

## First-Year Honors Mentor Program Grant

[2021-22](#) [2020-21](#) [2019-20](#) [2018-19](#)

### **2021-22**

## College of Agriculture and Life Sciences

### **Liya Mooradian, Genetics (LAS)**

*Faculty mentor: Silvina Arias – Plant Pathology and Microbiology*

Project name: Validation study of a Real Time PCR method for the detection of *Pantoea stewartii* subsp. *stewartii* in maize seeds

### **Kacy Oberbroeckling, Biology (LAS)**

*Faculty mentor: Silvina Arias – Plant Pathology and Microbiology*

Project name: Seedling Pathogens in the Soybean Production Cycle: Management and Communication

### **Carter Casey, Biology (LAS)**

*Faculty mentor: Gwyn Beattie – Plant Pathology*

Project name: Osmotic stress tolerance of phytopathogenic *Serratia marcescens*

### **Roman Combs, Microbiology**

*Faculty mentor: Nicolas Delchier – Food Science & Human Nutrition*

Project name: B-Vitamins content in legumes and their reactivity during food processing



**Bree Beyer, Genetics (LAS)**

**Jaden Brand, Chemical Engineering**

**Zachary Rapoza, Computer Engineering**

*Faculty mentor: Karri Haen – Genetics/Development & Cell Biology - Agls*

Project name: 3D Printable Prosthetic Devices

**Alex Bray, Microbiology**

*Faculty mentor: Larry Halverson – Plant Pathology and Microbiology*

Project name: Interrogating the maize rhizosphere using a synthetic community

**Kylie McGlade, Agronomy**

*Faculty mentor: Thomas Lubberstedt – Agronomy*

Project name: Bud 3.2 Haploid Evaluation

**Zach Harvey, Environmental Science (AGLS)**

*Faculty mentor: Fally Masambuka-Kanchewa – Agricultural Education & Studies*

Project name: Exploring Undergraduate students' agricultural information seeking behaviors

**Morgan Farnham, Dietetics (H Sci)**

*Faculty mentor: Fally Masambuka-Kanchewa – Agricultural Education & Studies*

Project name: Impact of agricultural information sources among dietetic students on their dietary preferences



**Sydney Pottebaum, Open Option (LAS)**

**Kristen Hoss, Environmental Science (AGLS)**

*Faculty mentor: Marshall McDaniel – Agronomy*

Project name: Managing Soils and Plants for Enhanced Agroecology Services

**Julia Marks, Genetics (AGLS)**

**Kelsa Heseltine, Microbiology**

**Evan Bollinger, Biochemistry (AGLS)**

*Faculty mentor: Melha Mellata – Food Science & Human Nutrition - Agls*

Project name: Molecular Regulation of Bacterial Horizontal Gene Transfer

**Callan Randall, Food Science (H Sci)**

**Arann Raven, Biology (AGLS)**

**Jessica Fuertes De Arcos, Chemical Engineering**

*Faculty mentor: Aubrey Mendonca – Food Science & Human Nutrition - Agls*

Project name: Improving the microbial safety of raw pineapple juice using an essential oil and cold plasma

**Sophia Schmidt, Horticulture**

*Faculty mentor: Ajay Nair – Horticulture*

Project name: Identifying Nutrient Deficiency Symptoms in Vegetable (Tomato) Transplants.

**Teju Malli, Microbiology**

**Kasey Kropp, Biology (AGLS)**

*Faculty mentor: Nicholas Peters – Plant Pathology and Microbiology*

# IOWA STATE UNIVERSITY

## Honors Program

Project name: Phage discovery and Science Bound Outreach

### **Katherine Sanow, Chemistry**

*Faculty mentor: Aude Watrelot – Food Science & Human Nutrition*

Project name: Color Stability of model wine solutions

## College of Design

### **Rosie Becicka, Pre Architecture**

### **Sage Cochran, Pre Architecture**

*Faculty mentor: Raluca Lancu – Art and Visual Culture*

Project name: Integrating the new with the old: 3D printing and laser cutting with letterpress

### **Grier Wheaton, Pre-Industrial Design**

*Faculty mentor: Verena Paepcke-Hjeltness – Industrial Design*

Project name: Exploring Sketchnoting as a Methodology for Class Reflection

## College of Engineering

### **Karthik Prasath, Aerospace Engineering**

### **Sam Hansen, Aerospace Engineering**

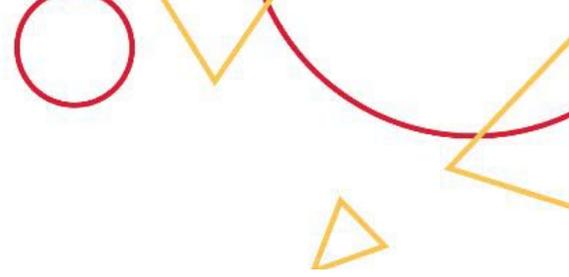
### **Sean Mulcrone, Mechanical Engineering**

### **Matthew Dorang, Mathematics**

### **Paco Pratas Glycerio de Freitas, Mechanical Engineering**

*Faculty mentor: Timothy Bigelow – Electrical Engineering*

Project name: Bio-Inspired Reduction of EMI in PCB Lines



**Max Rohrer, Computer Science**

**Ben Hollis, Animal Science**

**Harper Clark, Biology (LAS)**

**Erin McPike, Biology (AGLS)**

*Faculty mentor: Timothy Bigelow – Electrical Engineering*

Project name: Ultrasound Enhanced Wound Healing

**Joran Brensdal, Chemical Engineering**

*Faculty mentor: Eric Cochran – Chemical & Biological Engineering*

Project name: Unsaturated Diacids for the Synthesis of Bio-Enhanced Nylon 6,6

**Peter Guzman, Industrial Engineering**

*Faculty mentor: Todd Kingston – Mechanical Engineering*

Project name: Fabrication and Characterization of Microfluidic Devices

**Damian Pyrdol, Aerospace Engineering**

**Jackson Collins, Aerospace Engineering**

*Faculty mentor: Dae-Young Lee – Aerospace Engineering*

Project name: The Floating Attitude Control Test System

**Sarah Pierce, Mechanical Engineering**

*Faculty mentor: Sonal Padalker – Mechanical Engineering*

Project name: Detection of copper ions in water and study their influence on plant growth in hydroponic system

