The 6th Annual
Fall Undergraduate Research Festival

Wednesday, November 18, 2015
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 Fall Undergraduate Research Festival is proud to showcase nearly **100 visual presentations** given by the University of Iowa’s student researchers. Presenters work in over **40 different departments**, representing each of 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 April for the Spring Festival!

**Programs with full abstracts are available on the ICRU website.**

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.

**Upcoming ICRU Events and Opportunities**

- Excellence in Undergraduate Research Award - March 2016
- Distinguished Mentor Award – March 2016
- ICRU Research Fellows Applications Due — March 2016
- Research in the Capitol – March 2016
- Spring Undergraduate Research Festival (SURF) – April 2016
4:30-5:30PM Presenters

(odd numbers only)

1 - Aparna Ajjarapu
*Physical and chemical changes in β-lactoglobulin and α-lactalbumin caused by dry-heat induced interactions with sugar beet pectin*
Major(s): Biochemistry
Mentor(s): Phoebe Qi (Dairy and Functional Foods Unit, Eastern Regional Research Center, United States Department of Agriculture)

3 - Preston Anderson
*αSMA Cells Regenerate Surface Airway Epithelium After Injury*
Major(s): Biochemistry & Human Physiology
Mentor(s): John Engelhardt (Anatomy & Cell Biology) and Kalpaj Parekh (Cardiothoracic Surgery)

5 - Dorothy Armstrong
*The Female Body in Motion: Embodied Experiences in Media and Mediation*
Major(s): Dance (BFA), English (BA)
Mentor(s): Rebekah Kowal (Dance)

7 - Eno-Abasi Augustine-Akpan
*The prevalence of GRHL3 in nonsyndromic cleft and palate African populations*
Major(s): Biomedical Engineering
Mentor(s): Azeez Butali (College of Dentistry)

9 - Jill Aunan
*Reliability of Acoustic Measures within Classrooms and Frequency of Hearing Aid Use for Children Who Are Hard of Hearing*
Major(s): Communication Sciences and Disorders
Mentor(s): Elizabeth Walker (Communication Sciences & Disorders)
92 - Josh Volker
Altered mitochondrial dynamics in platelets results in a prothrombotic phenotype
Major(s): Biomedical Engineering
Mentor(s): Rhonda Souvenir and Dale Abel (Internal Medicine)

94 - Zachary Wehrspan
Loss of TFAP2C Leads to Warburg Effect in Breast Cancer and Opens New Opportunities for Cancer Treatment
Major(s): Biochemistry, Economics
Mentor(s): Ronald Weigel (Surgery)

96 - Alexander Wolff
Non-Pathogenic, Biologically Functional Amyloids: A Potential Solution to a Fundamental Problem in the Early Embryonic Development of Xenopus laevis
Major(s): Biochemistry
Mentor(s): Daniel Weeks (Biochemistry)

98 - Fangren Yu
Going back to Anhui: Formation of Huizhou Culture
Major(s): History
Mentor(s): Shuang Chen (History) and Newell Ann Van Auken (Chinese)

11 - Christina Behrens
Psychosocial factors present in talented and gifted middle school students in rural Iowa
Major(s): Psychology
Mentor(s): Lori Ihrig (Belin-Blank Center)

13 - Gabrielle Bui
AKT Inhibition Modulates Glycolysis through Post-Translational Modifications of Pyruvate Kinase M2
Major(s): Biochemistry
Mentor(s): Kayvan Keshari and Sui Seng Tee (Biochemistry)

15 - Thomas Cassier
Loss of Mitochondrial Pyruvate Carrier 1 leads to Hypertrophic Cardiomyopathy via Hypoxia Inducible Factor
Major(s): Neurobiology (BS), Psychology (BS)
Mentor(s): Yuan Zhang and Dale E. Abel (Internal Medicine)

17 - Alyssa Cokinis
Between the Lines of Cultural Diplomacy
Major(s): English/Creative Writing Track and Theatre Arts
Mentor(s): Lisa Daily (International Writing Program)

