



## Stewart Research Award

[2021-22](#) [2020-21](#) [2019-20](#) [2018-19](#) [2017-18](#) [2016-17](#) [2015-16](#) [2014-15](#) [2013-14](#) [2012-13](#)  
[2011-12](#) [2010-11](#) [2009-10](#) [2008-09](#) [2007-08](#) [2006-07](#) [2005-06](#)

### **2021-22**

**Ava Depping** *Faculty mentor: Rachel Eike – AESHM* - Project name: Design and Reliability of Embroidered Electrodes

**Julianna Hernandez** *Faculty mentor: Amy Toth – EEOB* - Project name: How Does Octopamine Affect Aggression in the Social Wasp *Polistes metricus*?

**Jackson Komp** *Faculty mentor: Elizabeth McNeill – FSHN* -Project name: Effects of dme-miR-6-3p on the Development and Aging of Heart Tissue in *Drosophila melanogaster*

**Isaiah Sents** *Faculty mentor: Kelly Ready-Best – AESHM* - Project name: Des Moines Gay Men's Chorus, Queer Spaces, Collective Styles, and Activist Dress, 1984-Present

**Braden Westby** *Faculty mentor: Richard Stone - IMSE / ME* - Project name: Realistic Environmental Testing of Electromyographically Controlled Robotic Firefighting System

### **2020-21**

**Dhaval Ghone** - *Faculty mentor: Eric Henderson - Genetics, Development, and Cell Biology* - Project name: Creating and Testing of Cas9 Delivering DNA Origami Nanosystem

**Stefan Peng** - *Faculty mentor: Don Sakaguchi – Genetics, Development, and Cell Biology* - Project name: Differentiation of Neural Stem Cells through Electric Field Stimulation

**David Reynolds** - *Faculty mentor: Raquel Espin Palazon - Genetics, Development, and Cell Biology* - Project name: Development of a Microfluidic Platform for Embryonic Zebrafish Confocal Microscopy Imaging

### **2019-20**

**Sparsh Agarwal (Chemical and Biological Engineering)** - *Project advisor: Nigel Reuel* - Project title: Substrate-wrapped Carbon Nanotubes as a Generalizable Sensor for Screening Enzymes for Biomass Degradation

# IOWA STATE UNIVERSITY

## Honors Program

**Holly Appleton (Food Science and Human Nutrition)** - *Project advisor: Melha Mellata* - Project title: High Voltage Atmospheric Cold Plasma Degradation of Pathogenic Fungal Spores and Derivative Toxins

**Stephanie Bias (Apparel, Events, and Hospitality Management)** - *Faculty advisor: Chin-Hsun Tsai* - Project title: Defining and Analyzing Attendee Motivation Factors for Vegan Festivals

**Kaela Gollob (Geological & Atmospheric Sciences)** - *Project advisor: Bill Simpkins* - Project title: Transport and Denitrification of Nitrate-N from a Losing Reach of the South Skunk River into an Alluvial Aquifer in Ames, Iowa

**Austin Hanus (Computer Engineering)** - *Project advisor: Benjamin Ahn* - Project title: Identify the Efficacy of CalcHub

**Laura Kurr (Biochemistry)** - *Faculty advisor: Jonathan Mochel* - Project title: A 3D In Vitro Model of Canine Inflammatory Bowel Disease for Accelerating Drug Safety and Efficacy Testing

**Zoey Mauck (Landscape Architecture)** - *Faculty mentor: Ben Shirtcliff* - Project name: The Case for Car-free Communities

**Macy Morrow (Kinesiology & Health)** - *Project advisor: James Lang* - Project title: Post-menopausal Differences in Response to Angiotensin II

**Sam Vande Loo (Mechanical Engineering)** - *Faculty mentor: Eulanda Sanders* - Cyber Sketch: Blurring the Lines between Physical and Digital Drawing Technologies

## 2018-19

**David Bis (Software Engineering)** - *Faculty mentor: Ellen McKinney* - Project name: Musical Instrument Performance Reactive Costume

