The 14th Annual

Spring

Undergraduate Research Festival

Wednesday, April 18, 2018
4:30pm-6:30pm

University of Iowa
University Capitol Centre
2nd floor South Atrium
Iowa City, Iowa
This event is hosted by the Iowa Center for Research by Undergraduates.

ICRU promotes undergraduate involvement in research and creative projects at the University of Iowa, serving students, staff, and faculty.

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The Spring Undergraduate Research Festival is proud to showcase over 100 visual presentations given by the University of Iowa’s student researchers and creative scholars. Presenters work in over 50 different departments across campus and represent the senior, junior, sophomore, and freshman classes.

Odd numbered posters will present from 4:30-5:30PM
Even numbered posters will present from 5:30-6:30PM

***Please note that at 5:30, all of the boards will be turned around to show the even numbering and the second hour presenters’ posters***

We hope that you enjoy talking with these outstanding students and will see you again in for the 8th Annual Fall Undergraduate Research Festival!

Programs with full abstracts are available on the ICRU website: www.uiowa.edu/icru.

Many thanks to the over 100 graduate and professional students and postdocs who have volunteered their time to serve as poster judges for this event.
1 - Ashley Arkfeld
*Optimizing Scholarship Allocations to Shape a First-Year Class*
Majors: Business Analytics & Information Systems, Marketing
Mentor: Jeffrey Ohlmann (Management Sciences)

3 - Serif Bacevac
*Mechanisms for Insulin-dependent Regulation of Skeletal Muscle Mitochondria by OPA-1*
Major: Health & Human Physiology
Mentor: Antentor Hinton (Internal Medicine)

5 - Jennifer Banks
*Dismal River Housing: a comparative study of Apache housing structures*
Major: Anthropology
Mentor: Matthew Hill (Anthropology)

7 - Rachel Bartlett
*Exploring Aural and Haptic Feedback for Visually Impaired People on a Track: A Wizard of Oz Study*
Major: Psychology & Informatics
Mentor: Kyle Rector (Computer Science)

9 - Marc Beer
*Adaptive consequences of color variation among recently diverged varieties of a specialist insect*
Major: Biology
Mentor: Andrew Forbes (Biology)

11 - Mark Biangmano
*Do Wishes Influence Expectations? Depends How You Ask*
Major: Psychology
Mentor: Paul Windschitl (Psychological & Brain Sciences)

13 - Aaron Buelow
*Low Force Electrically Induced Exercise (LFEE) Attenuates Blood Metabolic Biomarkers in People with and without Spinal Cord Injury*
Major: Biomedical Engineering
Mentor: Richard Shields (Physical Therapy and Rehabilitation)
15 - William Bui Tran
Fat-Derived FGF21 is Dispensable for the Resistance to Diet-Induced Obesity Observed in Mice Lacking OPA1 in Adipose Tissue
Major: Biomedical Engineering
Mentors: Renata Pereira (Internal Medicine); E. Dale Abel (Internal Medicine)

17 - Joseph Burba
Fluorescence-Monitored Assays for Binding Affinity of Calmodulin Mutants to NaV
Major: Biochemistry
Mentor: Madeline Shea (Biochemistry)

19 - Eleanor Burke
Errors in Estimation - Predictors and Consequences
Major: Psychology
Mentor: Gary Gaeth (Marketing); Irwin Levin (Psychology)

21 - Akanksha Chilukuri
Effects of Preeclampsia on Cortical Growth and Cortical-Dependent Behavior Using a Vasopressin Mouse Model
Major: Neuroscience
Mentor: Hanna Stevens (Psychiatry)

23 - Ross Clowser
Society for Ethnomusicology Podcast
Majors: Music (Jazz Studies), International Relations
Mentor: Trevor Harvey (Music)

25 - Liam Crawford
StoryCarnival: Developing Design Principles for Early Childhood Learning Environments
Majors: Computer Science, Philosophy
Mentor: Juan Pablo Hourcade (Computer Science)

27 - Christine Czarnecki
Formulation of novel dry powder antibacterial aerosols using central composite design of experiments
Major: Chemical & Biochemical Engineering
Mentor: Jennifer Fiegel (Chemical & Biochemical Engineering)
29 - Sarah DeLong-Duhon
Resolving phylogenetic relationships between three endemic Stereum fungi species
Major: Environmental Science
Mentor: Andrew Forbes (Biology)

