8:00 – 9:00  Registration & Breakfast, Pioneer Room

9:00 – 9:30  OPENING

Welcome: Svitlana Zbarska, Undergraduate Research Program Coordinator, Campus-wide, Iowa State University
Opening Remarks: Matthew Ellinwood, Associate Professor, Department of Animal Sciences, Iowa State University

Session I: 9:30-10:45

SESSION I.A  EXERCISE & HEALTH
Room 3512  Moderator: Gregory Welk, Kinesiology

I.A.1  Does Respiratory Quotient Explain Adverse Body Weight Responses to Exercise?
Tarin Phillips, Kinesiology
Mentor: Robin Shook, Kinesiology

I.A.2  Upper Respiratory Humoral Immunity in Response to Exercise and Psychological Stress
Safwan Elkhatib, Kinesiology and Health
Mentor: Marian Kohut, Kinesiology
I.A.3 Difference is Physical Activity Levels among Various Demographic Groups  
Ayla Heder, Kinesiology and Health - Community and Public Health  
Mentor: Gregory Welk, Kinesiology

I.A.4 Validity of Step Feature in Consumer Based Activity Monitors  
Michael Lamparek, Kinesiology and Health - Exercise Science  
Mentor: Gregory Welk, Kinesiology

I.A.5 The Role of Integrated Physical Activity with Academic Subjects in Classroom Engagement  
Madeline Willie, Kinesiology and Health  
Mentor: Spyridoula Vazou, Kinesiology

SESSION 1.B MECHANICAL ENGINEERING  
Room 3505 Moderator: Shan Hu, Mechanical Engineering

I.B.1 Smart Agriculture: Development of Smart Soil Sensor Based on Internet of Things  
Mahmoud Parto Dezfooli, Mechanical Engineering  
Mentor: Shan Hu, Mechanical Engineering

I.B.2 Dy Free High Performance Nd-Fe-B Permanent Magnets  
Kirk Rudolph, Mechanical Engineering  
Mentor: Karl A. Gschneidner Jr., Ames Laboratory of US DOE

I.B.3 Optimizing Trailer-Tail Design for Drag Reduction through Computational Fluid-Structure Interaction  
Sean Wasion, Mechanical Engineering  
Mentor: Ming-Chen Hsu, Mechanical Engineering

I.B.4 Electrodeposition of Cuprous Oxide Photoelectrode for Solar Water Splitting  
Elliot Suiter, Mechanical Engineering  
Mentor: Sonal Padalkar, Mechanical Engineering

SESSION 1.C PSYCHOLOGY AND SOCIOLOGY  
Room 3534 Moderator: Jim Coppoc, English

I.C.1 Why are Some Narcissists More Distressed than Others? The Role of Psychological Flexibility  
Madelyne Losby, Psychology  
Mentor: David Vogel, Psychology

I.C.2 Leveling the Playing Field: Using Expressive Writing and a Teaching Intervention to Reduce Test Anxiety Effects on Exam Performance  
Sarah Myers, Psychology and Animal Science  
Mentor: Jason Chan, Psychology
I.C.3  Youth thinking beyond the moment: A qualitative study from the PIAL project
Elisheva Havlik, Psychology
Mentor: Kathryn Goudy-Haht, Human Development and Family Studies

I.C.4  Sibling Effects on Delinquency in African American Adolescents
Cierra Hagans, Psychology
Mentor: Carolyn Cutrona, Psychology

I.C.5  Liar, Liar Pants on Fire!
Angel Raymundo, Psychology
Mentor: Carolyn Cutrona, Psychology

SESSION I.D  NEURODEGENERATIVE DISEASES
Room 3219  Moderator: Loreto Prieto, Psychology

I.D.1  Finding a Large-Animal Model for Retinitis Pigmentosa through EYS Mutation Screening in Chihuahuas
Catherine Mullen, Biology
Mentor: Matthew Ellinwood, Animal Science

I.D.2  CRISPR/Cas9 Mutagenesis of ALS-associated Genes in Zebrafish
Matthew Sierra, Biology
Mentor: Jeff Trimarchi, Genetics, Development and Cell Biology