# IOWA STATE UNIVERSITY

## Honors Program

### **Matt Graeve, Mechanical Engineering**

*Faculty mentor: Siddhartha Pathak – Materials Science & Engineering*

Project name: Nanomechanical Study and Characterization on MAX phase Materials

### **Nick Oldham, Materials Engineering**

### **Soren Hellyer, Materials Engineering**

*Faculty mentor: Siddhartha Pathak – Materials Science & Engineering*

Project name: Studying the Effect of Cryo temperature on the Properties of the Solder Joints for In-Space Applications

### **Gabe Cook, Environmental Engineering**

### **Nathan Pearson, Civil Engineering**

*Faculty mentor: Cassandra Rutherford – Civil, Construction and Environmental Engineering*

Project name: Development and Testing of Novel Tilt Table Testing Device for Measuring Soil Friction Angle

### **Caden Otis, Electrical Engineering**

*Faculty mentor: Jiming Song – Electrical And Computer Engineering*

Project name: Electromagnetic sensors and modeling

### **Ryan Casey, Mechanical Engineering**

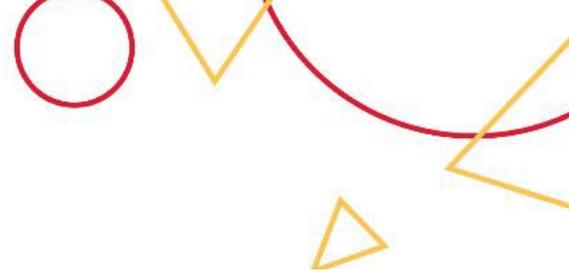
*Faculty mentor: Sri Sritharan – Civil Engineering*

Project name: Evaluating the Benefits of Tall Wind Towers in the US

### **Claire Schneider, Civil Engineering**

*Faculty mentor: Sri Sritharan – Civil Engineering*

Project name: Environmental Assessment of Tall Wind Towers



**Keith Friestad, Mechanical Engineering**

**Jake Winters, Mechanical Engineering**

*Faculty mentor: Brian Steward – Agricultural & Biosystems Engineering*

Project name: Exploring Magnetic Array Filtration Performance on Contaminated Hydraulic Oil

**Sean Kelly, Industrial Engineering**

*Faculty mentor: Peter Taylor – Civil, Construction & Environmental Engineering*

Project name: Effect of sample thickness on concrete sorption measurement Hydrated cement paste is known to absorb water, a property that can be assessed in a standard test ASTM C 1585. What is not clear is the effect of sample thickness on the test results. The work w

**Lucy Gates, Aerospace Engineering**

**Colin Sears, Aerospace Engineering**

*Faculty mentor: Hartanto Wibowo – Civil, Construction & Environmental Eng*

Project name: Physical Models as Teaching Tools for Engineering Statics

**Lauren Blair, Civil Engineering**

**Vy Phan, Civil Engineering**

*Faculty mentor: Hartanto Wibowo – Civil, Construction & Environmental Eng*

Project name: Flexural Tests of Concrete Beams Reinforced with Shape Memory Alloys

## College of Human Sciences

**Morgan Simms, Pre Architecture**

**Avery TeSelle, Pre Architecture**

# IOWA STATE UNIVERSITY

## Honors Program

*Faculty mentor: Rachel Eike – Apparel, Events, & Hospitality Management*

Project name: Sustainability in Shredding Textiles

### **Shane Zenk, Pre-Industrial Design**

*Faculty mentor: Rachel Eike – Apparel, Events, & Hospitality Management*

Project name: Design and Reliability of TENS Embroidered Electrodes

### **Luke Richard, Industrial Engineering**

*Faculty mentor: Rui Li – Apparel Merchandising and Design*

Project name: Performance improvement of personal protective equipment for healthcare workers

### **Muhayimana Benigne, Dietetics (H Sci)**

### **Alissa Hoover, Kinesiology & Health**

### **Ellie McCombs, Pre Diet & Exercise (H Sci)**

### **Kylie Petersen, Pre Diet & Exercise (H Sci)**

### **Maiya Schminkey, Kinesiology & Health**

### **Ava Spinner, Kinesiology & Health**

*Faculty mentor: E. Andrew Pitchford – Kinesiology*

Project name: Relationships between obesity, bone density, and lifestyle factors in adults with intellectual disabilities

### **Makayla Dove, Bioinformatics & Computational Biology**

### **Kenzie Sanden, Genetics (AGLS)**

*Faculty mentor: Qian Wang – Food Science & Human Nutrition - H Sci*

Project name: CRISPR gene editing of HEK 293 cells



## College of Liberal Arts and Sciences

**Katelyn Squires,**

**Atlas Cahill,**

**Rebecca Dinslage,**

*Faculty mentor: Gloria Betcher – English*

Project name: Mapping the BIPOC ISC Student Housing Experience to 1950

**Daniel Hollinger, Chemistry**

*Faculty mentor: Kirill Kovnir – Chemistry*

Project name: Exploratory Synthesis of Novel Ba-Cu-Mn-P Phases

**Jessie Cheung, Pre- Interior Design**

**Rachel Kramer, Design Undeclared**

*Faculty mentor: Maggie LaWare – English*

Project name: Pandemic Murals

**Bridget McGovern, Biology (LAS)**

**Ellie Lentz, Genetics (AGLS)**

**Isabella Lein, Biology (LAS)**

**Rachel Carrant, Genetics (AGLS)**

*Faculty mentor: Donald Sakaguchi – Genetics, Development & Cell Biology – LAS*

Project name: Biocompatibility of Polymer Scaffolds for Growth and Differentiation of Neural Stem Cells

