

8-2-2019

2019 Summer Undergraduate Research Program

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Recommended Citation

University of Northern Iowa. Summer Undergraduate Research Program., "2019 Summer Undergraduate Research Program" (2019).
Summer Undergraduate Research Program (SURP) Symposium Programs. 1.
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SURP

Summer Undergraduate Research Program
University of Northern Iowa



August 2, 2019

Seerley Hall

SURP

Summer Undergraduate Research Program

University of Northern Iowa

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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.



SYMPOSIUM SCHEDULE

11:30 AM - 1:30 PM

Welcome

Seerley 115

Marcy Seavey

UNI STEM Coordinator

Poster Session

Great Reading Room

Daniel Fick, MD

Carver College of Medicine

Department of Family Medicine

Poster Session

Great Reading Room

Light luncheon available

PARTICIPANTS & POSTER LOCATIONS

(1) **GRACE SACK**, TILAHUN ABEBE, (BIOLOGY)

Editing Fusarium graminearum genome with CRISPR/Cas9

(2) **EMILY CORNELIUS**, MICHAEL WALTER, (BIOLOGY)

Bacillus bacteriophage Q11 may have a 5' covalently attached protein.

(3) **ANISSA FORERO**, MICHAEL WALTER (BIOLOGY)

Does Preparation Method Affect Size-Type Distribution in Bacteriophage Population Images?

(4) **EMMA SIMPSON**, MARK MYERS (BIOLOGY)

Local and Landscape Effects on Butterfly Abundance in CP-42 Plantings

(5) **PRYCE JOHNSON**, KENNETH ELGERSMA (BIOLOGY)

Sown and Unsown Floral Resources Both Support Bee Abundance

(6) **KATE SINNOTT**, LAURA JACKSON, EMMA SIMPSON (BIOLOGY)

Effects of seed mix and surrounding land cover on Asclepias syriaca density in the Conservation Reserve Program's Pollinator Habitat plantings

(7) **ALLISON EAGAN**, AI WEN, GABBY BROWN (BIOLOGY)

Assessing Pollinator Enhancement CRP Habitat Value for Bees using the Floral Resource Index

(8) **ERVINA TABAKOVIC**, MARK SHERRARD, KATHLEEN MADSEN,
ALLISON EAGAN (BIOLOGY)

The Impact of Soil Water Storage Capacity on Species-specific Forb Establishment in CP42 Fields

(9) **TABITHA ALITZ**, DAWN DEL CARLO (CHEMISTRY AND BIOLOGY)

Development and Evaluation of a Hybrid ADI/SWH Model Pre-Laboratory Curriculum

(10) **MILDREDE DEBELLO**, JOSHUA SEBREE (CHEMISTRY AND BIOLOGY)

Infrared Analysis of Anaerobic Photochemical Aerosols

PARTICIPANTS & POSTER LOCATIONS

- (11) **KAILEY CASPER**, JOSHUA SEBREE (CHEMISTRY AND BIOLOGY)
The Spectroscopy of Coffee Roasting
- (12) **RODNEY WALLACE AND VICTORIA WILLIAMS**, MARTIN CHIN,
(CHEMISTRY AND BIOCHEMISTRY)
Silylation Using a Zinc Catalyst
- (13) **BRIDGET SHOEMAKER**, KIRK MANFREDI, MICHAEL WALTER
(CHEMISTRY AND BIOCHEMISTRY)
*Exploring the Antimicrobial Activity of Endophytes Isolated From Native North
American Prairie Plants*
- (14) **PAUL WHITE**, COLIN WEEKS (CHEMISTRY AND BIOCHEMISTRY)
How Blue was My Crystal: Synthesis of Copper(II) Oxalate Coordination Polymers
- (15) **JILL MILLER**, JUSTIN PETERS (CHEMISTRY AND BIOCHEMISTRY)
Mobility determination of polyanions using Capillary Electrophoresis
- (16) **HANNAH PETERSON**, JUSTIN PETERS, TIM KIDD, TAYLOR HARRIS
(CHEMISTRY AND BIOCHEMISTRY)
Supercoiled DNA Looping by Lac Repressor Protein Using Atomic Force Microscopy
- (17) **ALYSSA BAUER AND LANE VER MULM**, JOHN BUMPUS
(CHEMISTRY AND BIOCHEMISTRY)
Revisited: Calculating the Polarity of an Extremely Polar Organic compound
- (18) **ALEXANDRA WARREN**, ROBERT MARTIN CHIN
(CHEMISTRY AND BIOCHEMISTRY)
The Silylation of Carbon-Hydrogen Bonds Using Zn(OTf)₂ Catalyst
- (19) **EMMA YARROW**, JOSHUA SEBREE (CHEMISTRY AND BIOCHEMISTRY)
Lego Mindstorms as Alternative Scientific Instrumentation

PARTICIPANTS & POSTER LOCATIONS

(20) **ANDREA REULZEL**, JEFFREY ELBERT
(CHEMISTRY AND BIOCHEMISTRY)