19 - Erica Cole
Angiotensin AT1A receptors are not expressed on microglia in the brain
Major(s): Chemistry
Mentor(s): Justin Grobe (Pharmacology)

21 - Grace Coleman / George Daniel
Society for Ethnomusicology Podcast
Major(s): International Studies and Music / Biomedical Engineering
Mentor(s): Trevor Harvey (Music)
23 - Daniel Coulthard / Brandon Caswell
*Geochemical and Petrographical Analyses of Off-Axis Volcanism on Snæfellsnes, Iceland*
Major(s): Geoscience, Environmental Science / Geoscience
Mentor(s): David Peate (Earth and Environmental Science)

25 - Chloe Daniel
*Ancestral Origins of Homo floresiensis*
Major(s): Anthropology, Psychological and Brain Sciences
Mentor(s): Russell Ciochon (Anthropology)

27 - Frank De Stefano
*Lung Airway and Vessel Measurement Analysis between Five Computed Tomography Protocols*
Major(s): Biochemistry B.A.
Mentor(s): Jessica Sieren and Eric Hoffman (Radiology and Biomedical Engineering)

29 - Benjamin Donovan
*Alignment of Off-Plane Reflection Gratings for Future X-ray Spectrometer Missions*
Major(s): Physics & Astronomy
Mentor(s): Randall McEntaffer (Physics & Astronomy)

31 - Nicholas Eginoire
*Break Induced Replication in G1 of the cell cycle*
Major(s): Biology
Mentor(s): Anna Malkova (Biology)

33 - Grace Ehlinger
*An assessment of the relationships between urban forests, biodiversity, and ecosystem delivery*
Major(s): Environmental Policy and Planning
Mentor(s): Heather Sander (Geographical and Sustainability Sciences)

80 - Erin Sullivan
*Sex specific postnatal changes in telomerase expression after prenatal stress*
Major(s): Biomedical Engineering
Mentor(s): Hanna Stevens (Psychiatry)

82 - Brittany Todd
*Role of Interleukin-1 in Traumatic Brain Injury Pathogenesis*
Major(s): Neurobiology and Music Performance
Mentor(s): Elizabeth Newell and Alexander Bassuk (Pediatrics)

84 - Rebekah Truhan
*The Hidden Stratigraphy of Woodpecker Cave: A GIS Derived, Model-Based Approach to Establishing Stratigraphy in Visually Homogeneous Archaeological Deposits*
Major(s): Anthropology
Mentor(s): James Enloe (Anthropology)

86 - Steven Tucker
*Synthesis and Characterizations of Lanthanum (III) Sulfate Compounds*
Major(s): Environmental Sciences
Mentor(s): Tori Forbes (Department of Chemistry)

88 - Hannah Tykol
*Evaluating the Knowledge of Sexual Health Among Adolescents With and Without ASD*
Major(s): Nursing
Mentor(s): Melissa Lehan Mackin (Nursing)

90 - Ivy Vance
*Adsorption of Cu2+ on Electrospun Hematite Nanofiber/Mesoporous Silica Core-Shell Material*
Major(s): Chemistry
Mentor(s): Sarah Larsen (Chemistry)
68 - Carl Olson  
Structured Navigation and Manipulation with Parse Trees  
Major(s): Computer Science, Statistics  
Mentor(s): Aaron Stump (Computer Science)

70 - Yuefeng Pan  
Does Adding Calorie Information Change Choices For All Consumers?  
Major(s): Marketing and Finance  
Mentor(s): Cathy Cole (Marketing)

72 - Adiceson Peppels  
D1 and D2 receptors in the infralimbic and medial orbitofrontal cortices differentially mediate the reinstatement of cocaine seeking in rats  
Major(s): Psychology  
Mentor(s): Ryan Lalumiere (Psychology)