# IOWA STATE UNIVERSITY

## Honors Program

**Charlotte Barnes, Biology (LAS)**

**Brooklyn Elwood, Microbiology**

**Isabella Jaspering, Biology (LAS)**

*Faculty mentor: Rahul Nelli – Vet Diagnostic & Production Animal Med*

Project name: Distribution of Coronavirus receptors in one livestock species

**Grace Helle,**

**Connor Kirk,**

**Isabelle Von Seggern,**

*Faculty mentor: Nubia Resende-de-Macedo – Vet Diagnostic & Production Animal Med*

Project name: Optimization of an antimicrobial susceptibility test for *Mycoplasma bovis*

## 2020-21

### College of Agriculture and Life Sciences

**Diana Mulder, Microbiology & International Agriculture**

*Faculty mentor: Larry Halverson – Plant Pathology & Microbiology*

Project name: Characterizing a synthetic rhizosphere system to evaluate bacterial colonization of roots and their impact on plant health

**Hailee Christensen, Chemical Engineering**

*Faculty mentor: Jacek Koziel - Agricultural & Biosystems Engineering*

Project name: The Nose Knows! petrichor and the smell of soil

**Ryan Unga, Chemical Engineering**

**Cameron Cimino, Chemical Engineering**

**Cali Donkersloot, Engineering**

# IOWA STATE UNIVERSITY

## Honors Program

*Faculty mentor: Jacek Koziel – Agricultural & Biosystems Engineering*

Project name: Removing barriers for adoption of biochar treatment to mitigate gaseous emissions from manure: can common binders improve the performance of pelletized biochars?

**Caleb Skow, Biology**

**Arielyn Tegtmeier-Oatman, Global Resource Systems**

*Faculty mentor: Ajay Nair – Horticulture*

**Kurt Brase, Agricultural Engineering**

**Andrew Asama, Mechanical Engineering**

*Faculty mentor: Brian Steward – Agricultural & Biosystems Engineering*

Project name: Exploring magnet orientation on magnetic array filtration performance on contaminated hydraulic oil

## College of Design

**Grace Estenson, Graphic Design & Marketing**

*Faculty mentor: Raluca Iancu - Art and Visual Culture*

Project name: 3D Printing applications for letterpress printing

**Aidan Furley, Aerospace Engineering**

*Faculty mentor: Raluca Iancu - Art and Visual Culture*

Project name: Explorations in natural inks and paper engineering with moku hanga (Japanese water-based relief printing)

**Victoria Meeks, Pre-Industrial Design**

# IOWA STATE UNIVERSITY

## Honors Program

**Ella Kannegiesser, Pre-Architecture**

**Madeline Keough, Materials Engineering**

**Ayla Schiller, Pre-Architecture**

*Faculty mentor: Verena Paepcke-Hjeltness – Industrial Design*

Project name: Using sketchnoting as a methodology for class reflection

## College of Engineering

**Taylor Moore, Electrical Engineering**

*Faculty mentor: Rena Biswas – Electrical & Computer Engineering & Physics*

Project name: Novel water desalination methods

**Robert Downs, Chemical & Biological Engineering**

*Faculty mentor: Eric Cochran - Chemical & Biological Engineering*

Project name: Improved rejuvenation of asphalt through use of modified soybean oil

**Vanessa Hupp, Chemical Engineering**

*Faculty mentor: Eric Cochran - Chemical & Biological Engineering*

Project name: Additive manufacturing of cyanate ester

**Elena Knops, Chemical Engineering**

*Faculty mentor: Eric Cochran - Chemical & Biological Engineering*

Project name: Green no added formaldehyde glycerol based wood adhesive

**Victoria Kyveryga, Chemical & Biological Engineering**

*Faculty mentor: Eric Cochran - Chemical & Biological Engineering*

# IOWA STATE UNIVERSITY

## Honors Program

Project name: Bioadvantaged nylon from biomass fermentation

### **Anna McCaslin, Chemical Engineering**

*Faculty mentor: Eric Cochran - Chemical & Biological Engineering*

Project name: Additive manufacturing of cyanate ester

### **Cassandra Volpe, Chemical Engineering**

*Faculty mentor: Eric Cochran - Chemical & Biological Engineering*

Project name: Utilization of ground tire rubber for energy efficient pavements

### **Peter Micksch, Materials Engineering**

*Faculty mentor: Jun Cui – Materials Science & Engineering*

Project name: Stabilization of Cu-based shape memory alloy for air-less tire application

### **Kiah Christopherson, Mechanical Engineering**

*Faculty mentor: Ethan Secor – Mechanical Engineering*

Project name: Production of near field communication (NFC) coils using an aerosol ink jet printer

### **John Hiker, Aerospace Engineering**

### **Michael Miller, Aerospace Engineering**

### **Sara Stewart, Mechanical Engineering**

*Faculty mentor: Hui Hu – Aerospace Engineering*

Project name: Development of innovative anti-/de-icing strategies for UAS icing mitigation and protection

### **Nicholas Groth, Mechanical Engineering**

# IOWA STATE UNIVERSITY

## Honors Program

**Heather Junk, Electrical Engineering**

**Elizabeth Jones, English & Women and Gender Studies**

*Faculty mentor: Reza Montazami – Mechanical Engineering*

Project name: Phase-Change Material (PCM)