**Jacqueline Ehrlich (Biochemistry)** - *Faculty mentor: Olga Zabolina* - Project name: Examining the functional role of microRNAs implicated in Hypermobile Ehlers-Danlos Syndrome in maintaining connective tissue morphology

**Bella Guyll (Mechanical Engineering)** - *Faculty mentor: Michael Perez* - Project name: Effectiveness of vaying media in the filtration of Imidacloprid from agricultural run-off

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## Honors Program

**Ellen Meis (Biology and Environmental Science)** - *Faculty mentor: Josh Beck* - Project name: Optimizing the dCas9 Gene Regulation System for Malaria Parasite Research

**Laura Pesquera Colom (Biology)** - *Faculty mentor: Donald Sakaguchi* - Project name: Recovery of Adult Neural Progenitor Cells from Alginate Hydrogels

**Jessica Riojas (Environmental Science and Biology)** - *Faculty mentor: Amy Toth* - Project name: Mirror-Induced Behavior in Paper Wasps: Is an Insect Capable of Self-Recognition?

**Marissa Roghair (Genetics and Microbiology)** - *Faculty mentor: Donald Sakaguchi* - Project name: Investigation of cell-seeded biomaterial scaffolds as a novel cell transplantation platform using zebrafish as a model system

**Amy Stark (Genetics)** - *Faculty mentor: Donald Sakaguchi* - Project name: Assessment of XR1 glial cell line proliferation and viability in a three-dimensional gelatin scaffold microenvironment

## 2017-18

**Martin Asama (Chemical Engineering)** - *Faculty mentor: Dr. Loveland* - Project name: Coaxial Extrusion of Coated Frozen Desserts

**Kaitlin Brake (Graphic Design and Advertising)** - *Faculty mentor: Carrol Fabor* - Project name: 60 Seconds In

**Ian Dillon (Architecture)** - *Faculty mentor: Shelby Doyle* - Project name: Organ-O Chair

**Paul Veach (BPMI)** - *Faculty mentor: Etsuro Uemura* - Project name: Testing the effectiveness of an interactive 3D dpg brain application in the veterinary neuroanatomy classroom

**Curt Waltmann (Materials Engineering)** - *Faculty mentor: Alex Travasset* - Project name: Pair Interactions of Hydrocarbon-capped Nanoparticles

**Taylor Young (Kinesiology and Health)** - *Faculty mentor: Jason Gillette* - Project name: Effects of Loaded Squat Stance on Knee Kinematics and Kinetics

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## Honors Program

### 2016-17

**Colby Behrens (Biology)** - *Faculty mentor: Amy Toth* - Project name: Higher-Personality in paper wasps: mechanisms of colony and individual behavioral difference

**David Cordaro (Architecture)** - *Faculty mentor: Firat Erdim* - Project name: Pneumatic Systems

**Emily Hoffman (Interior Design)** - *Faculty mentor: Lee Cagley* - Project name: Children's Book

**Madeline Johnson (Psychology)** - *Faculty mentor: Alison Phillips* - Project name: Higher-Level Health Habits: MyPlate Guidelines

**Allison Kirstukas (Apparel Merchandising and Design)** - *Faculty mentor: Eulanda Sanders* - Project name: A Body Past Compare: Romeo and Juliet and the Language of Appearance

**Mala Sharma (Biology)** - *Faculty mentor: Norman Ellinwood* - Project name: Causative Mutation of Hypothyroidism in Feline Colony

**Lauren Mallot (English)** - *Faculty mentor: Brianna Burke* - Project name: The Green My Caffeine Initiative

**Valentina Pita (Nutritional Science)** - *Faculty mentor: Auriel Willette* - Project name: Influence of SIRT1 on hippocampal dendrites

### 2015-16

**Shannon Goes (Chemistry and Spanish)** - *Faculty mentor: Wenyu Hang* - Project name: Selective Hydrogenation Reactions for Biomass Conversion Catalyzed by Non-Precious Metal Intermetallics

**Christopher Isely (Chemical Engineering)** - *Faculty mentor: Kaitlin Bratlie* - Project name: pNIPAm particles for protein delivery to macrophages

**Heather Murphy (Mechanical Engineering)** - *Faculty mentor: Simon Laflamme* - Project name: 3-D Printing to Advance Structural Systems