74 - Peter Schumacher  
Examining Plagioclase Populations and What They Indicate for the Volcanism of the Berserkjahraun Lava Flows of Snaefellsnes, Iceland  
Major(s): Geoscience, English  
Mentor(s): David Peate (Earth and Environmental Sciences)

76 - Luke Stroth  
Hot Rocks 2: Rocks a-Popping: Applications of XRF data in understanding the integrity of an archaeological site  
Major(s): Anthropology  
Mentor(s): James Enloe (Anthropology)

78 - Stacy A. Sturdevant  
WWI Iowa Anti-German Sentiment: A Comparative Study  
Major(s): History  
Mentor(s): Glen H. Penny (History)

35 - Mengzhu Fu  
Cross-Cultural Study of The Wishful Thinking Effect  
Major(s): Psychology, Music  
Mentor(s): Paul Windschitl (Psychological and Brain Sciences)

37 - Callie Ginapp  
5-HT2A Receptors in Dorsal Raphe Nucleus are Responsible for CO2 Induced Arousal  
Major(s): Biology-Neurobiology track  
Mentor(s): Gordon Buchanan (Neurology)

39 - Emma Greimann  
The Association Between Physical Activity and Centrally-Mediated Pain Perception  
Major(s): Biology  
Mentor(s): Laura Frey Law (Physical Therapy & Rehab Science)

41 - Karen Grigsby  
Le Petite Mort- Changing Perceptions of Hysteria in film in the 1940's and 50's, during the decline of clinical hysteria  
Major(s): History and Anthropology  
Mentor(s): Mariola Espinosa and Jeffrey Cox (History)

43 - Bailey Hadnott  
Study of Airborne PCBs in and Around New Bedford Harbor Area: A collaboration of the University of Iowa and Boston University Superfund Research Programs  
Major(s): Environmental Engineering  
Mentor(s): Keri Hornbuckle and Andres Martinez (Civil and Environmental Engineering)

45 - Xiaotian He  
Examining the effect of sad images on empathy  
Major(s): Psychology  
Mentor(s): Daryl Cameron (Psychological and Brain Sciences)
47 - Megan Helms
*The role of monocytes in mouse models of retinal degeneration*
Major(s): Biomedical Engineering/pre-med
Mentor(s): Arlene Drack (Ophthalmology)

49 - Jonah Heskje
*Evaluating a Novel Intervention for Primary Caregivers of Persons with Dementia*
Major(s): Biology - Neurobiology Track
Mentor(s): Daniel Tranel (Neurology)

51 - Dean Hester
*Systematics, Affinity, and Biostratigraphic Utility of the Early Ordovician Trilobite Amblycranium Ross, From the Great Basin, Western USA*
Major(s): Earth and Environmental Sciences
Mentor(s): Jonathan Adrain (Earth and Environmental Sciences)

53 - Boi Lam Hong
*LED Printed Circuit Board Design to Further Ophthalmology Research*
Major(s): Electrical Engineering
Mentor(s): Anton Kruger (Electrical Engineering)

55 - Blake Johnson
*Expression of von Willebrand factor via piggyBac-mediated gene transfer in mouse models of von Willebrand Disease and hemophilia A*
Major(s): Human Physiology
Mentor(s): Janice Staber (Pediatrics)

57 - Rylee Kerper
*The Relationship of Depressive Symptoms and Secondhand Smoke Exposure in a Sample of Romanian Adolescents*
Major(s): Anthropology
Mentor(s): Kristina Venske (College of Public Health)

56 - Nicholas McCarty
*MicroRNAs as Potential Regulators of Glucose Metabolism within Anucleate Thrombocytes*
Major(s): Biochemistry, Microbiology
Mentor(s): E. Dale Abel (Internal Medicine and Biochemistry)

58 - Alyssa Mendenhall
*Quantification of Collagen Production in Young and Old Dermal Fibroblasts*
Major(s): Biomedical Engineering
Mentor(s): Edward Sander (Biomedical Engineering)