31 - Monica Derby
Personalizing symptom management strategies to meet the needs of rural residents with advanced cancer
Major: Nursing
Mentor: Stephanie Gilbertson-White (Nursing)

33 - Joshua Dunigan
Calcium-Triggered Activation of Calcineurin: Release of the Auto-Inhibitory Domain is Regulated by Calmodulin
Majors: Genetics & Biotechnology
Mentor: Madeline Shea (Biochemistry)

35 - Lauren Dunlay
Neuronal activity in the infralimbic cortex during cocaine seeking: representations of environment and decision making
Major: Psychology
Mentors: Ryan LaLumiere (Psychological & Brain Sciences); Victoria Muller Ewald (Psychological and Brain Sciences)

37 - Ryder Fink
Genetic Modifiers of a Drosophila model of sodium channelopathies
Major: Human Physiology
Mentor: Toshihiro Kitamoto (Anesthesia)

39 - Kathryn Gabel
Narrative Skills in School-Age Children who are Hard of Hearing
Major: Speech & Hearing Science
Mentor: Elizabeth Walker (Communication Sciences & Disorders)

41 - Manisha Gore
The effects of semioccluded vocal tract (SOVT) techniques on the vocal tract and vocal folds
Majors: Speech and Hearing Science
Mentor: Eileen Finnegan (Communication Sciences & Disorders)
43 - Christina Grimes
Characterization of infralimbic cortical activity in rats while seeking or abstaining from cocaine
Major: Psychology
Mentors: Victoria Muller Ewald (Psychological & Brain Sciences); Ryan LaLumiere (Psychological & Brain Sciences)

45 - Emily Hanson
Quantifying and Identifying Hidden Hearing Loss
Major: Communication Sciences & Disorders
Mentors: Inyong Choi (Communication Sciences & Disorders); Shawn Goodman (Communication Sciences & Disorders)

47 - Carolyn Hoemann
Young, Urban Cambodian’s Perceptions of Local Healthcare Services: an Exploratory Qualitative Analysis
Major: Ethics & Public Policy

49 - Jessica Janota
Aphasia Reading Club Outcomes: Acquisition and Use of Metacognitive Reading Strategies
Major: Speech & Hearing Science
Mentor: Alison Lemke (Communication Sciences & Disorders)

51 - Tiara Kane
Social Justice in Dickens’ A Tale of Two Cities and today
Major: English
Mentor: Takis Poulakos (Rhetoric)

53 - Alethea Kapolas
Sandstone:shale ratio maps of the Pennsylvanian lower Cherokee Group in southern Iowa
Major: Environmental Science
Mentors: Emily Finzel (Earth & Environmental Sciences); Justin Rosenblume (Earth and Environmental Sciences)

55 - Madison Kasparek
Acceptability of Measures assessing Environmental Confounders of Dietary Habits
Major: Physiology
Mentor: Teresa Marshall (Preventative & Community Dentistry)
57 - Morgan Kemerling
*Investigating the Effects of Exercise on Adipose Tissue Metabolism*
Major: Human Physiology
Mentor: Kathleen Markan (Pharmacology)

59 - Eric Knapp
*Determining Parameters for Optimal Transferrable Shadow Cure Polymerization*
Major: Chemical Engineering
Mentor: Julie Jessop (Chemical & Biochemical Engineering)

61 - Virginia Lamas Meza
*Analysis of Extractable Lipids and PCB 136 (2,2′,3,3′,4,4′-hexachlorobiphenyl) in Transgenic Mice Tissues*
Major: Environmental Chemistry
Mentor: Hans-Joachim Lehmler (Occupational and Environmental Health)

63 - Josh Larson
*CaNoRock - The Canada-Norway Student Sounding Rocket Field School*
Majors: Electrical Engineering, Physics
Mentor: David M. Miles (Physics & Astronomy)

65 - Rikki Laser
*Deficits in REM sleep twitching indicate developmental delay in a mouse model of autism*
Major: Neuroscience
Mentors: Mark Blumberg (Psychological & Brain Sciences); Cassandra Coleman (Psychological & Brain Sciences)

