



Iowa Center for Research
by Undergraduates

10th Annual

Fall

**Undergraduate
Research
Festival**

Wednesday, November 13, 2019

4:30-6:30 PM

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 with faculty and staff in research and creative projects at the University of Iowa.

2019-2020 ICRU Events and Opportunities

Excellence in Undergraduate Research Award	February 4, 2020
Distinguished Mentor Award	February 4, 2020
Summer ICRU Fellowship Apps Due	March 6, 2020
Academic Year Fellowship Apps Due	March 30, 2020
Research in the Capitol	March 24, 2020
Spring Undergraduate Research Festival	April 15, 2020

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ICRU's Fall Undergraduate Research Festival (FURF) is proud to showcase visual presentations focusing on the research and creative work performed by undergraduates at the University of Iowa. Presenters work in over **40 different departments** and major in over **35 different disciplines**, representing a broad range of sciences, arts, and humanities.

Odd numbered posters present 4:30-5:30 PM

Even numbered posters present 5:30-6:30 PM

****Please note that at 5:30, all of the boards will be turned around to display even numbered (the second hour presenters') posters****

Many thanks to all of the people who make both ICRU and FURF a possibility:

- All undergraduates presenting their work
- All poster judges
- All mentors of undergraduate researchers
- The Office of the Provost
- The Office of the Vice President for Research
- ICRU Research Ambassadors.

4:30-5:30 Presenters & Poster Numbers

Click presenter name/number to view abstract

[Click here to jump to 5:30-6:30 presenter list](#)

1 - Madison Anae

Understanding Magma Ascension Using Major and Minor Element Diffusion of Olivine, Pupuke Maar, Auckland Field, New Zealand

Major: Geoscience

Mentor: Ingrid Ukstins (Earth and Environmental Sciences)

3 - Angela Benton

*Investigating the neural crest gene regulatory network: identification of an enhancer nearby *tfap2a**

Major: Biochemistry

Mentor: Robert Cornell (Anatomy and Cell Biology)

5 - Maxwell Bernstein

MGF Data and the Angle of Attack of Cassiope-ePOP Against Field Aligned Currents

Major: Journalism

Mentor: David Miles (Physics and Astronomy)

7 - Aimee Butler

Disulfiram induces radio-chemo-sensitization in small cell lung cancer and enhances the toxicity of thioredoxin reductase inhibition and GSH depletion

Major: Microbiology

Mentor: Douglas Spitz (Free Radical and Radiation Biology), Melissa Fath (Free Radical and Radiation Biology)

9 - Kevin Chen

Role of Iron Storage Deficiencies in the Development of Preeclampsia

Major: Human Physiology

Mentor: Mark Santillan (Obstetrics and Gynecology)

11 - Tartil Ali

The Outcome of Epilepsy Surgery in Patients with History of Traumatic Brain Injuries

Major: Psychology

Mentor: Kenneth Manzel (Neurology)

13 - Sydney DeBoer

In Our Schools, In Our Stores, and In Our Homes; The Office of Price Administration, 1941-1947

Major: History, Social Studies Education

Mentor: Colin Gordon (History)

15 - Sarah DeLong-Duhon

*Unraveling a taxonomic mystery: Exploring species boundaries within *Stereum fungi**

Major: Environmental Science

Mentor: Andrew Forbes (Biology)

17 - Alex Dobrila

*c-di-GMP: secondary messenger signaling and its importance for surface colonization by *Vibrio parahaemolyticus**

Major: Microbiology

Mentor: Linda McCarter (Microbiology)

19 - Caroline Fantz

Gender Identity and Expression in Individuals with Intellectual Disability

Major: Nursing

Mentor: Melissa Lehan Mackin (Nursing)

21 - Dustin Fykstra

LJA5: A novel population of itch and pain-suppressing brainstem neurons

Major: Biomedical Sciences

Mentors: Alexander Bassuk (Pediatric Neurology) & Lindsay Agostinelli (Pediatric Neurology)

23 - Maria Greufe

Effects of Cerebellar Activity of Cocaine-Seeking Behavior

Major: Neuroscience

Mentor: Ryan Lalumiere (Psychological and Brain Sciences)

25 - Kinsey Gudenkauf

Thermal Changes in Ionic Liquid Solutions Probed by Differential Scanning Calorimetry