I.D.3  Analysis of Gene Expression in the Developing Zebrafish
Courtney Smith, Genetics
Mentor: Jeff Trimarchi, Genetics, Development and Cell Biology

SESSION I.E  EDUCATION
Room 3558  Moderator: Linda Serra Hagedorn, School of Education

I.E.1  Learning Leadership: A Qualitative Study on the Differences of Student Learning in Online versus Traditional Courses in a Leadership Studies Program
Katie Black, Industrial Engineering Certificate in Leadership
Mentor: Amber Manning-Ouellette, Psychology

I.E.2  Enhancing Students Understanding of Engineering Mechanics through Modern Technologies
Mohammad Rashid Mohammad Shoaib, Aerospace Engineering
Mentor: Benjamin Ahn, Aerospace Engineering

I.E.3  Evaluation of Student Opinions on Benefits of Critical Thinking and Scientific Writing Exercises in a Redesigned Upper-level Microbiology Course
Sydney Steinauer, Statistics
Mentor: Claudia L. Lemper, Plant Pathology and Microbiology; Lynne C. Gardner, Natural Resource Ecology and Management
I.E.4 Inclusive vs. Traditional Sex Education: An investigation of the Student Educational Experiences
Kelsie Leathers, Apparel Design
Mentor: Amber Manning-Ouellette, Psychology

SESSION I.F
Room 2256
COMPUTER MODELING AND SIMULATIONS
Moderator: Susan Yager, English

I.F.1 The Economic Costs of Natural Disasters, Terrorist Attacks, and other Calamities: An Analysis of Economic Models that Quantify the Losses Caused by Disruptions
Amro Al Kazimi, Industrial Engineering
Mentor: Cameron Mackenzie, Industrial Engineering

I.F.2 The Relationship Between Income Inequality and Monetary Policy
Farouq Ghandour, Economics and Math
Mentor: Joydeep Bhattacharya, Economics

I.F.3 Complementary Feature Selection Pipeline for Phenotype Prediction from Gene and Isoform Biomarker Candidates
Charles Labuzzetta, Mathematics
Mentor: Jeffrey Trimarchi, Genetics, Development and Cell Biology

I.F.4 Space Time Analysis for Cybersecurity
Zachary Lones, Computer Engineering
Mentor: Suraj Kothari, Computer and Electrical Engineering

Session II 11:00-11:50

SESSION II.A
Room 3505
PARKINSON’S DISEASE
Moderator: Vellareddy Anantharam, Biomedical Sciences

II.A.1 The Effects of Music on Velocity and Acceleration of Repetitive Finger Movements
Brandon Bates, Kinesiology and Health
Mentor: Elizabeth Stegemoller, Kinesiology

II.A.2 Determinants of Physical Activity in Persons with Parkinson’s Disease
Alyssa Sunken, Erin Gibson, Kinesiology and Health
Mentor: Elizabeth Stegemoller, Kinesiology
II.A.3 Follow Up Effects of Singing on Quality of Life in Persons with Parkinson’s disease
Sarah Welter, Kinesiology and Health
Mentor: Elizabeth Stegemoller, Kinesiology

SESSION II.B
PLANT BIOLOGY
Room 3512
Moderator: Ling Li, Genetics, Development and Cell Biology

II.B.1 GLAND4: A Putative Plant Transcription Factor Released by Cyst Nematodes
Catherine Wram, Microbiology
Mentor: Stacey Barnes, Plant Pathology and Microbiology

II.B.2 Taming a Pathogen: Developing Methods to Increase the Genetic Tractability of Erwinia Tracheiphila
Tina Wu, Microbiology, Genetics
Mentor: Gwyn Beattie, Plant Pathology and Microbiology

II.B.3 Characterization of Targeted Missense Zea mays Histidine Kinase1 Mutations in Saccharomyces cerevisiae Reveals Residues Important for Signaling Activity
Anna Rogers, Genetics and Statistics
Mentor: Michael Muszynski, Genetics, Development, and Cell Biology

