Iowa State University

12th SYMPOSIUM ON UNDERGRADUATE RESEARCH & CREATIVE EXPRESSION

April 10, 2018

http://www.undergradresearch.iastate.edu/symposium/
Program Overview

8:00 – 9:30  REGISTRATION AND BREAKFAST, Memorial Union, Pioneer Room

9:30 – 9:50  OPENING, Memorial Union, Gallery Room

Welcome: Svitlana Zbarska, Undergraduate Research Program Coordinator, Campus-Wide

Opening remarks: President Wendy Wintersteen

10:00 – 11:00  SESSION I (concurrent presentations)

I.A – Mechanical Engineering I  
Memorial Union, Room 3512

I.B – Entomology  
Memorial Union, Room 3505

I.C – Horticulture  
Memorial Union, Room 3534

I.D – Kinesiology I  
Memorial Union, Gallery Room

I.E – Ecology, Evolution & Organismal Biology  
Memorial Union, Gold Room

I.F – Political Science  
Memorial Union, Cardinal Room

I.G – Genetics & Environmental Studies  
Memorial Union, Oak Room

11:00 – 11:15  Break & Refreshments, Memorial Union, Pioneer Room

11:15 – 12:00  SESSION II (concurrent presentations)

II.A – Apparel & Design  
Memorial Union, Gallery Room

II.B – Physics  
Memorial Union, Room 3505

II.C – Chemistry  
Memorial Union, Room 3534

II.D – Dietetics Human Nutrition  
Memorial Union, Cardinal Room

II.E – Community & Regional Planning  
Memorial Union, Oak Room

II.F – Cellular & Molecular Biology  
Memorial Union, Room 3558

II.G – Leadership Studies II  
Memorial Union, Gold Room

II.H – Genetics & Entomology  
Memorial Union, Room 3512

12:00 – 1:00  Lunch, Memorial Union, Sun Room

Key speaker presentation: Carlton Basmajian, Director of the Center for Excellence in the Arts and Humanities, Iowa State University
SESSION III (concurrent presentations)

III.A – Kinesiology II
Memorial Union, Room 3558

III.B – Agricultural & Biosystems Engineering
Memorial Union, Room 3512

III.C – Education & Industrial Design
Memorial Union, Cardinal Room

III.D – Psychology I
Memorial Union, Room 3534

III.E – Communication Studies
Memorial Union, Oak Room

III.F – Human Diseases
Memorial Union, Gallery Room

III.G – Civil Engineering
Memorial Union, Room 3505

III.H – Software Engineering
Memorial Union, Gold Room

Break & Refreshments, Memorial Union, Pioneer Room

SESSION IV (concurrent presentations)

IV.A – Architecture
Memorial Union, Gallery Room

IV.B – Mechanical Engineering II
Memorial Union, Cardinal Room

IV.C – Interior Design
Memorial Union, Oak Room

IV.D – Animal Science
Memorial Union, Room 3512

IV.E – Agronomy
Memorial Union, Room 3534

IV.F – Leadership Studies III
Memorial Union, Gold Room

IV.G – Psychology II
Memorial Union, Room 3558

IV.H – Education
Memorial Union, Room 3505

POSTER SESSION, Memorial Union, South Ballroom

Each presentation is allotted 15 minutes. Participants and guests are asked to not enter or leave the rooms during presentations.
A Message from the Undergraduate Research Program

Welcome to the Iowa State University’s 12th Annual Symposium on Undergraduate Research & Creative Expression. The Symposium provides undergraduates from all academic disciplines with an opportunity to share their research with the university community and other quests through oral and poster presentations. Near 180 students from all Iowa State University colleges will present about 150 research projects. More than 50 Iowa State faculty members will participate as facilitators or judges to provide feedback to presenters and identify the best presentations. More than 80 student volunteers from the University Honors Program will assist in running the symposium. The Symposium represents part of a large effort of Iowa State University to enhance, support and celebrate undergraduate research activity.

The students selected for this year’s Symposium and their mentors represent all the Colleges at Iowa State University: Agricultural & Life Sciences, Business, Design, Engineering, Human Sciences, Liberal Arts & Sciences, Graduate College and Veterinary Medicine.

We hope you enjoy the day!