Major: Biochemistry

Mentor: Scott Shaw (Chemistry)

27 - Emma Hartke

Examining the Coincidence of Organic and Carbonate Carbon Isotope Perturbations during the Ireviken Extinction Event (Wenlock, Silurian)

Major: Geoscience

Mentor: Bradley Cramer (Earth and Environmental Sciences)

29 - Kaleigh Haus

Quantitative image analysis of cellular structures by fluorescence microscopy

Major: Biomedical Engineering

Mentor: Charles Harata (Molecular Physiology and Biophysics)

31 - Miranda Henry

Ethnomusicology Today

Major: Saxophone Performance

Mentor: Trevor Harvey (Ethnomusicology/Musicology)

33 - Donald Hill

Revisions of the Levenson-Gerk Pterygometopid trilobites

Major: Geoscience, Biology

Mentor: Jonathan Adrain (Earth and Environmental Sciences)

35 - Carly Iacullo

Effects of the timing of infrequent stimuli on motor system suppression

Major: Psychology

Mentor: Jan Wessel (Psychological and Brain Sciences)

37 - Emma Johnson

Anti-Catholicism During the Election of 1960

Majors: History, Criminology

Mentor: Colin Gordon (History)

39 - Korina Justiniani

Identification of genes necessary for Pseudomonas aeruginosa induced motility in response to interspecies signaling

Major: Microbiology

Mentor: Dominique Limoli (Microbiology and Immunology)

41 - Joseph Kettelkamp

Arterial input function and tracer kinetic model driven network for rapid inference of kinetic maps in Dynamic Contrast Enhanced MRI(AIF-TK-net)

Major: Biomedical Engineering

Mentor: Sajan Lingala (Biomedical Engineering)

43 - Virginia Lamas-Meza

2,2',3,5',6-Pentachlorobiphenyl (Pcb 95) and its hydroxylated metabolites in adipose tissue

Major: Chemistry

Mentor: Hans-Joachim Lehmler (Occupational and Environmental Health)

45 - Ricardo Lozano Flores

Fibronectin-Integrin Signaling Axis is Required for Endoderm Morphogenesis and Craniofacial Development

Major: Biology

Mentor: Fang Lin (Anatomy and Cell Biology)

47 - Russell Martin

The effect of joint angle and contraction velocity on measured muscle activation at the elbow and knee

Major: Biomedical Engineering

Mentor: Laura Frey-Law (Physical Therapy and Rehabilitation Sciences)

49 - Molly Matkovich

Effects of median raphe serotonergic neuron activation on EEG and seizure-induced death

Major: Mathematics

Mentor: Gordon Buchanan (Neurology)

51 - Caroline Meek

Publishing, International Collaboration, and Creative Leadership: Between the Lines 2019

Major: English and Creative Writing

Mentor: Katie Prout (International Writing Program), Allison Gnade (International Writing Program)

53 - Alissia Milani

Lake Michigan Ozone Study: Characterization and Sources of Airborne Particles

Major: Chemistry

Mentor: Betsy Stone (Chemistry)

55 - Jade Miller

Interactions of BG4 with G Quadruplex DNA

Major: Biochemistry

Mentor: Maria Spies (Biochemistry)

57 - Tate Neff

β -klotho in Glutamatergic Cells is Necessary for FGF21-mediated Weight Loss

Major: Biochemistry

Mentor: Matthew Potthoff (Pharmacology)

59 - Sarah Plock

The Role of Cognitive Control in Understanding Speech in Noise

Major: Speech and Hearing Science

Mentor: Bob McMurray (Psychological and Brain Sciences)

61 - Alexander Powers

Robust Automatic Multiple Landmark Detection in 3D MRI

Major: Computer Science and Engineering

Mentor: Hans Johnson (Electrical and Computer Engineering)

63 - Prateek Raikwar

A Novel Population of Pain-Suppressing Brainstem Neurons

Major: Neuroscience

Mentor: Alexander Bassuk (Pediatric Neurology)

65 - Katlyn Rozovics

Passive Imperialists: Imperial Attitudes in Ryse: Son of Rome

Major: History

Mentor: Rosemary Moore (History)

67 - Clayton Saffran-Johnson

Campaign Finance Reform in the 21st Century

Major: History, Philosophy

Mentor: Alyssa Park (History)