SESSION II.C
INSECT BEHAVIOR
Room 3534
Moderator: Ashley St. Clair, Ecology, Evolution & Organismal Biology

II.C.1 Polistes Fuscatus: The Effects of Personality Across Contexts and Colonies in Paper Wasps
Colby Behrens, Biology and Animal Ecology
Mentor: Amy Toth, Ecology, Evolution & Organismal Biology

II.C.2 Effects of Landscape Complexity on Native Bee Abundance and Diversity in Soybeans
Zoë Pritchard, Biology and Environmental Science
Mentor: Ashley St. Clair, Ecology, Evolution & Organismal Biology

II.C.3 Moth Diversity in the Grand River Grasslands of Southern Iowa
Logan Crees, Environmental Science
Mentor: Diane Debinski, Ecology, Evolution & Organismal Biology

SESSION II.D
HUMAN DISEASES
Room 3219
Moderator: Loreto Prieto, Psychology

II.D.1 Attraction of Aedes aegypti using CO2 and Volatile Organic Compounds in Static Air Chambers
Ariel Blackman, Animal Science
Mentor: Joel Coats, Entomology Toxicology
II.D.2 Identification of Conserved Protein Immunogens using Serum From Otitis Prone Children and Non-prone Children with a Streptococcus pneumoniae Infection
Quinn Lafrentz, Microbiology
Mentor: David Verhoeven, Biomedical Sciences

SESSION II.E CELL BIOLOGY
Room 3558 Moderator: Don Sakaguchi, Genetics, Development, and Cell Biology

II.E.1 Xenotransplant Model for Neural Progenitor Cell Plasticity
Kaelee Plante, Genetics
Mentor: Donald Sakaguchi, Genetics, Development, and Cell Biology

II.E.2 Interstitial Cells of Cajal’s Pacemaker Function in the Gastrointestinal Tract
Laura Fisher, Biology
Mentor: Julie Kuhlman, Genetics, Development, and Cell Biology

SESSION II.F CIVIL ENGINEERING
Room 2256 Moderator: Halil Ceylan, Civil, Construction, and Environmental Engineering

II.F.1 Evaluating Ultra-High Performance Concrete (UHPC) Properties and Wind Energy Applications
Chris Levandowski, Civil Engineering
Mentor: Sri Srithraran, Civil, Construction, and Environmental Engineering

II.F.2 Exploring the Crossroads of Human Gut Microbiome Engineering and Environmental Engineering Systems
Brady Evans, Civil Engineering; Samuel Venjohn, Civil Engineering
Mentor: Kaoru Ikuma, Civil, Construction, and Environmental Engineering

II.F.3 Growth of Fungi on Thin Stillage for Value Added Products
Taylor Herring, Biochemistry
Mentor: Hans van Leeuwen, Civil, Construction, and Environmental Engineering

Session III 1:10 - 2:00

SESSION III.A SOCIETY AND GLOBAL RESOURCE SYSTEMS
Room 3505 Moderator: Carmen Bain, Sociology

III.A.1 Addressing Food Insecurity in Uganda: The Role of Women’s Empowerment in Dairy Production
Emily Southard, Agriculture and Society and Global Resource Systems
Mentor: Carmen Bain, Sociology
III.A.2 Meeting the Need for Family Planning in Loreto, Peru
Hannah Darr, Global Resource Systems
Mentor: Devon Graham, Florida International University

III.A.3 Cover crops as a gateway to greater conservation in Iowa? Integrating crop models, field trials, economics and farmer perspectives
Rebecca Clay, Agronomy and Global Resource Systems
Mentor: Girdon Arbuckle, Sociology

SESSION III.B PARKINSON’S DISEASE
Room 3512 Moderator: Elizabeth Stegemoller, Kinesiology

III.B.1 The Influence of Rhythmic Auditory-Cueing on Gait in Persons with Parkinson’s Disease
Mollie Hammer, Biology
Mentor: Elizabeth Stegemoller, Kinesiology

III.B.2 Follow up effects of singing on voice in Parkinson’s disease
Alexa Trotter, Kinesiology
Mentor: Elizabeth Stegemoller, Kinesiology