Svitlana Zbarska

Symposium Coordinator
Undergraduate Research program coordinator
MECHANICAL ENGINEERING

Session I.A
10:00-11:00
Room 3512

Faculty Moderator: James Michael, Mechanical Engineering

I.A.1 Investigating structural and oxidation characteristic of Mo-based high entropy alloys
Mouhamad Diallo, Mechanical Engineering
Mentor: Ganesh Balasubramanian, Mechanical Engineering at Lehigh University

I.A.2 Programmatic Generation of Parametric Geometries for Isogeometric Analysis
Michael Filipowski, Mechanical Engineering
Mentor: Ming-Chen Hsu, Mechanical Engineering

I.A.3 Molecular Electronics – Examining the relationship between surface roughness and charge transport across tunneling junctions
Thomas Giroux, Mechanical Engineering
Mentor: Martin Thuo, Materials Engineering Department

I.A.4 Accuracy of 3D Replication Systems for Surface Texture Measurements
Allison Gregorovic, Mechanical Engineering
Mentor: Sriram Sundararajan, Engineering

ENTOMOLOGY

Session I.B
10:00-11:00
Room 3505

Faculty Moderator: Amy Toth, Ecology, Evolution, and Organismal Biology

I.B.1 Select plant essential oils inhibit detoxification enzymes in the yellow fever mosquito
Jacob Johnson, Biology
Mentor: Joel Coats, Entomology

I.B.2 Cultivation of entomopathogenic fungi for biological control of Dibrotica virgifera vigifera in larval and adult stages
Emily Mejstrik, Biology and Environmental Science
Mentor: Abigail Kropf, Entomology

I.B.3 Impact of honey bee colonies on bumble bee health at tallgrass prairies in Iowa
Zoe Pritchard, Biology, Environmental Studies
Mentor: Harmen Hendriksma, Ecology, Evolution, and Organismal Biology

HORTICULTURE

Session I.C
10:00-11:00
Room 3534

Faculty Moderator: Misty Lambert, Agricultural Education and Studies

I.C.1 Determining the Optimum Harvest Time for Aronia Berries to Maximize their Antioxidant and Sensory Properties
Thadeus Beekman, Food Science
Mentor: Lester Wilson, Food Science and Human Nutrition
I.C.2  Comparing the effects of restricting irrigation on diascia and lobelia growth and development
Myra James, Mechanical Engineering
Mentor: Christopher Currey, Agriculture and Life sciences

I.C.3  How Does Seed Dispersal Affect Population Growth?
Alexander Karnish, Biology
Mentor: Haldre Rogers, EEOB

I.C.4  A Low-input alternative healing system for grafted tomato transplants
Neel Solanki, Horticulture
Mentor: Ajay Nair, Horticulture

Session I.D
10:00-11:00
Gallery

KINESIOLOGY

Faculty Moderator: Elizabeth Stegemoller, Kinesiology

I.D.1  Relationship Between Depressive Symptoms and Activities of Daily Living in Older Adults
Evelyne Guay, Kinesiology Pre-Med
Mentor: Rudy Valentine, Kinesiology

I.D.2  Singing in Patients with Parkinson's Disease
Amos Kotz, Kinesiology and Health
Mentor: Elizabeth Stegemoller, Kinesiology

I.D.3  The Effects of Singing on the Acute Emotional Response and Quality of Life of Persons with Parkinson’s Disease (PD)
Tessa Mendoza, Kinesiology and Health
Mentor: Elizabeth Stegemoller, Kinesiology and Health

Session I.E
10:00-11:00
Room 3558

ECOLOGY, EVOLUTION AND ORGANISMAL BIOLOGY

Faculty Moderator: Joshua Selsby, Animal Science

I.E.1  Short term effects of tournament culling systems on Largemouth Bass
Thomas Hansen, Animal Ecology
Mentor: Andrea Sylvia, Natural Resources Ecology and Management

I.E.2  Association of clutch size and sex determination in turtles
Sarah Hill, Biology
Mentor: Nicole Valenzuela, Ecology, Evolution, and Organismal Biology

I.E.3  Herbivorous Squamates: Motivation and Morphology
Abby Klahs, Biology and Statistics
Mentor: Fredric Janzen, Ecology, Evolution, and Organismal Biology

I.E.4  Foot Shape Associated With an Arboreal Lifestyle in Lungless Salamanders
Lauren Mellenthin, Animal Ecology
Mentor: Dean Adams, Ecology, Evolution, and Organismal Biology
<table>
<thead>
<tr>
<th>Session I.F</th>
<th>10:00-11:00</th>
<th>Cardinal Room</th>
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<tbody>
<tr>
<td><strong>POLITICAL SCIENCE</strong></td>
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<td>Faculty Moderator: Mack Shelley, Political Science and Statistics</td>
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| I.F.1 Race, Public Opinion, and Capital Punishment  
*Sha’ Kurra Evans, Sociology*  
Mentor: Kyle Burgason, Sociology | | |
| I.F.2 Democracy and terrorism  
*Samantha Fuller, Political Science*  
Mentor: Mark Nieman, Political Science | | |
| I.F.3 @FLOTUS: How Twitter Changed Our First Lady  
*Julia Hall, Marketing*  
Mentor: Stacy Cordery, History | | |
| I.F.4 Law Enforcement Charlottesville: A Case Study  
*Madison Wiegand, Political Science*  
Mentor: Betty Dobratz, Sociology | | |