**Andrew Primmer (Agricultural Engineering)** - *Faculty mentor: Brian Steward* - Project name: The Application of Magnetic Array Filtration on Hydraulic Oil

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## Honors Program

**Courtney Smith (Genetics)** - *Faculty mentor: Jeffrey Trimarchi* - Project name: Using CRISPR/Cas9 to model ALS in zebrafish

**Joe Webb (Nutritional Science)** - *Faculty mentor: Auriel Willette* - Project name: Genes, Insulin Resistance, & Brain Metabolism Influencing Onset of Alzheimer's Disease

### 2014-15

**Morgan Bobb (Global Resource Systems and Genetics)** - *Faculty mentor: Donald Sakaguchi* - Project name: Immunohistochemical Analysis of Sciatic Nerve Tissue in a Poly-Lactic Acid Nerve Guidance Conduit

### 2013-14

**Morgan Bobb (Global Resource Systems and Genetics)** - *Faculty mentor: Donald Sakaguchi* - Project name: Immunohistochemical Analysis of Sciatic Nerve Tissue in a Poly-Lactic Acid Nerve Guidance Conduit

**Zihui Lin (Animal Science Pre Vet and Companion Animal Management)** - *Faculty mentor: N. Matthew Ellinwood* - Project name: Measures to evaluate Behavior, Learning and Memory in Canines with Mucopolysaccharidosis I and IIIB (MPS)

**Clayton Long (Kinesiology and Health)** - *Faculty mentor: Ann Smiley-Oyen* - Project name: Control of Finger Tapping at Different Rates in Children with Developmental Dyslexia

**David Nai (Chemical Engineering)** - *Faculty mentor: Donald Sakaguchi* - Project name: Examining cell survivability and growth in biodegradable polymer conduits: implications for peripheral nerve regeneration

### 2012-13

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## Honors Program

**Pavel Brodskiy (Chemical Engineering and Biology)** - *Faculty mentor: Donald Sakaguchi* - Project name: Effect of transfection of mesenchymal stem cells with neurotrophic factor genes on cellular proliferation, migration, and morphology

**Samantha Stearns (Biology)** - *Faculty mentor: Fred Janzen* - Project name: Ontology of the Plastral Hinge of the Eastern Box Turtle, *Terrapene carolina*

**Junlie Shannon Tan (Chemistry)** - *Faculty mentor: Javier Vela* - Project name: Investigating Local Polarity Effects on the Water Oxidation Activity of Transition Metal-Porous Oxide Photocatalytic Nanocomposites

**Justin Wang (Architecture)** - *Faculty mentor: Peter Goche* - Project name: Dialectic Assemblies: Occupying an Abandoned Structure in Iowa

**Brandon Zuck (Animal Science Pre-Veterinary Medicine)** - *Faculty mentor: Stephanie Hansen* - Project name: Investigation of the impact of trace mineral injection at birth on incidence of pinkeye in beef calves

## 2011-12

**Brandon Alvarado (Graphic Design)** - *Faculty mentor: Roger Baer* - Project name: Papercraft: Reinventing Paper in a Digital World

**Andrea Birkland (Animal Science Pre-Veterinary Medicine)** - *Faculty mentor: Matthew Ellinwood* - Project name: Effective Breeding Size and Population of an MPS IIIB Genetic Line of Schipperke Dogs

**Kristen Peterson (Animal Science)** - *Faculty mentor: Curt Youngs* - Project name: Post-thaw Survival of Jersey Dairy Cattle Embryos Cryopreserved in One of Four Different Permeating Cryoprotectant Agents

**Amanda Thill (Psychology)** - *Faculty mentor: Nathaniel Wade* - Project name: Exploring Internal Barriers to Help-Seeking in Military Personnel

## 2010-11

**Jessica Klein (Biology)** - *Faculty mentor: Matthew Ellinwood* - Project name: Sanfilippo Syndrome (MPS IIIB); Brain Pathology in the Canine Model