III.B.3 Follow-Up Results on the Effects of Singing on Swallow in Patients with Parkinson’s Disease.
Kali Disterhoft, Kinesiology and Health
Mentor: Elizabeth Stegemoller, Kinesiology

SESSION III.C HEURISTICS
Room 3219 Moderator: Erin Wilgenbusch, Greenlee School Journalism/Communication

III.C.1 Analysis of Heuristics Used in Creative Problem Solving
Samantha Creeger, Industrial Design
Mentor: Seda Yilmaz, Industrial Design

III.C.2 Uncovering Problem Exploration Heuristics
Allie Vaughan, Industrial Design
Mentor: Seda Yilmaz, Industrial Design

III.C.3 Impact of Cognitive Style on the use of Design Heuristics
Ian Baker, Industrial Design
Mentor: Seda Yilmaz, Industrial Design
SESSION III.F  APPAREL, MERCHANDISING AND DESIGN
Room 3558  Moderator: Brenda Jones, Art and Visual Culture

III.D.1  Native American Jingle Dress
Elizabeth Kraidich, Apparel, Merchandising, and Design
Mentor: Brenda Ackerman, Apparel, Merchandising, and Design

III.D.2  “A Body Past Compare”: Romeo and Juliet and the Language of Appearance
Allison Kirstukas, Apparel, Merchandising, and Design
Mentor: Eulanda Sanders, Apparel, Merchandising, and Design

III.D.3  Sustainable Solutions for Used Clothing: The Case of OVERFLOW Thrift Store in Ames
Ashley Tinguely, Apparel, Merchandising, and Design
Mentor: Elena Karpova, Apparel, Merchandising, and Design

SESSION III.E  ENVIRONMENTAL SCIENCE
Room 2256  Moderator: Bambi Yost, Landscape Architecture

III.E.1  The Sorption of Bisphenol-A (BPA) by Two Iowa Soils
Taylor McDowell, Environmental Science and French
Mentor: Fritzie Rivas, Agronomy

III.E.2  The Impacts of Urban Pollution on Streams
Emily Martin, Environmental Science
Mentor: Richard Schultz, Natural Resource Ecology and Management

III.E.2  Greenhouse Gas Emission and Water Quality Quantification along Saturated Buffer Strip of Bear Creek
Timothy King, Biology and Environmental Science
Mentor: Richard Schultz, Natural Resource Ecology and Management

SESSION III.F  AEROSPACE ENGINEERING
Room 3534  Moderator: Ran Dai, Aerospace Engineering

III.F.1  Bio-inspired Blade Designs to Reduce Propeller Noise
Rachel Pick, Aerospace Engineering
Mentor: Anupam Sharma, Aerospace Engineering

III.F.2  Effects of surfactants on the terminal velocity of settling drops
Azeez Odesanya, Aerospace Engineering
Mentor: Thomas Ward, Aerospace Engineering