**Fiona O'Doherty, Mechanical Engineering**

**Nathan Osberg, Mechanical Engineering**

*Faculty mentor: Reza Montazami – Mechanical Engineering*

Project name: Soft flexible electronic

**Ian Seiler, Mechanical Engineering**

**Madison Vetter, Software Engineering**

*Faculty mentor: Reza Montazami – Mechanical Engineering*

Project name: Machine learning framework in monitoring and optimization of high-resolution E-jet printing

**Madison Karamagianis, Chemical Engineering**

**Flora Kafunda, Biological Systems Engineering**

**Lindsey Weymouth, Chemical Engineering**

*Faculty mentor: Ian Schneider – Chemical & Biological Engineering*

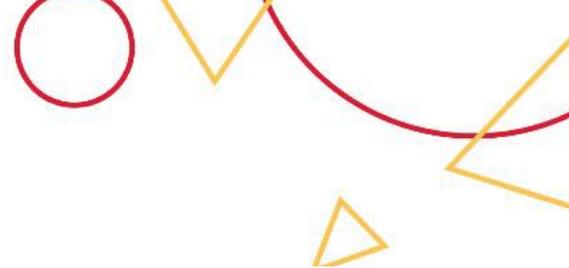
Project name: Functionalization of alginate hydrogel system and determining the mechanical properties

**Dane Holmes, Undeclared Engineering**

**Jordan Steinmetz, Undeclared Engineering**

*Faculty mentor: Hartanto Wibowo – Civil, Construction & Environmental Engineering*

Project name: Examining the effect of steel fibers in concrete



**Shanna Fellows, Civil Engineering**

**Samantha Schmitt, Undeclared Engineering**

*Faculty mentor: Hartanto Wibowo – Civil, Construction & Environmental Engineering*

Project name: Demonstrating the potential use of shape memory alloys in seismic design

## College of Human Sciences

**Megan Smith, Biochemistry**

*Faculty mentor: Aude Watrelot – Food Science & Human Nutrition*

Project name: Evaluation of the formation of polymeric pigments in wine color stability

**Quincey Bauman, Biology**

**Ryan Schiltz, Kinesiology & Health**

*Faculty mentor: Li-Shan Chou – Kinesiology*

Project name: Effects of arch support insoles on knee joint loading and gait balance control

**Alexandra Crowson, Open Option**

**Frances Loeffelholz, Dietetics & Nutritional Sciences**

**Elizabeth Marlow, Kinesiology**

**Sarah Petersen, Kinesiology**

*Faculty mentor: Andrew Pitchford – Kinesiology*

Project name: Associations of motor competence, balance, physical activity, and obesity in neurotypical children

### College of Liberal Arts and Sciences

#### **Matthew Crabb, Electrical Engineering**

*Faculty mentor: Aaron Sadow - Chemistry*

Project name: Catalyst screening in ring-closing alkane metathesis (RCAM) of Poly-alphaolefins

#### **Natalee Thompson, Biological Premedical Illustration**

*Faculty mentor: Donald Sakaguchi – Genetics, Development & Cell Biology*

Project name: Neurotransmitter modulation of neural stem cell differentiation

#### **Jamie Smith, Open Option**

#### **Zoe Dekruif, Linguistics**

*Faculty mentor: Evgeny Chukharev-Hudilainen – English*

Project name: ProWrite: Biometric technology for improving college students' writing processes

#### **Daniel Howell, Chemistry**

#### **Henry Thomas, Chemistry**

#### **Gabriel Clark, Chemical Engineering**

*Faculty mentor: Wenyu Huang – Chemistry*

Project name: Well-defined nanomaterials for heterogeneous catalysis

#### **Prescott Jeckel, Biochemistry, Biophysics, & Molecular Biology**

#### **Annika Miller, Animal Science**

*Faculty mentor: Nicholas Peters – Plant Pathology & Microbiology*

Project name: Virus discovery and characterization

**Ella Grzybowski, Political Science & Environmental Studies**

**Jennifer Godbersen, English**

*Faculty mentor: Angela Powers – Greenlee School of Journalism/Communication*

Project name: Civility research: media coverage of Black Lives Matter

### **2019-20**

## **College of Agriculture and Life Sciences**

**Celia Delury, Biological Systems Engineering**

*Faculty mentor: William Beck - Natural Resource Ecology & Management*

Project name: Woodchips for water quality: Influence of select Iowa wood species on bioreactor performance

**Lilyahna Kowal, Genetics**

*Faculty mentor: Gwyn Beattie - Plant Pathology*

Project name: Microbiome drivers of fitness benefits in drought-stressed plants

**Olivia Saul, Animal Science**

*Faculty mentor: Suzanne Millman - Veterinary Diagnostic & Production Animal Medicine*

Project name: Effects of virtual reality on the behavior of laying hens

**Emma Buchacker, Microbiology**

**Emily Kahl, Environmental Science**

*Faculty mentor: Larry Halverson - Plant Pathology*

# IOWA STATE UNIVERSITY

## Honors Program

Project name: Characterization of a synthetic maize microbiome

**Darcy Bonds, Horticulture**

**Andrew Jochum, Chemistry**

**Landon Wahe, Civil Engineering**

*Faculty mentor: Jacek Koziel - Agricultural & Biosystems Engineering*

Project name: Improving sustainability of Iowa agriculture: Synergy between improved nutrient recycling

**Emma Brady, Geology**

**Ahna Lassegard, Environmental Science**

*Faculty mentor: Bradley Miller - Agronomy*

Project name: Particle size sorting along hillslopes in a forested versus urban environment