69 - Arshaq Saleem

The role of the mitochondrial microprotein Mitoregulin in Parkinson's Disease pathogenesis

Major: Neuroscience

Mentor: Ryan Boudreau (Internal Medicine), Colleen Stein (Internal Medicine)

71 - Kimberly Schroeder

Correlating menstrual cycle-associated pulmonary changes with lung structure measures derived from quantitative CT

Major: Biomedical Engineering

Mentor: Jessica Sieren (Radiology and Biomedical Engineering)

73 - Brian Shanahan

Examples of Smart Cities in the US

Major: Civil Engineering

75 - Hannah Shrader

Dissecting the immunological link between intraoperative bacterial contamination and peritoneal metastasis of pancreatic ductal adenocarcinoma

Majors: Biochemistry, Medical Anthropology

Mentor: Carlos Chan (Surgery)

77 - Zachary Silver

Russian Intervention: An Analysis

Major: International Relations

Mentor: Elizabeth Menninga (Political Science)

79 - Abigail Simon

Sensitivity to fine-grained phonetic variation in children who use cochlear implants

Major: Speech and Hearing Science

Mentor: Bob McMurray (Psychological and Brain Sciences)

81 - Hannah Slowey

Effects of E-Cigarette Exposure on Viability and Proliferation of Placental Cells

Major: Human Physiology

Mentor: Donna Santillan (Obstetrics and Gynecology)

83 - Francesca Spencer

*Probing the nuclear aggregate proteome using *Xenopus* oocytes*

Majors: Biochemistry, Italian

Mentor: Daniel Weeks (Biochemistry)

85 - Michael Steffen

Offensive to the Majority: The Formation, Activism, and Survival of the University of Iowa Gay Liberation Front

Major: History

Mentor: Leslie Schwalm (Gender, Women's, and Sexuality Studies)

87 - Mary Wille

Primary Progressive Apraxia of Speech: A Systematic Review

Major: Speech and Hearing Science

Mentor: Karen Bryant (Communication Sciences and Disorders)

89 - Charlie Wolfe

Khaleesi: Breaking The Advertising & Tracking Redirect Chains

Major: Computer Science and Engineering

Mentor: Zubair Shafiq (Computer Science)

91 - Seunghye Yang

Rule and Exception Learning in Pigeon Categorization

Major: Psychology

Mentor: Leyre Castro Ruiz (Psychological and Brain Sciences)

93 - Jia Zhao

Using Dual-Luciferase Assay to Validate the Targets of a Transcription Factor Regulating Stress Response

Major: Biology

Mentor: Bin He (Biology)

95 - Bennett Zuck

Position Sense and the Control of a Handheld-Tool

Major: Human Physiology

Mentor: Warren Darling (Health and Human Physiology)

97 – Allison Kusik

Geochemistry and Petrology of the Osborne Core (North East Iowa Intrusive Complex)

Major: Geoscience

Mentor: David Peate (Earth and Environmental Sciences)

5:30-6:30 Presenters & Poster Numbers

Click presenter name/number to view abstract

2 - Sameer Ansari

Clinical and Imaging Features of Contrast Induced Neurotoxicity

Major: Human Physiology

Mentor: Santiago Ortega (Neurology), Cynthia Zevallos (Neurology)

4 - Gwen Barnes

A Bayesian Age-Depth Model for the Silurian Altajme Core, Gotland, Sweden

Major: Geoscience

Mentor: Brad Cramer (Earth and Environmental Sciences)

6 - Lakyn Belk; Matthew Culver

Actin capping protein Carmil3 is required for the migration of endodermal cells and KV formation

Majors: Human Physiology; Biomedical Engineering

Mentor: Fang Lin (Anatomy and Cell Biology)

8 - Angie Benda

Using eye movements to understand variation in gesture sensitivity during a math tutorial

Major: Psychology, Political Science

Mentor: Susan Wagner Cook (Psychological and Brain Sciences)

10 - Ethan Bennett

Curve fitting of the decay phase of postsynaptic currents of mammalian neurons

Major: Computer Science

Mentor: Charles Harata (Molecular Physiology and Biophysics), Hiroyuki Kawano (Molecular Physiology and Biophysics)

12 - Bailey Bergman

Phytoplankton Composition of Caloosahatchee River and Estuary and the Gulf of Mexico

Major: Biology

Mentor: Bradley Cramer (Earth and Environmental Sciences)