III.F.2  Harvesting low speed wind energy with piezoelectric thin film
Stanley Barbel, Aerospace Engineering
Mentor: Thomas Ward, Aerospace Engineering
<table>
<thead>
<tr>
<th>SESSION IV.A</th>
<th>CHEMICAL AND MATERIAL ENGINEERING</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room 3505</td>
<td>Moderator: Tomas Mansell, Chemical and Biological Engineering</td>
</tr>
<tr>
<td>IV.A.1</td>
<td><strong>Identification of Soil Microbes Capable of Utilizing Cellobiosan</strong></td>
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<td></td>
<td><em>Yee Shiean Tan</em>, Chemical Engineering</td>
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<td>Mentor: Laura Jarboe, Chemical and Biological Engineering</td>
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<tr>
<td>IV.A.2</td>
<td><strong>Role of Cobalt Phosphate Layer on Bismuth Vanadate for Photoelectrochemical Biomass Conversion</strong></td>
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<td><em>Ivy Wu</em>, Chemical Engineering</td>
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<td>Mentor: Matthew Panthani, Chemical Engineering</td>
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<tr>
<td>IV.A.3</td>
<td><strong>Physical Properties of Sodium Ion Conducting Mixed Glass Formers for use as Solid State Electrolytes</strong></td>
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<td><em>Carter Francis</em>, Materials Engineering</td>
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<td>Mentor: Steve Martin, Materials Engineering</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>SESSION IV.B</th>
<th>GENETICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room 3512</td>
<td>Moderator: Maura McGrail, Genetics, Development and Cell Biology</td>
</tr>
<tr>
<td>IV.B.1</td>
<td><strong>Phylogeny and reproduction of Raffaelea tritirachium, a fungus that is symbiotic with Ambrosia beetles</strong></td>
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<td></td>
<td><em>Ruben Garcia Vazquez</em>, Microbiology</td>
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<td>Mentor: Thomas Harrington, Plant Pathology</td>
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<td>IV.B.2</td>
<td><strong>Antigenic Evolution of Swine Influenza H1 Viruses</strong></td>
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<td><em>Jered Stratton</em>, Genetics</td>
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<td>Mentor: Amy Vincent, Vet Microbiology and Preventive Medicine</td>
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<td>IV.B.3</td>
<td><strong>Dispersal Vs. Fecundity in Non-pollinating Fig wasps</strong></td>
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<td><em>Dhynasah James</em>, Genetics</td>
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<td>Mentor: John Nason, Ecology, Evolution &amp; Organismal Biology</td>
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<tr>
<th>SESSION IV.C</th>
<th>PUBLIC HEALTH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room 3219</td>
<td>Emily Wilcox, Honors Department</td>
</tr>
<tr>
<td>IV.C.1</td>
<td><strong>The Effect of the Smart Eats Program on Nutrition Knowledge and Behavior</strong></td>
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<tr>
<td></td>
<td><em>Mitchell Zaplatosch</em>, Diet and Exercise</td>
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<td>Mentor: Ruth Litchfield, Food Science and Human Nutrition</td>
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<tr>
<td>IV.C.2</td>
<td><strong>10 Year Predicted Risk of Heart Disease in Iowa Police Officers</strong></td>
</tr>
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<td><em>Markus Flynn</em>, Kinesiology</td>
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<td>Mentor: Warren Franke, Kinesiology</td>
</tr>
</tbody>
</table>
SESSION IV.D BIOCHEMISTRY
Room 3534 Dana Schumacher, Honors Department

IV.D.1 Modification of Binary Vectors for Plant Transformation by Swapping Selectable Markers
Lauran Chambers, Biochemistry
Mentor: Olga Zabotina, Biochemistry Biophysics and Molecular Biology

IV.D.2 Understanding Ionic Dependencies of Aptamer-ligand Interactions for Better Sensor Design
Alex Donelson, Biochemistry
Mentor: Marit Nilsen-Hamilton, Biochemistry

IV.D.3 DNA Grafting on Nanowires
Devesh Mohan, Electrical Engineering
Mentor: Meng Lu, Electrical Engineering, Celine Ternon, LMGP, French

SESSION IV.E PHYSICS AND TECHNOLOGY
Room 3558 Svitlana Zbarska, Honors Department

IV.E.1 Fractional Energy-loss of Electrons from Heavy-Flavor Decays
David Montealegre, Physics
Mentor: Craig Ogilvie, Physics

IV.E.2 Tip-Referenced Ultrastable Atomic Force Microscopy
Benjamin Reichert, Electrical Engineering
Mentor: Sanjeevi Sivasankar, Physics

SESSION IV.F INTERIOR DESIGN
Room 2256 Moderator: Andrea Wheeler, Architecture

IV.F.1 Re-exploration of Café Design: Through the use of space, form, shape, and size.
Kristian Kennedy, Interior Design
Mentor: Jihyun Song, Interior Design

IV.F.2 Multicultural Heritages and Special Populations Needs: Research and Design of the Andre and Iris LaSalle Residence in Wayzata, Minnesota
Kiara Davis, Laila Ahaddad, Interior Design
Mentor: Diane Al Shihabi, Interior Design