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## Honors Program

**Nathaniel Looker (Agronomy and Global Resource Systems)** - *Faculty mentor: Dick Schultz* - Project name: Monitoring dry-season transpiration in the ecosystems of a montane watershed in Zacapa, Guatemala

### 2009-10

**Brian Moore (Architecture)** - *Faculty mentor: Pete Goche* - Project name: Field Chapel: Constructing a Space for Meditation

**Kimberly Zamora (Graphic Design)** - *Faculty mentor: Cherie Ure* - Project name: Studies in Roman Travel Publication for students abroad

### 2008-09

**Kelly Norris (Horticulture)** - *Faculty mentor: Cindy Haynes* - Project name: The Iowa Gardener's Travel Guide

**Tepei Shirakura (Biochemistry, Biophysics, & Molecular Biology)** - *Faculty mentor: Edward Yu* - Project name: Structure-function Relations Associated with the CBS Domains and Protein Tails of the Nucleotide-Binding Proteins of Osmoregulatory ABC Transporter

### 2007-08

**Lucas Carlstrom (Animal Science)** - *Faculty mentor: George Brandt* - Project name: Identification of a Novel Genetic Mutation for von Willebrand disease in beagles or basset hounds

**Kathleen Korn (Animal Science)** - *Faculty mentor: Don Beitz* - Project name: Mechanism of Stearoyl-CoA Desaturase Inhibition by Oleic Acid

**Laura Rudolph (Food Science & Human Nutrition)** - *Faculty mentor: Donald Simsonson* - Project name: Reflections on a Senior Recital

**Miko Wilford (Psychology and Political Science)** - *Faculty mentor: Meg Gerrard* - Project name: Absent-Exempt Thinking About Alcohol Poisoning

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**Lisa Willman (Architecture, Spanish, and Psychology)** - *Faculty mentor: Mikesch Muecke* - Project name: Urban Overflow: The Gentrification of a Prominent Denver Neighborhood

**ChenRu Zheng (Art & Design)** - *Faculty mentor: Lin Wei-Chang* - Project name: Reinventing modern China through the Shadow of Mao, 1966-Present

## 2006-07

**Emily Blaedel (Psychology)** - *Faculty mentor: Nathaniel Wade* - Project name: The role of religious affiliation in forgiving behavior

**Cathy Compton (Music Education)** - *Faculty mentor: Gordon Gerrard and Donald Simpson* - Project name: Handel's Operas

**Steven Diesburg (Physics and Environmental Science)** - *Faculty mentor: Say Kee Ong* - Project name: Uganda small scale biogas, energy for a home

**Luke Gran (Natural Resource and Ecology Management)** - *Faculty mentor: Heidi Asbjornsen* - Project name: Assessment of the environmental benefits of reforestations

on severely degraded lands in the Mixteca Alta region of southeastern Mexico using two indicators: infiltration and soil quality

**Caleb Grote (Agricultural Biology)** - *Faculty mentor: Don Beitz* - Project name: Oxyntomodulin, a new step in the understanding of food intake response

**Ryan McNair (Management Information Systems)** - *Faculty mentor: Jim Trenberth* - Project name: BARJCHE 2007: Advanced Lighting Control

**Cilia Maria Ruiz-Paz (Psychology and International Studies)** - *Faculty mentor: Kathleen Hickok* - Project name: Women: Their place in the world

**Erin Schafer (Genetics)** - *Faculty mentor: Marian Kohut* - Project name: Global Transcriptional Analysis of *Mycoplasma Hypopneumoniae* Following Exposure to Hydrogen Peroxide

**Katherine Wiegert (Biology)** - *Faculty mentor: Ann Smiley-Oyen* - Project name: Motor Learning, Retention and Transfer in People with Parkinson's Disease

## 2005-06



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## Honors Program

**Beth Danowsky (Dietetics)** - *Faculty mentor: Grace Marquis* - Project name:  
Characteristics of Responders to WIC Intervention Aimed at Increasing the Intake of  
Vegetables in 2 to 5-year-old Children

**Mark Jacobson (Biology)** - *Faculty mentor: Don Sakaguchi* - Project name:  
Identification of Integrin Receptors Involved in the Proliferation, Differentiation, and  
Migration of Neural Stem Cells