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<thead>
<tr>
<th>Session I.G</th>
<th>10:00-11:00</th>
<th>Oak Room</th>
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<tr>
<td><strong>GENETICS AND ENVIRONMENTAL STUDIES</strong></td>
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<tr>
<td>Faculty Moderator: Jim Raich, Ecology, Evolution, and Organismal Biology</td>
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| I.G.1 Determination of Photosynthetic Microbial Species in a Permanently-Stratified Lake Using High-Performance Liquid Chromatography  
*Micah Fatka, Biology*  
Mentor: Elizabeth Swanner, Geological and Atmospheric Sciences | | |
| I.G.2 Using DNA-based techniques to detect phytoplankton in lake ice  
*Danika Nolte, Biology and Women's Studies*  
Mentor: Elizabeth Swanner, Geochemistry | | |
| I.G.3 Impact of Wastewater Effluent on Antibiotic Resistance Dissemination  
*Angie Burke, Civil Engineering (Environmental Specialization)*  
Mentor: Kaoru Ikuma, Civil Engineering | | |

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<tr>
<th>Session II.A</th>
<th>11:15-12:00</th>
<th>Gallery</th>
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<tr>
<td><strong>APPAREL AND DESIGN</strong></td>
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<tr>
<td>Faculty Moderator: Dan Naegele, Architecture</td>
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| II.A.1 Exploring Wearable Technology: Design Attributes of Solar Powered Book Bags Concerning Generation Y  
*Courtney Beringer, Mechanical Engineering*  
Mentor: Eulanda Sanders, Apparel, Events, and Hospitality Management | | |
| II.A.2 Guiding New Design for Cold Weather Insulation Gloves by Characterizing the Thermal Comfort Properties  
*Kajsa Hallberg, Apparel, Merchandising and Design*  
Mentor: Guowen Song, Apparel, Events, and Hospitality Management | | |
## PHYSICS

**II.B.1** Effects of Extragalactic Orbiting Bodies on Galactic Disk Evolution  
*Alexander Criswell*, Physics  
Mentor: Curtis Struck, Physics and Astronomy

**II.B.2** Quantitative Model of the Advanced Near-field Optical Microscope for Nanomaterial Characterization  
*Liam McDermott*, Physics, Mathematics  
Mentor: Zhe Fei, Physics and Astronomy

**II.B.3** Capping Ligand Vortices as "Atomic Orbitals" in Nanocrystal Self-Assembly  
*Curt Waltmann*, Materials Engineering  
Mentor: Alex Travesset, Physics and Astronomy

## CHEMISTRY

**II.C.1** Synthesis and Characterization of R7T2Ge4 (R = Ce, Pr; T = Co, Ni) Featuring All-Metal Organic-Molecule-Like Clusters  
*Kaiser Aguirre*, Aerospace and Materials Engineering  
Mentor: Qisheng Lin, Chemistry

**II.C.2** Single crystal growth, structure, and magnetic properties of Ce7Ni2Ge4  
*Yiqiu Qian*, Chemistry  
Mentor: Qisheng Lin, Chemistry

**II.C.3** Kinetics of Functionalization of Mesoporous Silica Nanoparticles with Organotrialkoxysilanes  
*Hsin Wang*, Chemistry  
Mentor: Igor Slowing, Chemistry/Ames laboratory

## DIETETICS AND HUMAN NUTRITION

**II.D.1** Childhood Obesity Treatment in Iowa: Primary Care Providers’ and Residents’ Practices and Attitudes  
*Benjamin Dralle*, Nutritional Science, Genetics  
Mentor: Lorraine Lanningham-Foster, Food Science and Human Nutrition

**II.D.2** Determining the Iron Solubility of Iron-enriched Aspergillus Oryzae and Common Fortificants  
*Casey Johnson*, Dietetics  
Mentor: Manju Reddy, Food Science and Human Nutrition

**II.D.3** Effects of Altering Feed Strategy to Mealworms and the Impact on Nutrient Composition  
*Sarah May*, Animal Science  
Mentor: Mariana Rossoni-Serao, Animal Science
COMMUNITY AND REGIONAL PLANNING