**Kaitlyn Lathrop, Animal Science**

**Vincent Vanyo, Genetics**

*Faculty mentor: Chris Minion - Veterinary Microbiology & Preventive Medicine*

Project name: Genetics of mycoplasmas

**Abraham De Jong, Biochemistry**

**Erika Nelson, Chemistry**

*Faculty mentor: Nicholas Peters - Plant Pathology*

Project name: Identification and characterization of novel viruses that kill *Escherichia coli*

# IOWA STATE UNIVERSITY

## Honors Program

**Peter Exley, Mechanical Engineering**

**Justin Nock, Mechanical Engineering**

*Faculty mentor: Brian Steward - Agricultural & Biosystems Engineering*

Project name: Magnetic Filtration of Particle Contaminants from Hydraulic Fluids

**Katelyn Nelson, Chemical Engineering**

**Matthew Truka, Chemical Engineering**

*Faculty mentor: Lester Wilson - Food Science & Human Nutrition*

Project name: Bioactive assay of grape pomace post-wine production

## Ivy College of Business

**Cameron Bristow, Marketing**

*Faculty mentor: Samantha Cross - Marketing*

Project name: Understanding food insecurity on college campuses

**Audrey Jones, Business**

*Faculty mentor: David Cantor - Supply Chain Management*

Project name: Do consumers care about pharmaceutical contamination in the supply chain?

## College of Engineering

**Cassidy Carolan, Mechanical Engineering**

*Faculty mentor: Sarah Bentil - Mechanical Engineering*

Project name: Impact of shockwaves on viability of brain cells

# IOWA STATE UNIVERSITY

## Honors Program

### **Ian Dalton, Mechanical Engineering**

*Faculty mentor: Sarah Bentil - Mechanical Engineering*

Project name: Parametric analysis of external conditions affecting cavitation bubble properties

### **Adam Eichhorn, Materials Engineering**

*Faculty mentor: Michael Bartlett - Materials Science & Engineering*

Project name: Making adhesion on challenging surfaces patterned adhesive films

### **Grant Giansanti, Computer Engineering**

*Faculty mentor: Sonal Padalkar - Mechanical Engineering*

Project name: Scalable synthesis of copper oxide nanowires for electrocatalysis and anti-microbial studies

### **Brenna Hartse, Mechanical Engineering**

*Faculty mentor: Nicole Hashemi - Mechanical Engineering*

Project name: Mechanically exfoliated graphene as a platform for characterizing neuronal cell damage

### **Joshua Holtzleiter, Mechanical Engineering**

*Faculty mentor: Sarah Bentil - Mechanical Engineering*

Project name: The influence of brain tissue hydration on the adhesion of airbrushed speckles

### **Andrew Mord, Mechanical Engineering**

# IOWA STATE UNIVERSITY

## Honors Program

*Faculty mentor: Jaime Juarez - Mechanical Engineering*

Project name: Hydrogel rheology sampled by acoustophoretic microparticle transport

### **William Neilson, Chemical Engineering**

*Faculty mentor: Ian Schneider - Chemical & Biological Engineering*

Project name: Separating cells through spatial control of mechanical properties

### **Claire Palmer, Mechanical Engineering**

*Faculty mentor: Michael Bartlett - Materials Science & Engineering*

Project name: Switchable adhesion through smart materials

### **Isaac Peterson**

*Faculty mentor: Nicole Hashemi - Mechanical Engineering*

Project name: Manufacturing of biocompatible hollow microvessels using a microfluidic device

### **Mia Riddley**

*Faculty mentor: Nicole Hashemi - Mechanical Engineering*

Project name: Development of Brain-on-a-chip to control microvessel cell culturing

### **Maddi McAleer, Mechanical Engineering**

Hannah Nguyen, Chemical Engineering

Sam Richardson, Chemical Engineering

*Faculty mentor: Timothy Bigelow - Electrical & Computer Engineering*

Project name: Rayleigh Wave Laser Line Source

# IOWA STATE UNIVERSITY

## Honors Program

**Matthew Greiner, Mechanical Engineering**

**Si Yuan Sim, Electrical Engineering**

**Nathan Trotter, Engineering**

*Faculty mentor: Timothy Bigelow - Electrical & Computer Engineering*

Project name: Rayleigh Wave Laser Line Source

**Tyler Gerold, Aerospace Engineering**

**Khanh Hoang, Aerospace Engineering**

**Anthony Karl, Mechanical Engineering**

**Luke Marzen, Aerospace Engineering**

*Faculty mentor: Timothy Bigelow - Electrical & Computer Engineering*

Project name: Subharmonic detection of defects

**Benjamin Gardner, Electrical Engineering**

**Keirick Glennon, Electrical Engineering**

**Alexander Rickabaugh, Mechanical Engineering**

**Frank Sullivan, Software Engineering**

*Faculty mentor: Timothy Bigelow - Electrical & Computer Engineering*

Project name: Comparison of coax and ultrasound detection of defects

**Brianna Burton, Chemical Engineering**

**Jacob Davis, Chemical Engineering**

**Charles-Umashan Egharevba, Chemical Engineering**

**Will Henrichsen, Chemical Engineering**

**Conner Smith, Chemical Engineering**

*Faculty mentor: Eric Cochran - Chemical & Biological Engineering*

# IOWA STATE UNIVERSITY

## Honors Program

Project name: Untitled

**Janie Grover, Civil Engineering**

**Zakhary Keel, Civil Engineering**

*Faculty mentor: Tim Ellis - Civil, Construction & Environmental Engineering*

Project name: High-rate treatment of landfill leachate using the Static Granular Bed Reactor (SGBR) for renewable energy recovery