67 - Yahang Li
*DRP-1 and Mitochondria-associated endoplasmic reticulum membranes are important for inducing fission during exercise*
Major: Biomedical Engineering
Mentors: E. Dale Abel (Internal Medicine); Antentor Hinton (Internal Medicine)

69 - Kaylee Lindburg
*Economic Effects of Johnson County Minimum Wage Increase on Local Business Activity*
Major: Economics
Mentor: John Solow (Economics)
71 - Michael Lord
The Role of Uncoupling Protein 2 (UCP2) in Platelet Mitochondrial Function
Major: Human Physiology
Mentor: Rhonda Souvenir (Internal Medicine)

73 - Lucas Maakestad
The Effects of Protein Architectures on Polymerase Selection During Translesion Synthesis
Majors: Biochemistry, Chemistry
Mentor: Todd Washington (Biochemistry)

75 - Russell Martin
Using zebrafish to test potential drugs for their efficacy against epileptic seizures
Major: Biomedical Engineering
Mentors: Robert Cornell (Anatomy & Cell Biology); Alexander Bassuk (Pediatrics)

77 - Hailey Moore
Polarization in the Radio Arc in the Galactic Center
Major: Physics & Astronomy
Mentor: Cornelia Lang (Physics & Astronomy)

79 - Sarah Nguyen
The role of the surface completion in the convexity context effect
Major: Psychology
Mentor: Cathleen Moore (Psychological & Brain Sciences)

81 - Claire O’Connell
Validating Rotamer Optimization Using Goldstein Elimination Criteria
Major: Biomedical Engineering
Mentor: Michael Schnieders (Biomedical Engineering)

83 - McKenna Pierson
Adolescent Risk Taking and Sensitivity to Negative Outcomes
Major: Psychology
Mentor: Jatin Vaidya (Psychiatry)

85 - Morgan Rafferty
Artificial Intelligence for Financial Services
Major: Mathematics
Mentor: Isabel Darcy (Mathematics)
87 - Alex Rice  
How Technology is Transforming the Retail Space  
Major: Economics  
Mentor: Julia Garlick (Economics)

89 - Amy Schembari  
The Effect of Career Preparation and Perceived Proactivity on Anticipated Person-Environment Fit  
Majors: Marketing, Entrepreneurial Management  
Mentor: Amy Kristof-Brown (Management & Organizations)

91 - Cassandra Sheridan  
The Role of Category Density in Pigeon's Tracking of Relevant Information  
Major: Psychology  
Mentors: Ed Wasserman (Psychological & Brain Sciences); Leyre Castro (Psychological and Brian Sciences)

93 - Neevetha Sivagurunathan  
The Effects of ADHD and Depression on Sensitivity to Reward and Punishment  
Majors: Psychology, Statistics  
Mentor: Molly Nikolas (Psychological & Brain Sciences)

95 - Brittany Stephanie  
Car Insurance Factors  
Major: Mathematics  
Mentor: Isabel Darcy (Mathematics)

97 - Sarah Stueve  
Uncoupling Protein (UCP)-2 and Thrombosis Risk  
Major: Biology  
Mentor: Rhonda Souvenir (Internal Medicine)

99 - Keely Sybesma  
Effects of Biomass Burning Emissions on Pregnancies in Temuco, Chile  
Majors: Mathematics, Chemistry  
Mentor: Elizabeth Stone (Chemistry)

101 - Ravjot Virdi  
Effect of combination therapy with Annexin V and CTLA 4 in a mouse model of breast cancer  
Major: Bioimmedicial Sciences  
Mentors: Joel Shilyansky (Surgery, Pediatrics); Chaobo Yin (Surgery)
103 - Bowen Wang
Effect of Country-by-Country Reporting on Multinational Enterprise Tax
Avoidance Strategy
Major: Accounting
Mentors: Kevin Markle (Accounting); Jaron Wilde (Accounting)

105 - Nicole Wendel
Monitoring and Modeling Drug Dissolution Kinetics: New Experiment
for Pharmaceutical Education
Major: Chemistry
Mentor: Lei Geng (Chemistry)

107 - Ziling Xia
How to Improve the Health of International Students in American
Colleges
Major: Health & Human Physiology
Mentor: Gayle Walter (Health & Human Physiology)