Session II.E
11:15-12:00
Oak Room

Faculty Moderator: Ulrike Passe, Architecture

II.E.1 Evaluation of a nutrition education program: Buy Eat Live Healthy's suitability and usefulness to refugees
Thomata Doe, Nutritional Science and GLOBE
Mentor: Christine Hradek, Human Sciences Extension and Outreach

II.E.2 Center of Excellence, IN-CORE Cross Disciplinary Glossary
Sydney Edwards, Biology and Environmental Science with minor in Urban Studies
Mentor: Sara Hamideh, Community and Regional Planning

CELLULAR AND MOLECULAR BIOLOGY

Session II.F
11:15-12:00
Room 3558

Faculty Moderator: Melha Mellata, Food Science and Human Nutrition

II.F.1 Cell Culture Assessment of Vitamin D on Inflammatory Gene Expression Using Brain Cells
Lily Harvison, Genetics
Mentor: Matthew Rowling, Food Science and Human Nutrition

II.F.2 Examining the Architecture of Focal Adhesion Kinase
Faleesia Willis, Biology
Mentor: Eric Underbakke, Biochemistry, Biophysics, and Molecular Biology

LEADERSHIP STUDIES

Session II.G
11:15-12:00
Gold Room

Faculty Moderator: Mack Shelley, Political Science

II.G.1 Coming Together: Using Leadership to Create Collaboration in Divided Communities
Raia Arbisi, Psychology
Mentor: Dr. Amber Manning-Ouellette, Psychology

II.G.2 Personal Perceptions of Destructive Leadership
Caeona Krivolavy, Child, Adult, and Family Services
Mentor: Amber Manning-Ouellette, Psychology

GENETICS AND ENTOMOLOGY

Session II.H
11:15-12:00
Room 3512

Faculty Moderator: Allen Miller, Plant Pathology and Microbiology

II.H.1 An acyl carrier protein mutant links auxin signaling and fatty acid biosynthesis
Clarissa Lewis, Kinesiology
Mentor: Dior Kelley, Genetics

II.H.2 Deductive Reasoning in Paper Wasps: Polistes dominula are Capable of Transitive Inference
Jessica Riojas, Biology and Environmental Science
Mentor: Elizabeth Tibbetts, Ecology and Evolutionary Biology - University of Michigan
### SESSION III, 1:15 pm – 2:15 pm

#### Session III.A
1:15-2:15
Room 3558

**KINESIOLOGY**

**Faculty Moderator:** Phil Martin, Kinesiology

**III.A.1** Peripheral markers of inflammation in persons with Parkinson’s disease, progressive supranuclear palsy, and multiple system atrophy  
*Jose Amaya,* Kinesiology  
Mentor: Elizabeth Stegemöller, Kinesiology

**III.A.2** Visual Processing in Parkinson’s Disease  
*Lauren Young,* Psychology  
Mentor: Elizabeth Stegemoller, Kinesiology

**III.A.3** Effects of Music on Gait and Associated Motor Cortical Activity in Healthy Young Adults and Persons with Parkinson’s Disease  
*Zoe Lambert,* Kinesiology and Health, *Carlye Marshall,* Kinesiology and Health  
Mentor: Elizabeth Stegemoller, Kinesiology

#### Session III.B
1:15-2:15
Room 3512

**AGRICULTURAL AND BIOSYSTEMS ENGINEERING**

**Faculty Moderator:** Jacek Koziel, Agricultural and Biosystems Engineering

**III.B.1** Effects of Woodchip Bioreactors on Water Quality  
*Alexis Slade,* Agricultural Engineering Land and Water  
Mentor: Michelle Soupir, Agricultural and Biosystems Engineering

**III.B.2** Plant Localization With Deep Learning  
*Isaac Tegeler,* Computer Engineering  
Mentor: Lie Tang, Agriculture and Biosystems Engineering

**III.B.3** Miscanthus Grass as a Carbon Source for Denitrifying Bioreactors  
*Kyle Werning,* Biosystems Engineering  
Mentor: Michelle Soupir, Agriculture and Biosystems Engineering

**III.B.4** Improving and Testing Methods of Securing Row Cover for Organic Cucurbit Production  
*Jennifer Widmer,* Agricultural Engineering  
Mentor: Brian Steward, Agricultural and Biosystems Engineering

#### Session III.C
1:15-2:15
Cardinal Room

**EDUCATION AND INDUSTRIAL DESIGN**

**Faculty Moderator:** Tejas Dhadphale, Industrial Design

**III.C.1** Instructional Heuristics in Innovative Educational Practices  
*Steven Abramsky,* Industrial Design  
Mentor: Seda McKilligan, Industrial Design