Synthesis of Linkers for Localized Drug Delivery

(21) **JENS PETERSEN**, XINHUA SHEN
(EARTH AND ENVIRONMENTAL SCIENCES)

Developing Effective Air Quality Simulations Using AERMOD Model

(22) **FAITH LUCE**, CHAD HEINZEL
(EARTH AND ENVIRONMENTAL SCIENCES)

*Determining Source of Materials Used in Artifacts Found Within Seeberger's Cave,
Jackson County, Iowa.*

(23) **FORREST CORNIN**, SIOBAHN MORGAN
(EARTH AND ENVIRONMENTAL SCIENCES)

Investigating Fourier Coefficient Relationships of Cepheid Variable Stars

(24) **PATRICE NESS ESSOMBEY**, DOUGLAS MAUPASIRI (MATHEMATICS)

The math behind the lotka-volterra model

(25) **LAUREN FLACK AND ALEXIS STEINLAGE**, ELIZABETH HUGHES OLOF
STEINTHORSDDOTTIR (MATHEMATICS)

Factors Impacting Students' Mathematical Performance and Beliefs

(26) **JULIANA HUEGERICH**, LAWRENCE ESCALADA (PHYSICS)

*Aligning the PRISMS Plus Curriculum with the Next Generation Science Standards
and Education Research*

(27) **TYLER BROWN**, TIM KIDD (PHYSICS)

Acquisition of Physics Knowledge using the Parallax BOE online manual for coding and robotics

(28) **MARY SUTTON**, ALI TABELI, COLLEEN CALDWELL,
MARIA SPIES (PHYSICS)

*Stochastic Lattice Simulation of the RAD51 Nucleoprotein Filament Formation on
Single-Stranded DNA*

(29) **TAYLOR HARRIS**, TIM KIDD (PHYSICS)

Technique development of finite layer dichalcogenides through mechanical exfoliation on gold substrate

(30) **GAOYONG WU**, TIM KIDD (PHYSICS)

Identifying Elemental Composition of Sand Grains with EDX

(31) **DEXTER COX**, TIM KIDD (PHYSICS)

Analysis of Insulative Properties of Cellulose Aerogels by Solid Volume Fraction

(32) **ERNEST TOUTANT III**, JEFF MORGAN (PHYSICS)

Analyzing Understanding of Electromagnetism in Workshop Physics

(33) **RYAN CARLILE**, PAVEL LUKASHEV (PHYSICS)

Computational study of low-dimensional materials

(34) **COLE SCHREIBER**, PAUL SHAND (PHYSICS)

The Manhattan Project and the Globalization of Nuclear Weapons

(35) **NATHAN SCHMIDT**, ALI TABELI (PHYSICS)

Molecular dynamics study of an actin cytoskeletal network

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

Mark and Sharon Butterworth
Drs. Jeff and Kim Rathmell
Clark and Helga Fensterman
Dr. Gary and Myrna Floyd
Dr. Robert and Brenda Good
Gayl and Kathy Hopkins
Dr. Gerald and Christine Intemann
Frances Jourdan
Richard Jourdan
Drs. Guang Jin and Fank Ju
David and Lois Kail
Dr. Alan and Karen Orr
Drs. Brian Raue and Dionne Stephens
Dr. Becky and Danny Rose
Drs. David and Cathy Swanson
Dr. Virginia Weimar-Mutters
Melvin Dostal
Richard Riehle and Janet Forst

JACI DONATH

Funded by the Myrna and Gary Floyd Undergraduate Research Assistantship

JEREMY ABELS

Funded by the Dr. Robert and Brenda Good Undergraduate Research Fellowship

BRENT ANDERSON

*Funded by the Dr. Gerald Intemann Endowed Undergraduate
Research Fellowship in Physics*

2019 Summer Undergraduate Research Acknowledgements

DEAN'S OFFICE, COLLEGE OF HUMANITIES, ARTS AND SCIENCES

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(AN INITIATIVE FUNDED BY THE
ROY J. CARVER CHARITABLE TRUST)

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BIOLOGY
CHEMISTRY AND BIOCHEMISTRY
COMPUTER SCIENCE
EARTH AND ENVIRONMENTAL SCIENCES
MATHEMATICS
PHYSICS

2019 Summer Undergraduate Research Acknowledgements

**ALUMEND, A WHOLLY OWNED SUBSIDIARY OF AVERA MCKENNON
HOSPITAL AND UNIVERSITY HEALTH CENTER AND MANAGED UNDER
THE AVERA RESEARCH INSTITUTE**

IOWA SPACE GRANT CONSORTIUM

U.S. DEPARTMENT OF AGRICULTURE FARM SERVICES AGENCY

NATIONAL SCIENCE FOUNDATION

**ARMY EDUCATIONAL OUTREACH PROGRAM/
RESEARCH AND ENGINEERING APPRENTICESHIP PROGRAM**

U.S. GEOLOGICAL SURVEY

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GOOD UNDERGRADUATE RESEARCH FELLOWSHIP