14 - Ellie Biebesheimer

Paired organic and carbonate carbon isotope chemostratigraphy of the Mulde Excursion from the Altajme Core, Gotland, Sweden

Major: Geoscience

Mentor: Brad Kramer (Earth and Environmental Science)

16 - Daniel Conway

Structural Predictions of Escherichia Coli Outer Membrane Proteins Using Evolutionary Contact Information

Majors: Biochemistry, Computer Science

Mentor: Adrian Elcock (Biochemistry)

18 - Nathan Cremers

Designing a Modular Driver for Use in Optogenetic Studies

Major: Neuroscience

Mentor: John Freeman (Psychological and Brain Sciences)

20 - Megan Crotts

A ketogenic diet increases latency to seizure-induced respiratory arrest in the DBA/1 mouse

Major: Neuroscience

Mentor: George Richerson (Neurology), Frida Teran (Neurology)

22 - Harry Daley-Young

The Fall of Penn Central and the Rise of Conrail: Corporate Failure and the Politics of Deregulation and Nationalization in the 1970s

Major: History, Theatre Arts

Mentor: Tyler Priest (History)

24 - Clarissa Dietz

Investigation of Radiative Transfer Model's Application to VIIRS DNB Images

Major: Physics

Mentor: Daniel Feldman (Lawrence Berkeley National Laboratory)

26 - Lauren Davis

Changes in Vasopressin Receptor Expression in Hypertensive Pregnancies

Major: Human Physiology

Mentor: Eric Devor (Obstetrics and Gynecology)

28 - Alessandra Dutra

Metal Organic Material Comparison: Uranium and Cadmium Based Syntheses

Major: Chemistry

Mentor: Tori Forbes (Chemistry)

30 - Samuel Eck

The Emma Goldman Clinic: From Collectivism to Corporatism

Major: History, English

Mentor: Lina-Maria Murillo (Gender, Women's, and Sexuality Studies, History)

32 - Madysen Gilbert

Nutrient Analyses of the Caloosahatchee River and Estuary of Southwest Florida

Major: Biomedical Engineering

Mentor: Sajan Lingala (Biomedical Engineering)

34 - Jacob Heffelfing

In Vitro Metabolism and Enantioselective Enrichment of the Safener Benoxacor

Major: Public Health

Mentor: Hans-Joachim Lehmler (Occupational and Environmental Health)

36 - Benjamin Howard

A detrital zircon provenance study of the Marnoso-arenacea Formation, Northern Apennines, Italy.

Major: Geoscience

Mentor: Emily Finzel (Earth and Environmental Sciences)

38 - Elizabeth Janey

Swimming in 16p11 mice

Major: Psychology

Mentor: Mark Blumberg (Psychological and Brain Sciences)

40 - Renato Jensen; Joshua Peterson

DRP1 Deficiency in Skeletal Muscle Alters Gene Expression of Mitochondrial-endoplasmic Reticulum Contact- and Misfolded Protein Response-related Proteins

Major Biochemistry; Biology)

Mentor: Marcelo Correia (Internal Medicine), E. Dale Abel (Internal Medicine)

42 - Lillian Jones

Tracking atmospheric pollen during extreme weather events

Major: Chemistry

Mentor: Betsy Stone (Chemistry)

44 - Benjamin Kimball

Severus of Antioch and the Anti-Chalcedonian Movement

Major: History, Anthropology

Mentor: Michael Moore (History)

46 - Dariya Kozlova

Changes in Insulin Clearance in PCOS are Driven by Insulin Sensitivity

Major: Biochemistry

48 - Emily Lefebber

Nothing Comes to Her Who Sits and Waits

Major: History, Political Science

Mentor: Landon Storrs (History)

50 - Tianyi Li

Analysis of Metal in Airborne Particulate Matter in Winter Kathmandu, Nepal

Major: Environmental Science

Mentor: Betsy Stone (Chemistry)

52 - Cole Lotspeich

The Klan in the 1920s: Correlates of Membership in Champaign County, IL

Major: Political Science

Mentor: Douglas Dion (Political Science)

54 - Benjamin Louviere

Beer & Spirit

Major: History

Mentor: Michael Moore (History)

56 - Jack Lynn

Night owl's dilemma: determining the connection between sleep deprivation and seizure-induced death