109 - Zijing Yu
Social media sentiments and company performance
Majors: Finance, Mathematics
Mentor: Shagun Pant (Finance)

111 - Cody Zak
Role of infralimbic projections to the nucleus accumbens core in
extinction of cocaine seeking behavior.
Majors: Psychology, Neurobiology
Mentors: Ryan LaLumiere (Psychological & Brain Sciences); Kelle Nett
(Psychological and Brain Sciences)

113 - Shao Yang Zhang
Angiotensin AT1A Receptors on AVP-expressing Neurons Contribute to
Vasopressin Secretion
Major: Biomedical Engineering
Mentor: Justin Grobe (Pharmacology)

115 - Shiwen Zhou
Parents’ Mind-Mindedness in Infancy and Children’s Theory of Mind at
Preschool Age
Majors: Psychology, Communication Studies
Mentor: Grazyna Kochanska (Psychological & Brain Sciences)
Second Hour Presenters
5:30-6:30PM
(even numbers only—boards will be turned around)

2 - Kevin Blicharski; Alexander Powers
*Bootstrapping Using Machine Learning to Create Training Datasets for Automatic Cerebellum Segmentation*
Major: Computer Science and Engineering; Computer Science and Engineering
Mentor: Hans Johnson (Electrical and Computer Engineering)

4 - Alexis Brannan
Major: Human Physiology
Mentors: Leonard MacGillivray (Chemistry); Gonzalo Campillo (Chemistry)

6 - Ashely Chong
*Exploring the Creative Process*
Major: International Studies
Mentor: Natasa Duricova (International Writing Program)

8 - Greg Collins
*OPA1 deletion results in ER stress, cardiac dysfunction and death*
Major: Human Physiology
Mentors: E. Dale Abel (Internal Medicine); Helena Kenny (Internal Medicine)

10 - Geoff Collins
*The formation and tracking of 3D breast cancer cellular spheroids in a high throughput format*
Major: Biochemistry
Mentor: Meng Wu (Pharmaceutical Sciences and Experimental Therapeutics)
12 - Cody Crawford  
Revitalization of the University of Iowa's Bird Egg Collection after 100 Years of Dormancy  
Major: Biology  
Mentor: Cindy Opitz (Pentacrest Museums)

14 - Mackenzie Cross  
Analyzing the Faunal Assemblage Produced by Woodland Hunters  
Major: Anthropology  
Mentor: James Enloe (Anthropology)

16 - Victoria Cunningham  
Familial Characteristics of Urinary Chronic Pelvic Pain Syndrome (UCPPS) in the MAPP Research Network Data  
Major: Human Physiology  
Mentor: Susan Lutgendorf (Psychological & Brain Sciences)

18 - Riley Deutsch  
An Ex Vivo Staining Technique for Enhanced Image Contrast of Tissue Samples in Micro Computed Tomography  
Major: Biomedical Engineering  
Mentor: Jessica Sieren (Radiology)

20 - Alayna Dieter  
Skeletal Muscle-Specific DRP1 Deficiency Alters Autophagy, Increases ER Stress and Apoptosis and Reduces Force Generation in Skeletal Muscle  
Major: Biochemistry  
Mentor: Marcelo Correia (Internal Medicine)

22 - Gabrielle Duncan  
Epigenetic Investigation of Military Sexual Trauma in Post-Traumatic Stress Disorder  
Majors: Human Physiology, Cell & Developmental Biology  
Mentor: Gen Shinozaki (Psychiatry)

24 - Caroline Emory  
Efferent Auditory Feedback During Human Vocalization  
Majors: Speech & Hearing Science, Psychology  
Mentor: Shawn Goodman (Communication Sciences & Disorders)
26 - Zhiting (Jack) Feng
Boronic ester coordination enables [2+2]-photodimerizations in the solid state - a green chemistry approach for the synthesis of useful building blocks
Majors: Biochemistry, Ethics & Public Policy
Mentor: Leonard MacGillivray (Chemistry)

28 - Rebecca Frederick
What’s in front? Measuring figure-ground segregation across the visual field
Majors: Psychology, English
Mentor: Cathleen Moore (Psychological & Brain Sciences)