**III.C.2** Visual Note-taking in the Digital Age: Improving Teaching and Learning in Large Classrooms.  
*Noah Garwood,* Industrial Design  
Mentor: Tejas Dhadphale, Industrial Design
A World of Binaries: Gender in Product Design
Kellie Walters, Industrial Design
Mentor: Betsy Barnhart, Industrial Design

Session III.D
1:15-2:15
Room 3534

PSYCHOLOGY

Faculty Moderator: Samantha Cross, Marketing

III.D.1 Shifting Homelessness Narratives From the Micro to the Macro
Caenoa Krivolavy, Child, Adult, and Family Services, Julia Casas, Family and Consumer Science Education and Studies
Mentor: Amanda Hardy-Hillman, Human Development and Family Studies

III.D.2 Struggling to Make Ends Meet: Predicting depression in Married and Cohabitating African American Women
Olivia Robertson, Psychology
Mentor: Fred Clavel, Psychology

III.D.3 If my romantic partner is satisfied with "us", then so am I?
Farshad Sadr, Psychology
Mentor: Susan Cross, Psychology

III.D.4 Cognitive Functioning in Human and Machine Game Playing
Ethan Owens, Biology
Mentor: Sayali Kukday, Biology

COMMUNICATION STUDIES

Faculty Moderator: Sandra Looft, World Languages and Cultures

III.E.1 College-Students Negotiating Healthcare Privacy Boundaries with their Parents
Sarah Heller, Communication Studies; Madison Schwenneker, Communication Studies
Mentor: Katherine Rafferty, Psychology

III.E.2 Relational Dialectics Theory: Analyzing parents' stories to understand larger tensions represented in their talk
Kara Hutton, Communication Studies; Nicole Miller, Communication Studies
Mentor: Katherine Rafferty, Psychology

III.E.3 Social Media Use Among Iowa State Students: Implications for Disconnectedness and Well-Being
Cassidy Wagner, Psychology
Mentor: Dawn Sweet, Psychology
III.F.1 Identifying stage specific convulsive seizures with EEG characteristics in rats following a kainate model of temporal lobe epilepsy
Andy Hinojo, Biology
Mentor: Thimma Settappa Thippeswamy, Biomedical Sciences

III.F.2 Effects of Pyruvate Kinase on Brain Glucose Uptake and Gray Matter Volume
Jonathan Cerna, Dietetics
Mentor: Auriel Willette, Department of Food Science and Human Nutrition

III.F.3 Evaluation of immune responses induced by vaccines against extraintestinal pathogenic Escherichia coli
Madison Huber, Genetics
Mentor: Melha Mellata, Food Science and Human Nutrition

III.F.4 The Effect of Lysophosphatidylcholine on Cognitive Impairment
Ye-Lim Lim, Psychology
Mentor: Auriel Willette, Food Science and Human Nutrition

III.G.1 How do Social Factors Affect Knowledge Sharing?
Jake Rink, Civil Engineering
Mentor: Cristina Poleacovschi, Civil Engineering

III.G.2 The Tale of Two Devastating Earthquakes in Mexico City
Enrique Rubio Delgado, Civil Engineering
Mentor: Sri Sritharan, Civil Construction and Environmental Engineering

III.H.1 AGV Reduction Algorithm for Shop Floor Optimization
Colin Brown, Industrial Engineering
Mentor: Guiping Hu, Industrial and Manufacturing Systems Engineering

III.H.2 Literary Review of Security for the Internet of Things
Josua Gonzales-Neal, Software Engineering
Mentor: Phillip Jones, Electrical and Computer Engineering

III.H.3 Modeling the Invisible
Grant Neighbor, Mechanical Engineering
Mentor: Caroline Westort, Landscape Design

III.H.4 Gender-based Selection Strategy for Genomic Selection
Megan Wellner, Industrial Engineering
Mentor: Guiping Hu, Industrial and Manufacturing Systems Engineering
SESSION IV, 2:30 pm – 3:30 pm

Session IV.A
2:30-3:30
Gallery

ARCHITECTURE

Faculty Moderator: Andrea Wheeler, Architecture

IV.A.1 Landscape, Architecture, and Spirituality at the Remote Monastic Communities of Mount Athos
Alexander Blum, Architecture
Mentor: Jelena Bogdanovic, Architecture

IV.A.2 Interdisciplinary Research into Architecture and Music: An Evaluation of Acoustic Performance of a Selection of Spaces in the ISU Music Building
Boram Kim, Architecture
Mentor: Michael Muecke, Architecture

IV.A.3 From Dust to Renaissance: Visual Preservation
Yue Yuan, Architecture
Mentor: Diane Shihabi, Interior Design

