEN (BIOLOGY)**
Correlation Between Wild Bee Populations and Vegetative Resources in the Conservation Reserve Program's Pollinator Enhancement Planting

(6) **ALYSSA BURGERT, DR. LAURA JACKSON (BIOLOGY)**
Does Native Grass Cover Affect Density of Seeded and Unseeded Forbs in CP-42 Pollinator Habitat Plantings?

(7) **LILY CONRAD, BENJAMIN HOKSCH, DR. MARK MYERS (BIOLOGY)**
Floral Resource Dynamics for Pollinators in a Central Iowa Tallgrass Prairie Restoration

(8) **ETHAN MARBURGER, CORINNE MYERS, DR. MARK MYERS (BIOLOGY)**
Floral Resource Availability and Butterfly Community Characteristics in CP-42 Pollinator Habitat Plantings

(9) **NATHAN THEEL, DR. MARK SHERRARD (BIOLOGY)**
Sown Forb Performance in CP-42 Fields

(10) **JACI DONATH, DR. MICHAEL WALTER (BIOLOGY)**
How Does 2-D Electrophoresis Assist in Characterizing Small Bacteriophages?
(11) **HNEIVA URANGA**, KASHIF SHAIKH, SYMONE ROBINSON, DR. MICHAEL WALTER (BIOLOGY)
What is The True Ratio Between Small and Large Soil Bacteriophages?

(12) **NICOLE BISHOP**, JASPREET RISHI, DR. JOSHUA SEBREE (CHEMISTRY AND BIOCHEMISTRY)
Effect of Carbon Monoxide in Atmospheric Haze Formation at Cryogenic Temperatures

(13) **JASPREET RISHI**, NICOLE BISHOP, DR. JOSHUA SEBREE (CHEMISTRY AND BIOCHEMISTRY)
Effect of Number Density on Formation Kinetics of Aromatic Seeded Aerosols as Measured Through Thin Film Spectroscopy

(14) **BRIAN PAULEY**, DR. COLIN WEEKS (CHEMISTRY AND BIOCHEMISTRY)
Synthesis and Purification of a,a'-bis(4-aminopyridine)-p-xylene

(15) **NICHOLAS BONDE**, DR. DAWN DEL CARLO (CHEMISTRY AND BIOCHEMISTRY)
Student Use of a Science Writing Heuristic Style Pre-lab

(16) **HANNA LOVSTAD**, DR. JEFFREY ELBERT (CHEMISTRY AND BIOCHEMISTRY)
Convergent Synthesis of Photoactive Naphthalimide Compounds for Localized Drug Delivery

(17) **WARREN ROUSE**, DR. JEFFREY ELBERT (CHEMISTRY AND BIOCHEMISTRY)
Synthesis of Hydrolysable Organic Linkers and Derivatives for Localized Drug Delivery

(18) **TREASURE DIVIS**, DR. JEFFREY ELBERT (CHEMISTRY AND BIOCHEMISTRY)
Photo-Active Naphthalimide-Drug Compound Synthesis and Characterization

(19) **KAITLYN PARROTT**, DR. JEFFREY ELBERT (CHEMISTRY AND BIOCHEMISTRY)
Synthesis and Characterization of ValDrug and ValDrug-Naphthalimide Compounds for Localized Drug Delivery

(20) **KEVIN BOEHNKE**, DR. SHOSHANNA COON (CHEMISTRY AND BIOCHEMISTRY)
Surface Chemistry of Crystal Violet on Titanium Dioxide

(21) **JOSHUA PRYBIL**, DR. MARTIN CHIN (CHEMISTRY AND BIOCHEMISTRY)
Silylation of Carbon-Hydrogen Bonds using Diruthenium Catalysts

(22) **JORDAN KLINGMAN**, DR. MARTIN CHIN (CHEMISTRY AND BIOCHEMISTRY)
Silylation of Aromatic Compounds using a Diruthenium Catalyst

(23) **ROMANE VAILLANT**, DR. MARTIN CHIN (CHEMISTRY AND BIOCHEMISTRY)
Synthesis of Carbon-Silicon Bonds using Diruthenium Catalyst

(24) **MOHAMMED RAWWAS**, DR. ALEKSANDAR POLEKSIC (COMPUTER SCIENCE)
System for Retrieval of Data on Adverse Drug Reactions (ADRs)

(25) **JAMES CURBOW**, MIHO SANDERS, SHERIFF JORKEH, JOSHUA HILLIARD DR. ANDREW BERNs, (COMPUTER SCIENCE)
Formal Methods for Detecting Security Vulnerabilities

(26) **LOGAN WINFORD**, DR. SIOBHAN MORGAN (EARTH AND ENVIRONMENTAL SCIENCE)
Investigating the Cause for Variations in the Fourier Coefficients of c-type RR Lyrae Stars

(27) **EVAN EADES**, MORGAN STREFF, DR. CHAD HEINZEL (EARTH AND ENVIRONMENTAL SCIENCE)
The Geology and Natural History of the Cedar River

(28) **LILY HEINZEL**, DR. CHAD HEINZEL (EARTH AND ENVIRONMENTAL SCIENCE)
Relationships Between Fluvial Ecosystems and the Iowan Erosion Surface
(29) **JENNIFER PAULEY,** DR. CHAD HEINZEL, DR. LAURA JACKSON  
(EARTH AND ENVIRONMENTAL SCIENCE)  
Soil Characteristics Effecting Weed Invasion on Conservation Reserve Program  
Pollinator Habitats

(30) **THOMAS BOVY,** DR. CHAD HEINZEL  
(EARTH AND ENVIRONMENTAL SCIENCE)  
Preliminary Delineation of the Black Hawk Creek Watershed

(31) **ROSS VANDE VOORT,** DR. ADRIENNE STANLEY (MATHEMATICS)  
Classifying Unbalanced Sets

(32) **ERIC NICHOLS,** DR. T.J. HITCHMAN (MATHEMATICS)  
Knots in the Thickened Torus

(33) **WILLIE BROWN,** DR. ANDREW STOLLENWERK (PHYSICS)  
Mass Analysis of Tunneling Spectra

(34) **PAUL WHITE,** EMILIA MOROSAN, DR. TIM KIDD, DR. LAURA STRAUSS, DR. PAUL SHAND (PHYSICS)  
Griffiths-like Phase in Mn-intercalated TaS$_2$

(35) **SAM PROPHET,** JULIANA HERRAN, RISHABH DALAL, PARASHU KHAREL, DR. PAVEL LUKASHEV (PHYSICS)  
First Principles Study of Surface States and Tetragonal Distortion in Heusler Alloys

(36) **WAYNE BOWIE,** JOSEPH TIBBS, NATHAN SCHMIDT, DR. ALI TABEI (PHYSICS)  
Data Analysis of Biological Stochastic Movies

(37) **NATHAN SCHMIDT,** WAYNE BOWIE, DR. ALI TABEI (PHYSICS)  
Image Processing of Cellular Aggregates

(38) **DEXTER COX,** DR. TIM KIDD (PHYSICS)  
Influence of Sonication Parameters on the Morphology of Nanocellulose Aerogels

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Private individuals who support undergraduate research with gifts of $1000 or more:

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**PARTICIPANTS & POSTER LOCATIONS**

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**JACI DONATH**

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