**Timothy Ellis, Software Engineering**

**Garrett Fields, Aerospace Engineering**

**Damien Henry, Electrical Engineering**

**Alec Rosentrater, Aerospace Engineering**

**Tom Ruminski, Computer Engineering**

*Faculty mentor: Randall Geiger - Electrical & Computer Engineering*

Project name: Autonomous energy delivery to untethered TOT nodes

**Charles Bruchal, Materials Engineering**

**Lucas Eddinger, Mechanical Engineering**

**Shiva Neelakantan, Mechanical Engineering**

**Jonathan Ravishankar, Mechanical Engineering**

**Clavin Shuck, Mechanical Engineering**

*Faculty mentor: Ralph Napolitano - Materials Science & Engineering*

Project name: Investigation of hot-cracking susceptibility in advanced Al-based and Ni-based alloys

**Matthew Bindel, Industrial Engineering**

**Katie Wyatt, Industrial Engineering**

*Faculty mentor: Frank Peters - Industrial & Manufacturing Systems Engineering*

# IOWA STATE UNIVERSITY

## Honors Program

Project name: Large Scale Parallel 3D Printing of Metal Casting Patterns

**Natalie McAninch, Chemical Engineering**

**Dennis Seay, Chemical Engineering**

**Ashlan Simpson, Statistics**

*Faculty mentor: Derrick Rollins - Chemical & Biological Engineering*

Project name: Activity tracker

**Maria Lebedeva, Chemical Engineering**

**Megan Wolfe, Chemical Engineering**

*Faculty mentor: Ian Schneider - Chemical & Biological Engineering*

Project name: Spatial control of the mechanizal properties of alginate

**Isaac Hunter, Construction Engineering**

**Mira Luke, Civil Engineering**

**Noah Rudi, Construction Engineering**

*Faculty mentor: Behrouz Shafei - Civil, Construction & Environmental Engineering*

Project name: Investigation of Concrete under Environmental and Mechanical Stressors

**Alexanderia Birlingmair, Civil Engineering**

**Ingrid Gail Guevarra, Civil Engineering**

**Ellenor Whitney, Civil Engineering**

*Faculty mentor: Hartanto Wibowo - Civil, Construction & Environmental Engineering*

Project name: Experimental simulation of structural failures utilizing a simple shake table

## College of Human Sciences



### **Elizabeth Clow, Mechanical Engineering**

*Faculty mentor: Ellen McKinney - Apparel, Events & Hospitality Management*

Project name: Development of hand-specific model and systematic tool (HMST) for next generation gloves used for firefighters and other emergency responders

### **Ben Hones, Mechanical Engineering**

*Faculty mentor: Rachel Eike - Apparel, Events & Hospitality Management*

Project name: Novel developments in conductive nanofiber technology for wearable electronics

### **Reese Gardner, Computer Science**

#### **Alexis Steinhoff, Biology**

*Faculty mentor: Elizabeth Shirtcliff - Human Development & Family Studies*

Project name: Evoking stress reactivity in virtual reality: transportation stress

## **College of Liberal Arts and Sciences**

### **Collin Anderson, Chemistry**

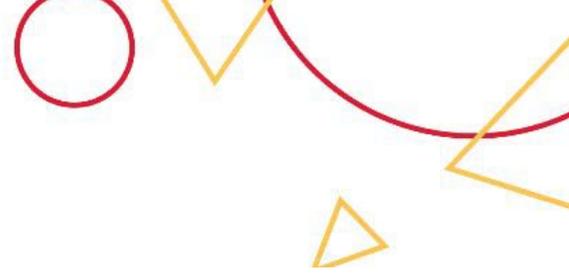
*Faculty mentor: Wenyu Huang - Chemistry*

Project name: Developing new intermetallic NP catalysts

### **Kathryn Blair, Aerospace Engineering**

*Faculty mentor: John Hauptman - Physics & Astronomy*

Project name: Calculation of magnetic and electric fields for an experimental search for magnetic charges



### **Jonah Gray, Environmental Science**

*Faculty mentor: Ajay Nair - Horticulture*

Project name: Use of micronutrient-based biostimulants in vegetable transplant production

### **Nicholas Serck, Chemistry**

*Faculty mentor: Junqi Li - Chemistry*

Project name: Synthesis of building blocks for the modular construction of terpene-inspired macrocycles

### **Matt Shafer, Biochemistry**

*Faculty mentor: Olga Zabolina - Biochemistry, Biophysics & Molecular Biology*

Project name: Study of the xylosyltransferase specific activity towards substrates

### **Claire Beaudry, Liberal Arts & Sciences**

**Lydia Samuelson, English**

**Hannah Van Sickle, English**

*Faculty mentor: David Russell - English*

Project name: Academic research writing: Keeping the flow going

**Abigail Fowler, Microbiology**

**Anna Garbe, Biology**

**Peyton Hamel, Genetics**

**Riley Kuennen, Chemical Engineering**

**Amanda Roush, Biology**

*Faculty mentor: Donald Sakaguchi - Genetics, Development & Cell Biology*

# IOWA STATE UNIVERSITY

## Honors Program

Project name: Electrical stimulation and differentiation of neural stem cells

**Regan Breen, Biochemistry**

**William Alex Rance, Biochemistry**

*Faculty mentor: Eric Underbakke - Biochemistry, Biophysics & Molecular Biology*

Project name: Defining scaffolding interfaces in PSD-95

## 2018-19

### College of Agriculture and Life Sciences

**Hector Arbuckle, Biology, and Audry Jenkins, Agronomy**

*Faculty mentor: Steven Bradbury*

Project name: Effect of intraspecific competition on monarch (*Danaus plexippus*) larval movement and survival

**Alexander Bender, Animal Ecology, and Bradley Melvin, Microbiology**

*Faculty mentor: Vallareddy Anantharam*

Project name: Apoptotic cell death signalling in cell culture models of Parkinson's Disease

**Lauren Bilek, Horticulture, and Kaitlin Diggins, Environmental Science**

*Faculty mentor: Shuizhang Fei*

Project name: Mechanism of triggering and breaking summer dormancy in sandberg bluegrass