IV.F.3 Preservation of Historical Interiors: Uniting Contemporary Function with Historical Integrity in the Cedar Rapids’ Carnegie Library
Allison Sims, Natalie McCullough, Interior Design
Mentor: Diane Al Shihabi, Interior Design - Historic Preservation
<table>
<thead>
<tr>
<th>Poster Presentation 3:30 - 5:00</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>P.1</strong> Research and Development of a Liquid Desiccant Dehumidification System  &lt;br&gt; <em>Jacob Benner, Laura Michaelson</em>, Mechanical Engineering  &lt;br&gt; Mentor: Ulrike Passe, Architecture</td>
</tr>
<tr>
<td><strong>P.2</strong> Exploring Wearable Technology: Solar Powered Bookbags  &lt;br&gt; <em>Courtney Beringer, Sam Vande Loo</em>, Mechanical Engineering  &lt;br&gt; Mentor: Eulanda Sanders, Apparel, Events and Hospitality Management</td>
</tr>
<tr>
<td><strong>P.3</strong> Analyzing Climate Change in the Arctic by Examining Indices of Severe Weather from Contemporary Climates  &lt;br&gt; <em>Kierstin Blomberg</em>, Meteorology  &lt;br&gt; Mentor: William Gutowski, Geological and Atmospheric Sciences</td>
</tr>
<tr>
<td><strong>P.4</strong> Teacher Leadership  &lt;br&gt; <em>Hannah Bolen</em>, Elementary Education  &lt;br&gt; Mentor: Vincent Genareo, Research Institution for Students in Education</td>
</tr>
<tr>
<td><strong>P.5</strong> The Influence of Rhythmic Auditory-Cueing Techniques on Gait Function of People with Parkinson’s Disease  &lt;br&gt; <em>Alison Brinkman</em>, Kinesiology: Pre-Physical Therapy  &lt;br&gt; Mentor: Elizabeth Stegemoller, Kinesiology</td>
</tr>
<tr>
<td><strong>P.6</strong> Cover Crops as a Gateway to Greater Conservation in Iowa? Integrating Crop Models, Field Trials, Economics and Farmer Perspectives  &lt;br&gt; <em>Rebecca Clay</em>, Agronomy and Global Resource Systems  &lt;br&gt; Mentor: Gabrielle Roesch-McNally, NREM</td>
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<tr>
<td><strong>P.7</strong> The Influence of Activating versus Relaxing Music on Repetitive Finger Movements on Muscle Activity.  &lt;br&gt; <em>Stephanie Clements</em>, Kinesology  &lt;br&gt; Mentor: Elizabeth Stegemoller, Kinesiology</td>
</tr>
<tr>
<td><strong>P.8</strong> Historic Preservation and Interior Design: Engaging Avant-Garde Technology to Reinstate Historic Integrity in the Cedar Rapids Carnegie Building  &lt;br&gt; <em>Joseph Péré Danielsen, Hannah Greenfield</em>, Interior Design  &lt;br&gt; Mentor: Diane Al Shihabi, Interior Design</td>
</tr>
<tr>
<td><strong>P.9</strong> Cortisol Reactivity to Supportive Group Settings  &lt;br&gt; <em>Sydney Ellis</em>, Hispanic Studies; <em>Francisco Bermudez-Henriquez</em>, Kinesology; <em>Alex Restemayer</em>, Kinesiology; <em>Alexandra Marcell</em>, Anthropology; <em>Logan Stiens</em>, Biology; <em>Olga Miocevic</em>, Human Development and Family Studies  &lt;br&gt; Mentor: Elizabeth Shirtcliff, Development of Human and Family Studies</td>
</tr>
</tbody>
</table>
P.10 Site Suitability Analysis for Student Housing in Ames, Iowa  
Laurelin Haas, Community and Regional Planning and Environmental Studies  
Mentor: Monica Haddad, Community and Regional Planning

P.11 Are the Dark Triad Personality Traits Associated with Cheating in the Bedroom and in the Classroom?  
Cierra Hagans, Psychology  
Mentor: Robert Helling, Psychology