IV.A.4 Rebuilding Lives: Brasilia
Shivang Patel, Pre-Architecture
Mentor: Jonathan Hassid, Political Science

Session IV.B
2:30-3:30
Cardinal Room

MECHANICAL ENGINEERING II

Faculty Moderator: Sonal Padalkar, Mechanical Engineering

IV.B.1 Implementation of the Actuator Line Method in Finite Element Simulation of Wind Turbine Aerodynamics
Nikita Kozak, Mechanical Engineering
Mentor: Ming-Chen Hsu, Mechanical Engineering

IV.B.2 Stamped-graphene biosensors on biodegradable and disposable substrates
Abraham Polonia Suarez, Mechanical Engineering
Mentor: Jonathan Claussen, Mechanical Engineering

IV.B.3 Ultra-high dynamic range imaging for metallized detonations
Ryan Thompson, Mechanical Engineering, Physics
Mentor: James Michael, Mechanical Engineering

Session IV.C
2:30-3:30
Oak Room

INTERIOR DESIGN

Faculty Moderator: Diane Al Shihabi, Interior Design

IV.C.1 Villa Petschek: Touchstone of American History
Collin Powell, Interior Design and German
Mentor: Diane Al Shihabi, Interior Design

IV.C.2 Gendered Interiors: A Transatlantic Import of Victorian Domesticity from Germany to America
Collin Powell, Interior Design and German
Mentor: Ruxandra Looft, World Languages and Cultures
IV.C.3  The U.S. Ambassador's Residence in Warsaw: A Matter of American Design and Diplomacy in Poland  
Joel Wienhold, Interior Design  
Mentor: Diane Al Shihabi, Interior Design

IV.C.4  Preservation Uniformitarianism: Weaving Cutting-Edge Technology into History  
Yiqi Zhao, Architecture  
Mentor: Diane Al Shihabi, Interior Design

Session IV.D  
2:30-3:30  
Room 3512  

ANIMAL SCIENCE  
Faculty Moderator: Grant Dewell, Veterinary Diagnostic and Production Animal Medicine

IV.D.1  Mucosal Immunoglobulin A Responses to Probiotics and Vaccines in Chickens  
MaryKate Horak, Dietetics, minor Genetics  
Mentor: Melha Mellata, Food Science and Human Nutrition

IV.D.2  Differential Porcine circovirus 1 and Porcine circovirus 2 epitope-based enzyme-linked immunosorbent assay  
Shay Lierman, Animal Science  
Mentor: Pablo Piñeyro, Veterinary Diagnostic and Production Animal Medicine

IV.D.3  The Effects of Raw Potato Starch on Salmonella Shedding in Weaning Pigs  
Morgan Smith, Software Engineering and Microbiology  
Mentor: Crystal Loving, USDA Agricultural Research Service

IV.D.4  Immune Cell Levels in Hens Raised in Conventional and Cage-Free Environments Across Three Stages of Production  
Caroline Treadwell, Animal Science and Biology  
Mentor: Melha Mellata, Food Science and Human Nutrition

Session IV.E  
2:30-3:30  
Room 3534  

AGRONOMY  
Faculty Moderator: Marshall McDaniel, Agronomy

IV.E.1  Decomposition of Cotton Underwear and Tea Bags As a Soil Health Indicator in Agroecosystems  
Theresa Brehm, Global Resource Systems, Agronomy  
Mentor: Marshall McDaniel, Agronomy

IV.E.2  Genomic Selection for Maize Root Quantitative Traits  
Andrew Herr, Agronomy  
Mentor: Jianming Yu, Agronomy

IV.E.3  Improving Access to Maize Genomes to Fields Datasets  
Madeline McMullen, Agronomy  
Mentor: Carolyn J. Lawrence-Dill, Genetics, Development, and Cell Biology/Agronomy

IV.E.4  Screening of soybean lines for soybean cyst nematode resistance  
Blake Trygestad, Agronomy  
Mentor: Silvia Cianzio, Agronomy
LEADERSHIP STUDIES

Session IV.F
2:30-3:30
Gold Room

Faculty Moderator: Christina Svec, Music

IV.F.1
Game on; Leadership strategies in the rising world of eSports
Tyler Much, Computer Engineering; Minor in Leadership studies
Mentor: Amber Manning-Ouellette, Psychology

IV.F.2
School Leadership: Using Relational Leadership as an Administrator in a Diverse Community
Zoe Wissler, Political Science
Mentor: Amber Manning-Ouellette, Psychology