Major: Chemical Engineering

Mentor: Gordon Buchanan (Neurology), Benton Purnell (Neurology)

58 - Alexia Mahanna

Local and Autonomous Community Migration Responses: Case Study of Barcelona, Spain

Major: Global Health Studies, Ethics and Public Policy

60 - Cameron Moeller

Variably Innate: Inconsistent British Perceptions of Martial Races in the Late-Victorian Indian Army

Major: History, International Relations

Mentor: Paul Greenough (History)

62 - Shaun Morris

Cecina Table Set

Major: 3D Design

Mentor: Monica Correia

64 - Marissa Mueller

Actimetry Analysis Methods Produce Large Differences in Lifestyle Physical Activity Estimates

Major: Biomedical Engineering

Mentor: Laura Frey-Law (Physical Therapy and Rehabilitation Sciences),

Ruth Chimenti (Physical Therapy and Rehabilitation Sciences)

66 - Mayra Narvaez

Biotransformation of dichloroacetamide safeners

Major: Chemical Engineering

Mentor: David Cwiertny (Civil and Environmental Engineering)

68 - Megan Schnoebelen

Slipping Away from the "Summer Slide": Reducing Summer Reading Loss in School-Age Students Summer 2019 Honors Internship Project

Majors: Elementary Education, Music Performance

Mentors: Andrew Willard (Honors Program), Sherry Rhineheart (Pomerantz Career Center)

70 - Emily Silich

HaloSat Observations of the Vela and Puppis A Supernova Remnants

Majors: Astronomy, Physics, Mathematics

Mentor: Philip Kaaret (Physics and Astronomy)

72 - Abigail Simon; Mary Wille

Characterizing Primary Progressive Apraxia of Speech: A Case Study of a 76-Year-Old Female

Majors: Speech and Hearing Science

Mentor: Karen Bryant (Communication Sciences and Disorders)

74 - Allison Steger

Fueling the Future of Preston Station: The creation of a collection management policy and action plan

Major: History

Mentor: Heidi Lung (Anthropology)

76 - Hanxi Tang

Genetic Modification of Neurological Phenotypes in a Drosophila Voltage-gated Sodium Channel Mutant

Major: Biology

Mentor: Toshihiro Kitamoto (Anesthesia), Junko Kasuya (Anesthesia)

78 - Jared Termini

Analysis of Chandra Data of the Composite Supernova Remnant G310.6-1.6

Major: Physics and Astronomy

Mentor: Casey Deroo (Physics and Astronomy)

80 - Gabriella Thomsen

Helper-Dependent Adenovirus Transduces the Human and Rat Retina but Elicits an Inflammatory Reaction When Delivered Subretinally in Rats

Major: Spanish, Interdepartmental Health Sciences

Mentor: Luke Wiley (Ophthalmology)

82 - Jacob Tinker

Participant Screening in Dietary Approaches to treat MS Study

Major: Exercise Science

Mentor: Terry Wahls (Internal Medicine)

84 - Haley Vaughn

Longitudinal Time-to-Event Analysis of Time-gated Word Recognition in Children who are Hard of Hearing

Major: Speech and Hearing Sciences

Mentor: Elizabeth Walker (Communication Sciences and Disorders)

86 - Kimberly Vencer

Effects of low brain activity following seizures on immobility in mice

Major: Human Physiology

Mentor: Gordon Buchanan (Neurology)

88 - Olivia Westemeier

Pathway to Prevention: Protective Behavioral Strategies Linked to Sexual Assault on College Campuses

Major: Psychology

Mentor: Teresa Treat (Psychological and Brain Sciences)

90 - Lauren Williams

Does Partisanship Affect Everyday Russians' Engagement in Bribery?

Major: Russian, Environmental Policy and Planning

Mentor: William Reisinger (Political Science)

92 - Ashton Woiwood

Characterizing and Modeling Threat Feeds for Patch Management

Major: Informatics

Mentor: Zubair Shafiq (Computer Science)

94 - Mikayla Wymore

Photoredox Studies with Alkyl and Aryl Radicals

Major: Chemistry, Biochemistry

Mentor: Gregory Friestad (Chemistry)

96 - Joshua Yem

Dynamic and Static Position Sense of Body Targets in Three Dimensions

Major: Human Physiology, Music

Mentor: Warren Darling (Health and Human Physiology), Chris Coffman (Health and Human Physiology)