P.12 Play, YouTube, and Adolescents’ Rights to Public Space  
Josh Haines, Landscape Architecture, P Business, Computer Engineering; Taylor Voorhees, Pre Business; Lucas Golinghorst, Computer Engineering  
Mentor: Benjamin Shirtcliff, Landscape Architecture

P.13 Optimization and Modelling of a Planar Bio-Sensor  
Aaron Havens, Bernard Lee, Mechanical Engineering  
Mentor: Jonathan Claussen, Mechanical Engineering

P.14 Microclimate Analysis with 10-foot Mobile Weather Station  
Jesus Hernandez, Electrical Engineering  
Mentor: Ulrike Passe, Architecture

P.15 Occupant-Centered Building Operation Strategies for Balancing Thermal Comfort and Energy Efficiency in Warm and Humid Climates  
Evan Jeanblanc, Architecture  
Mentor: Ulrike Passe, Architecture

P.16 Survey of Studies on Fruit and Frugivore Relationships  
Alexander Karnish, Biology  
Mentor: Haldre Rogers, Biology

P.17 Comparison of Activity Time Estimates in Free-Living Youth using Different Measurement Techniques  
Bailie Kies, Dietetics; Jennifer Simmons, Kinesiology  
Mentor: Gregory Welk, Kinesiology

P.18 Native American Jingle Dress  
Elizabeth Kraidich, Apparel, Merchandising, and Design  
Mentor: Brenda Ackerman, Apparel, Merchandising, and Design

P.19 Drying Behavior and Analysis of Moisture Content in Waste Food  
Emily Martin, Environmental Science  
Mentor: Kurt Rosentrater, Agricultural and Biosystems Engineering

P.20 Development of Optical Label-Free Biosensing System for Fatty Acid Detection  
Devesh Mohan, Aaron Melcer, Electrical Engineering  
Mentor: Meng Lu, Electrical Engineering
P.21 Up From the Footnotes: A Case of Plagiarism
Christina Prevete, English and International Studies
Mentor: Marcia R. Prior-Miller, Greenlee School Journalism/Communication

P.22 Making Children A Harder Target To Hit: The Iowa Media Literacy Program – A Follow-Up Study
Amanda Purcell, Johnathan Anderson, Emily Waskel, Psychology; Manuela Faulhaber, Psychology, Sociology
Mentor: Doug Gentile, Psychology

P.23 Biogeography of Fruit Traits
Miranda Salsbery, Biology
Mentor: Haldre Rogers, Ecology, Evolution and Organismal Biology

P.24 Data Visualization of Building Energy Consumption for Public Users
Kelsie Stopak, Architecture and Environmental Studies; Karthik Abbineni, Information Systems
Mentor: Ulrike Passe, Architecture

P.25 Do Different Desaturase Enzymes in Corn Silks Cause Variation in Fatty Acid Accumulation?
Paul Strickler, Biology
Mentor: Marna Yandeau-Nelson, Genetics, Development and Cell Biology

P.26 Determinants of Physical Activity in Persons with Parkinson’s Disease
Alyssa Sunken, Kinesiology and Health; Erin Gibson, Kinesiology and Health
Mentor: Elizabeth Stegemoller, Kinesiology

P.27 Development of Metal Sensor using RNA Aptamers
Selina Shiqing Teh, Genetics; Hongdi Song, Nicholas Mulderink, Biochemistry
Mentor: Muslum ILGU, Roy J. Carver Department of Biochemistry, Biophysics, and Molecular Biology

P.28 Does Natural Visual Camouflage Reduce Turtle Nest Predation?
Kameron Voves, Biology
Mentor: Fred Janzen, Ecology, Evolution and Organismal Biology

P.29 Physiological and Morphological Effects of Chemical Defoliation on Seed Corn
Katharina Wigg, Agronomy
Mentor: Susana Goggi, Seed Science

p.30 Computation Applied to the Future of Rare Earth Separations
Jeffrey Gustafson, Chemistry
Mentor: Theresa Windus, Chemistry