**Max Kigin, Biology, Luke Schaeckabach, Aerospace Engineering, and Isaac Schennum, Software Engineering**

*Faculty mentor: Karin Dorman*

# IOWA STATE UNIVERSITY

## Honors Program

Project name: Merging illumina paired end reads

### **Kyra McMillin, Agricultural Biochemistry**

*Faculty mentor: W. Allen Miller*

Project name: Mutagenesis of eukaryotic initiation factor 4E to confer viral resistance against positive RNA plant viruses containing PTE-like cap-independent translation element

### **Marcus Pull, Animal Ecology**

*Faculty mentor: Michael Weber*

Project name: Assessment of methods to estimate age of bigmouth buffalo (*ictiobus cyprinellus*)

### **Grace Reineke, Horticulture**

*Faculty mentor: Ajay Nair*

Project name: Microbial amendments for foliar and seed treatments in sustainable vegetable transplant production

### **Megan Smith, Environmental Science**

*Faculty mentor: Michael Weber*

Project name: Assessing diet shifts of hatchery reared walleye sander vitreus

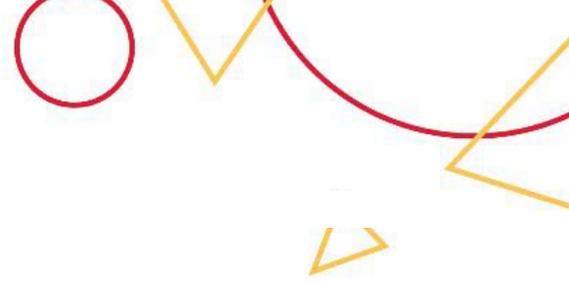
### **Lydia Stanley, Genetics**

*Faculty mentor: Thomas Lubberstedt*

Project name: Spontaneous double haploid gene in maize

### **Caitlyn Thompson, Animal Science**

*Faculty mentor: Ganwa Li*



Project name: Characterization of klebsiella pneumoniae mastitis cow

## College of Design

**Carolyn Driskell, Pre Graphic Design, Brandon Edwards, Pre Architecture, and Annaka Ketterer, Pre Industrial Design**

*Faculty mentor: Varena Paepcke-Hjeltness*

Project name: Using sketchnoting as a methodology for class reflection

## College of Engineering

**Celia Abolafia, Chemical Engineering**

*Faculty mentor: Wenya Huang*

Project name: New intermetallic nanomaterials: synthesis and application in heterogeneous catalysis

**Mathew Anders, Materials Engineering, Christian Gauker and Alexander Kom, Chemical Engineering**

*Faculty mentor: Ian Schneider*

Project name: Understanding tumor cell migration using 3D topographical structures

**Hailey Ator, Construction Engineering, and Max Fiascone, Mechanical Engineering**

*Faculty mentor: Junxing Zheng*

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## Honors Program

Project name: Developing and validating 3D vision cone penetrometer to visualize underground soils

### **Olivia Bogle, Mechanical Engineering**

*Faculty mentor: Reza Montazami*

Project name: Stress included crystalization in multiphase nanocomposites

### **Rachael Bryum, Mechanical Engineering**

*Faculty mentor: Michael Bartlett*

Project name: Thermal conductivity in multifunctional soft matter composites

### **Ava Depping, Mechanical Engineering**

*Faculty mentor: Rachel Eike*

Project name: Conductive embroidery antenna development and analysis

### **Alexandra Dunnum, Materials Engineering & Biochemistry, and Gabrielle Sawin, Kinesiology & Health**

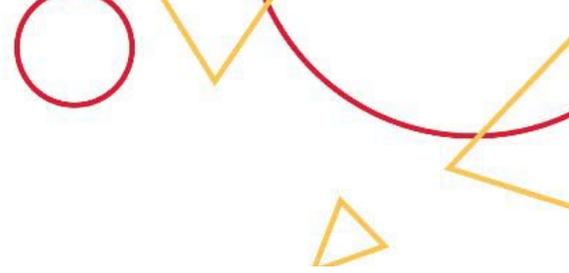
*Faculty mentor: Donald Sakaguchi*

Project name: Characterization of brain architecture after implantation of biomaterial scaffolds in zebrafish

### **Melia Finn, Industrial Engineering, and Jack McGonegle, Data Science**

*Faculty mentor: Kristen Cetin*

Project name: Bridging the gap between academia and industry in approaches for solving complex, ill-structured problems



**Zoe Follman, Materials Engineering**

*Faculty mentor: Greg Curtzwiler*

Project name: Influence of postconsumer polyethylene content on the seal strength of impulse sealed pouches

**Byron Frank, Mechanical Engineering**

*Faculty mentor: Cris Schwartz*

Project name: Understanding polymer wear using a size scaling approach

**Luke Geis and Shawn Husgen, Chemical Engineering**

*Faculty mentor: Eric Cochran*

Project name: Renewable formadhyde free glycerol based adhesives for wood composites

**Peter Gepson and Matthew O'Brien, Civil Engineering**

*Faculty mentor: Behrouz Shafei*

Project name: Investigation of bonding mechanisms in non-conventional concrete reinforcement materials

**Tyler Gerwig, Keaton Maier, and William Sibilski, Aerospace Engineering**

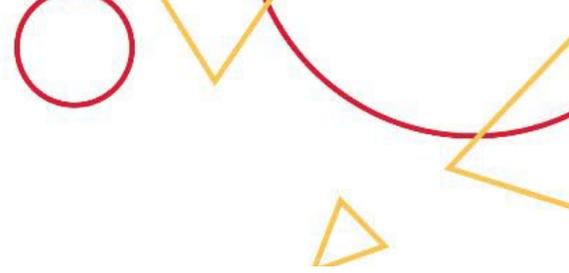
*Faculty mentor: Dae Young Lee*

Project name: Autonomous control of multiple drones

**Caleb Groff and Abigayle Moser, Aerospace Engineering**

*Faculty mentor: Hui Hu*

Project name: Development of novel plasma-based anti-/de-icing strategies for aircraft icing mitigation