30 - Diana Garcia
Stone Tool Manufacture at Woodpecker Cave: Results from Raw Material Analysis
Major: Anthropology
Mentor: James Enloe (Anthropology)

32 - Austin Greenough
A Comparison of the Critical Accounting Policies Between Significant U.S. Companies and Their Chinese Counterparts
Major: Accounting
Mentor: Cristi Gleason (Accounting)

34 - Ye Guo
Interpretable Models for Explaining and Assisting Convolutional Neural Networks
Majors: Finance, Business Analytics & Information Systems
Mentor: Tong Wang (Business)

36 - Cameron Hauser
Role of locus coeruleus noradrenergic neurons in CO2-induced arousal from sleep
Major: Human Physiology
Mentor: Gordon Buchanan (Neurology)

38 - Kaelynn Heiberg; Rachel Maller
Equity Implemented: A Research-Practice Partnership with the Iowa City Community School District
Major: Sociology, Ethics & Public Policy; Sociology
Mentor: Sarah Bruch (Sociology)
40 - Elise Heitmann
*Don’t be so Dense: The Creation of Density Contour Maps*
Major: Anthropology
Mentor: James Enloe (Anthropology)

42 - Brenda Herrera
*Mechanisms Impacting Oral Health Equity in an Expanded Medicaid Program: Narratives from Program Members and Dentist*
Major: Global Health
Mentor: Julie Reynolds (Dentistry, Public Policy Center)

44 - Joshua Hjelmaas
*State Surveillance Using Quantum Processor-Backed Cryptography: The Future of Electronic Privacy Law*
Major: Business Analytics and Information Systems
Mentor: Andrew Hosmanek (Management & Organizations)

46 - Zachary Juron; Mohamad Abdullah Mohd Kamal
*Topological Data Analysis (TDA) & the Chicago Cubs*
Majors: Mathematics; Statistics, Mathematics
Mentor: Isabel Darcy (Mathematics)

48 - Khaled Kayali
*Effects of Cypermethrin on the Morphology and Number of Microglia in the Embryonic Brain*
Major: Biomedical Engineering
Mentor: Hanna Stevens (Psychiatry)

50 - Katelyn Kelly
*Use and Discard: Analyzing Piece Plotted and Screened Artifacts from Woodpecker Cave*
Majors: Anthropology, Psychology
Mentor: James Enloe (Anthropology)

52 - Breanna Kramer-Riesberg
*Ebola Virus Infection of Skin*
Major: Microbiology
Mentor: Al Klingelhutz (Microbiology)
54 - Yunyi Li
*Self-exciting risk modelling for predicting next location of series crimes*
Major: Business Analytics
Mentor: Tong Wang (Management Science)

56 - Carter Lilly
*Comparing the Impact of Modified Paleolithic Diet and Low Saturated Fat Diet on Motor Function in the Setting of Fatigued Relapsing-Remitting Multiple Sclerosis Patients*
Major: Human Physiology
Mentor: Terry Wahls (Internal Medicine)

58 - Lingyi Liu
*Probing Molecular Transport in Nanoporous Silica Particles by Single-Molecule Spectroscopy*
Majors: Chemistry, Biochemistry
Mentor: Lei Geng (Chemistry)

60 - Leigha Meredith
*Characterizing Urban Forest Communities through Tree Surveys and Soundscape Recordings*
Major: Environmental Science
Mentor: Heather Sander (Geography)

62 - Alissia Milani
*Lake Michigan Ozone Study: Characterization and Sources of Airborne Particles*
Major: Chemistry
Mentor: Elizabeth Stone (Chemistry)

64 - Prince Morkeh
*ATL-1, the C. elegans ATR homolog, is required for maintaining chromosomal integrity in aging germline*
Major: French
Mentor: Sarit Smolikove (Biology)

68 - Margaret Mungai
*MFN-2, a mitochondria-associated endoplasmic reticulum membrane protein may be important for the formation of insulin mediate ER-Mitocontacts*
Majors: Biology, Neuroscience
Mentor: Antentor Hinton (Internal Medicine)
70 - Matthew Murry
*Autophagy protects cardiomyocytes against palmitate-induced death*
Major: Biology
Mentor: Quan Jiang Zhang (Internal Medicine)