PSYCHOLOGY

Session IV.G
2:30-3:30
Room 3558

Faculty Moderator: Tyler Jensen, Finance

IV.G.1
Materialistic Happiness and Its Relationship with Self-Judgment in College Students
Xin Yueh Choo, Psychology
Mentor: Douglas Gentile, Psychology

IV.G.2
Do Mindfulness, Self-forgiveness, and Non-attachment Predict Self-compassion?
Nathaniel Collins, Management
Mentor: Douglas Gentile, Psychology

IV.G.3
Blanket Inoculation of Attitudes
Hawa Conteh, Psychology
Mentor: Dr. Kevin Blankenship, Psychology

EDUCATION

Session IV.H
2:30-3:30
Room 3505

Faculty Moderator: Janice Friedel, School of Education

IV.H.1
Lecture Capture and Learner Engagement Strategies for Industrial Engineering Distance Education: Results of a Pilot Program
Arlette Rufer, Industrial and Manufacturing Systems Engineering
Mentor: Michael Helwig, Industrial and Manufacturing Systems Engineering

IV.H.2
Design Thinking Methods and Innovation In Education
Colette Koczek, Industrial Design
Kelly Guerin, Industrial Design
Mentor: Seda McKilligan, Industrial Design
P.1  Comparing the quality and quantity of automated corrective feedback provided by Grammarly versus MS Word  
*Catherine Bappe*, Linguistics  
*Mentor*: Jim Ranalli, English

P.2  Gait and Music EMG  
*Callan Barrick*, Kinesiology  
*Teagan Manus*, Kinesiology  
*Marissa Koepp*, Kinesiology  
*Mentor*: Elizabeth Stegemoller, Kinesiology

P.3  Effects of incremental exercise on the dorsolateral prefrontal cortex measured by near-infrared spectroscopy  
*Amber Baughman*, Dietetics  
*Mentor*: Panteleimon Ekkekakis, Kinesiology

P.4  Effects of Dual Targeted Therapies of Anticancer Drugs in Preclinical Models of Colorectal Cancer  
*Monica Brown*, Genetics and Microbiology  
*Mentor*: Todd Pitts, Division of Medical Oncology, University of Colorado Anschutz Medical School

P.5  Tapestry: Scalable Photovoltaic Films for Deployable Martian Solar Farms  
*Ryan Byrnes*, Mechanical Engineering  
*Kyle Helvie*, Mechanical Engineering  
*Gage Lochner*, Aerospace Engineering  
*Jensen Mayes*, Electrical Engineering  
*Riley Roche*, Mechanical Engineering  
*Mentor*: Wei Hong, Aerospace Engineering

P.6  Is Facebook the New Phone Company?  
*Courtney Carstens*, Journalism and Mass Communications  
*Mentor*: Andrew Pritchard, Greenlee School of Journalism

P.7  The Effect of Music Played Before/During Stroop Task on Cognitive Inhibition  
*Cortney Elkin*, Kinesiology and Health  
*Alaina Berg*, Biology and Spanish  
Gwynne Wright, Kinesiology and Health  
*Ella Gustafson*, Kinesiology and Health  
*Mentor*: Elizabeth Stegemoller, Kinesiology

P.8  Immortalized Wildtype Microglial Cells (WTMCL) cell lines as a model system for screening Anti-neuroinflammatory agents  
*Grace Gasser*, Biology  
*Mentor*: Vellareddy Anantharam, Biomedical Sciences

P.9  Faulty Turbine Blade Detection in the Time Domain from Casing Pressure and Vibration Measurements  
*Adam Gjersvik*, Aerospace Engineering  
*Mentor*: Thomas Chiu, Aerospace Engineering
P.10  Does the diversity of flowers influence ecosystem biodiversity in an Iowa prairie?
Luke Goodman, Animal Ecology and Environmental Studies
Mentor: Haldre Rogers, Ecology, Evolution, and Organismal Biology

P.11  Understanding the role of isoflavones in the soybean-soybean aphid interaction
Sarah Grambo, Biochemistry
Mentor: Gustavo MacIntosh, Biochemistry

P.12  Evaluating the Effectiveness of Iowa’s Lake Restoration Projects
Kathryn Holmes, Environmental Science, Community and Regional Planning
Mentor: Grace Wilkinson, Ecology, Evolution, and Organismal Biology

P.13  Using Empathy and Fear as Persuasive Tools in Scientific Communication
Madeyln Huinker, Communication Studies and Environmental Studies
Amanda Schuler, Environmental Science
Su-Yeon Cho, Journalism and Mass Communication
Mentor: Dara Wald, Journalism and Mass Communication