### **Ashlyn Haack, Mechanical Engineering**

*Faculty mentor: Sonal Padalker*

Project name: Design a single thread cloth based cholesterol sensor: study the effects of mechanical variations on biosensor performance

### **Abigail Hammer, Aerospace Engineering**

*Faculty mentor: Kristin Rozier*

Project name: Design and analysis of formal specification patterns

### **Ben Harwood and Brandon Lochner, Mechanical Engineering**

*Faculty mentor: Brian Steward*

Project name: Characterizing the impact of contaminant particles in hydraulic systems

### **Lucas Heimer, Electrical Engineering**

*Faculty mentor: Long Que*

Project name: Measurement of a-synuclein, a marker for Parkinson's disease, in buffer using nanosensor

### **Liam Herbst, Chemical Engineering**

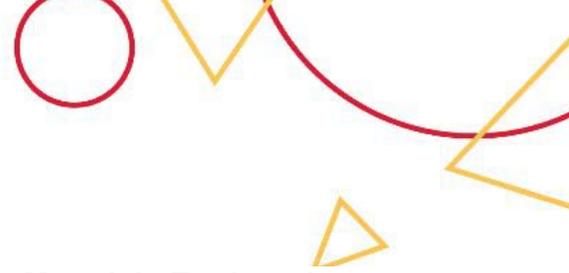
*Faculty mentor: Eric Cochran*

Project name: Scalable "one-pot" synthesis of acrylated epoxidized high oleic soybean oil for asphalt modification

### **Michael Huntley, Aerospace Engineering, Paul Iman, Mechanical Engineering, and Abigail Van Rheenen, Aerospace Engineering**

*Faculty mentor: Alice Alipour*

Project name: Mitigating vibrations in tall buildings under extreme wind events



**Mason Kenkel, Chemical Engineering, and Henry Thurber, Materials Engineering**

*Faculty mentor: Shan Jiang*

Project name: Thin, light blocking coatings for packaging

**Christar Kim, Biological Systems Engineering**

*Faculty mentor: Marshall McDaniel*

Project name: Use of glycerin, a byproduct of biodiesel production, as a soil-health-enhancing ammendment

**Joseph Kim, Industrial Engineering**

*Faculty mentor: Richard Stone*

Project name: Project FREEDOM

**Karter Krueger, Software Engineering**

*Faculty mentor: Alex Stoytchev*

Project name: Autonomous floor-mapping robot

**Joyce Lai, Electrical Engineering**

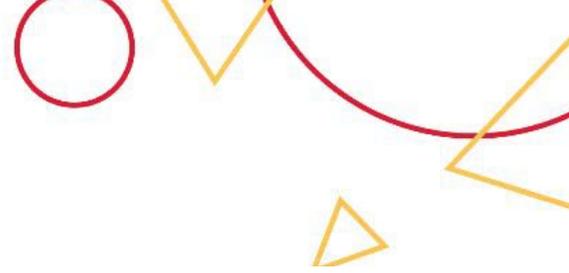
*Faculty mentor: Sree Nicakanta*

Project name: Identification of novel biomarkers using a big data approach: integrating brain image with AD/PD databases

**Abigail Libbesmeier, Mechanical Engineering**

*Faculty mentor: Sarah Bentil*

Project name: Stereovision using a single camera to capture dynamic soft tissue deformation from multi-angles



**Megan Lowell, Mechanical Engineering**

*Faculty mentor: Nicole Hashemi*

Project name: Graphene/neuronal cell interactions

**Nicholas Moulstad and Braden Westby, Mechanical Engineering**

*Faculty mentor: Juan Ren*

Project name: Feedback control of nanopositioning stage

**Josh Pandorf, Mechanical Engineering**

*Faculty mentor: Kevin Keener*

Project name: High voltage atmospheric cold plasma's effect on soil

**Matthew Penick, Aerospace Engineering**

*Faculty mentor: Sonal Padalkar*

Project name: Designing highly efficient ni-based electrocatalysts for hydrogen generation

**Ryan Pretzer, Mechanical Engineering**

*Faculty mentor: Nicole Hasemi*

Project name: 3D electro-sensing platform for cell culture applications

**Zack Rauth, Mechanical Engineering**

*Faculty mentor: Reza Montazami*

Project name: Electro-jet printing of conjugated polymer inks

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## Honors Program

**Lucas Roe and Cole Schlup, Agricultural Engineering**

*Faculty mentor: Mehari Tekeste*

Project name: College soil machine dynamics laboratory

**Matt Sporre, Mechanical Engineering**

*Faculty mentor: Xianglan Bai*

Project name: Production of biorenewable materials

**Ari Williams, Chemical Engineering**

*Faculty mentor: Eric Cochran*

Project name: Towards biobased ABS

## College of Human Sciences

**Sydney Barlow and Emma Theis, Kinesiology & Health**

*Faculty mentor: James Lang*

Project name: Duration of cardioprotection following remote ischemic preconditioning

## College of Liberal Arts and Sciences

**Grace Murphy, Chemistry**

*Faculty mentor: Eric Cochran*

Project name: Glycerol based bio-polymers

**Aubrey Uriel, Computer Science**



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## Honors Program

*Faculty mentor: Sree Nicakanta*

Project name: Big data in a box

## **Michaela Verwers, Biochemistry**

*Faculty mentor: Nancy Boury*

Project name: Determination of *microbacterium foliorum*'s visibility and suitability as a phage host in storage at stationary phase