72 - Danielle Nauman
*The effects of vocal effort on bilabial contact pressure and intraoral air pressure*
Major: Speech & Hearing Sciences
Mentor: Jerry Moon (Communication Sciences & Disorders)

74 - Nhan Nguyen
*Wnt5b is required for endoderm morphogenesis*
Major: Biomedical Engineering
Mentor: Fang Lin (Anatomy & Cell Biology)

76 - Aleisha Norton
*Psychosocial Well-Being and Depression in Ovarian Cancer Survivors*
Majors: Biology, Psychology
Mentor: Susan Lutgendorf (Psychological & Brain Sciences)

78 - Danielle Pellack
*Is Mitochondrial Fission Protective in Glaucoma*
Major: Human Physiology
Mentor: Michael Anderson (Molecular Physiology & Biophysics, Ophthalmology & Visual Sciences)

80 - Marissa Roseman
*Do parasites help drive life history variation in natural populations?*
Majors: Biology, Environmental Science
Mentor: Maurine Neiman (Biology)

82 - Alexi Rubin
*Analyzing the Effect of the Wahls and Swank Diets on Fatigue, Mood, and Cognition in Multiple Sclerosis Patients*
Major: Nursing
Mentor: Terry Wahls (Internal Medicine)

84 - Eli Schmidt
*The guidance of visual attention through learned feature probabilities*
Major: Psychology
Mentor: Shaun Vecera (Psychological & Brain Sciences)
86 - Victoria Shihadah
Framing Expectations: The Effects of Transient Degraded Speech Conditions on Competition in Spoken Word Recognition
Major: Speech & Hearing Science
Mentor: Bob McMurray (Psychological & Brain Sciences)

88 - Katie Sinwelski
Evidenced-Based Interventions for Chemotherapy-Induced Dysgeusia
Major: Nursing
Mentor: Catherine Cherwin (Nursing)

90 - Zach Theiler
Homoleptic Neodymium(III) and Uranium(III) Phosphinodiboranates
Majors: Biochemistry, Chemistry
Mentor: Scott Daly (Chemistry)

92 - Maegan Tyrrell
Initial Qualitative Assessment of The Passport Project
Major: Health Promotion
Mentor: Jon Winet (Art & Art History)

94 - Allison Vaske
Role of CDK8 Activity in Cardiovascular Disease
Major: Chemical Engineering
Mentor: Chad Grueter (Internal Medicine)

96 - Sophia Vogeler
Maternal NR supplementation during lactation promotes NAD metabolism for milk production and neonatal development
Major: Biochemistry
Mentor: Charles Brenner (Biochemistry)

98 - Olivia von Gries
#getsmART! - A Digital Art Series
Majors: Studio Art, Art History
Mentor: Veronica Rose Smith (Museum of Art)

100 - Jesse Weiss
Introducing e-consents in a Clinical Setting
Major: Nursing
Mentor: Debra Brandt (Obstetrics & Gynecology)
102 - Michaela Wiltgen
Identifying risk factors for preeclampsia in subsequent pregnancies in women with a history of preeclampsia
Major: Nursing
Mentor: Debra Brandt (Obstetrics & Gynecology); Donna Santillan (Obstetrics & Gynecology)

104 - Arthur Wold
The Shellfish Informant: Using Bivalve Remains to Reconstruct Ancient Environments
Major: Anthropology
Mentor: James Enloe (Anthropology)

106 - Audrey Wood
Beyond the Text: Using Illustrations and Text Readers to Support Reading Comprehension in Post-Secondary Students with Intellectual or Developmental Disabilities
Major: Speech & Hearing Science
Mentor: Meredith Saletta (Communication Sciences & Disorders)

108 - Cole Wymore
Surveying Parents at a Health Fair About Attitudes and Practices Related to Helmet Use
Major: Human Physiology

110 - Yuanxi Zhang
Failure to Timely Remediation of ICFR Weaknesses and Audit Pricing
Majors: Accounting, Finance
Mentor: Cristi Gleason (Accounting)

112 - Shiwen Zhou
Parent-child Conversations about Road-crossing Safety in an Immersive Virtual Environment
Majors: Psychology, Communication Studies
Mentor: Jodie Plumert (Psychological & Brain Sciences)