P.14  Design Research and Civic Responsibility: Rehabilitating Iowa’s Historic Downtowns To Preserve Cultural Heritage
Kristian Kennedy, Interior Design
Katelyn Judson, Interior Design
Jaclynn Montour, Interior Design
Mentor: Diane Alshihahi, Interior Design

P.15  Attend to the Rhythm: Rhythmic Movement Sequencing Intervention in Children
Brenna Klesel, Psychology
Mentor: Ann Smiley-Oyen, Kinesiology

P.16  Quality of Life in Iowa’s Thriving Small Towns
Matthew Lechowicz, Architecture
James Weatherly, Community and Regional Planning
Hannah Fisher, Agriculture and Society
Mentor: Kimberly Zarecor, Architecture

P.17  The potential of a novel technology to positively impact Iowa beef production
Colette Manley, Animal Science/Pre-Veterinary Medicine
Mentor: Stephanie Hansen, Animal Science

P.18  The Effect of Preferred and Non-Preferred Study Music on Stroop Task Performance
Allison Meyer, Kinesiology
Molly Norman, Kinesiology
Emma Gettes, Kinesiology
Jonathan Mennecke, Kinesiology
Mentor: Elizabeth Stegemoller, Kinesiology

P.19  Effectiveness of Motivational Interviewing for Different Personalities in College Students
Jenna Peterson, Kinesiology and Health
Mentor: Gregory Welk, Kinesiology

P.20  A Comprehensive Review of Project-Based Language Learning Literature
Julia Ringhofer, English Education
Brandon Davis, Elementary Education
Mentor: Gulbahar Beckett, English
Cross Price Effects on Housing in Local Markets
*Aimee Rodin*, Mathematics and Actuarial Science
*Mentor*: Peter Orazem, Economics

An Examination of Sudden Warming Events Associated with Cold Fronts in Iowa
*Zane Satre*, Meteorology
*Mentor*: Tsing-Chang Chen, Department of Geological and Atmospheric Sciences

The Relationship between Finger and Toe Tapping in Persons with Parkinson’s Disease
*Jessica Schafer*, Kinesiology
*Riley Berg*, Kinesiology
*Breanna Poage*, Music
*Mentor*: Elizabeth Stegemoller, Kinesiology

Analyzing the Security Margin of SHA-3 Under Mathematical and Satisfiability Constructs
*Alexander Scheel*, Computer Science and Mathematics
*Mentor*: Clifford Bergman, Mathematics

Market Share Inequality in United States Agriculture
*Skyler Schneekloth*, History
*Mentor*: Katherine Lacy, Liberal Arts and Sciences

The Influence of Activating Versus Relaxing Music on Cortical Activity on Healthy Young Adults
*Kathryn Sharp*, Biology/Music
*Kate Rumel*, Kinesiology
*Mentor*: Elizabeth Stegemoller, Kinesiology

Primer Server - A web application to design primers for the amplification of unique DNA targets in complex genomes
*Takao Shibamoto*, Computer Engineering
*Mentor*: Erik Vollbrecht, Genetics, Development and Cell Biology

In-situ quality inspection for micro/nano scale additive manufacturing system based on electrohydrodynamic inkjet printing using machine vision
*Eric Spahr*, Industrial Engineering
*Kevin Lin*, Industrial Engineering
*Mentor*: Hantang Qin, Industrial and Manufacturing Systems Engineering

Utility of Virtual Reality for Physiological Stress Responsivity
*Logan Stiens*, Biology
*Sam Massey*, Software Engineering
*Jake Liebman*, Software Engineering
*Sam Messbarger*, Kinesiology and Health
*Mentor*: Elizabeth Shirtcliff, Human Development and Family Studies

A Mobile Diagnostics Lab for Interdisciplinary Climate Research
*Kaylinn Taggart*, Architecture and Community and Regional Planning
*Laura Michaelson*, Mechanical Engineering
*Zach Thielen*, Architecture
*Mentor*: Ulrike Passe, Architecture

Understanding Location Choice for Subsidiaries of Multinational Firms
*Derek Thada*, Mathematics and Statistics
*Mentor*: Olga Chyzh, Political Science
P.32  Controlling the Self Assembly of Janus Particles
Charles Truka, Chemical Engineering
Weston Laake, Chemical Engineering
Mentor: Shan Jiang, Materials Science and Engineering

P.33  Finger Tapping Exercise: Parkinson’s Disease vs. Alzheimer’s Disease
Noah Weeks, Kinesiology
Thomas Nettleton, Kinesiology
Mentor: Elizabeth Stegemoller, Kinesiology
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Abstracts for the presentations at this year’s Symposium are available on the ISU website:

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