60 - Drew Miles
*Off-Plane Diffraction Grating Performance and Applications*
Major(s): Physics, Astronomy
Mentor(s): Randall McEntaffer (Physics & Astronomy)

62 - Kylie Moore
*Depression and High Risk Behavior in Young Adults*
Major(s): Psychology
Mentor(s): Michael O’Hara (Psychology)

64 - Devon Moose
*Regulation of a Sodium Leak Channel in the Drosophila Circadian Pacemaker*
Major(s): Biochemistry
Mentor(s): Bridget Lear (Biology)

66 - William Narhi
*Quality of Life in Long-term Advanced Stage Ovarian Cancer Survivors*
Major(s): Psychology
Mentor(s): Susan Lutgendorf (Psychological and Brain Sciences and Obstetrics and Gynecology and Urology)
44 - Victoria Johnson
Assessing Contemporary Models of Post-colonial and Transnational Themes and Ideologies
Major(s): English
Mentor(s): Claire Fox (English)

46 - Tamar Kavlashvili
Inverse relationship between Myc and Progesterone Receptor in Endometrial Cancer
Major(s): Biology
Mentor(s): Shujie Yang and Kimberly K Leslie (Obstetrics/Gynecology)

48 - Nick Koehn
Longitudinal Analysis and Comparison of Four Mathematical Prediction Models of Solitary Pulmonary Nodules Imaged on CT
Major(s): Human Physiology
Mentor(s): Jessica Sieren (Biomedical Engineering - Radiology)

50 - Kathryn Langenfeld
Stable Isotope Enabled Pathway Elucidation of 2,4-Dinitroanisole Metabolized by Rhizobium lichtii
Major(s): Environmental Engineering and Mathematics
Mentor(s): Craig Just (Civil and Environmental Engineering)

52 - Lincoln Lewerke
Regulation of RsiV Cleavage by Signal Peptidase: A Role of the Signal Peptide
Major(s): Microbiology
Mentor(s): Craig Ellermeier (Microbiology)

54 - Zoe Linn
Inter-rater Reliability of Novice and Expert Listener Judgments in Identification of Deviant Speech Characteristics in Patients with Parkinson's Disease after Deep Brain Stimulation
Major(s): Communication Sciences and Disorders
Mentor(s): Karen Bryant (Communication Sciences and Disorders)

59 - Anya Kim
The Effects of Adenosine on Microglial Cell Death in Simulated Ischemia (Oxygen Glucose Deprivation)
Major(s): Neurobiology, Spanish
Mentor(s): Michael Dailey (Biology/Neuroscience)

61 - Ryan Kunkle
Hanc [Animam] Tu Exerce Optimis In Rebus: Cicero's Use of a Platonic Rhetorical Framework to Provide a Spiritual Justification of His Political Philosophy
Major(s): History
Mentor(s): Rosemary Moore (History/Classics)

63 - Yiman Lyu
E-beam mode creating and ALD size shrinking efficiency
Major(s): Mechanical Engineering
Mentor(s): Aju Jugessur (University of Iowa Micro Fabrication)

65 - Sophia Mallaro
Protecting People and the Planet By Reducing Wood Consumption for Cooking
Major(s): Computer Engineering
Mentor(s): H.S. Udaykumar (Mechanical and Industrial Engineering)

67 - Alexis Miller
Probing caspase-1 with cardiolipin
Major(s): Biomedical Engineering
Mentor(s): Fayyaz Sutterwala (Internal Medicine)

69 - Zachary Miller
Provenance of Pennsylvanian Aged Strata from the Appalachian Foreland Basin in Eastern Pennsylvania and Western Maryland
Major(s): Geoscience
Mentor(s): Emily Finzel (Earth and Environmental Science)
71 - Ben Olson  
*Physiological Indicators of Projection Bias*
Major(s): Math and Economics  
Mentor(s): Bill Hedgcock (Marketing)

32 - Roxanne Dudovitz / Shawna Dudovitz  
*[2+2] Photocycloaddition of a Common Anti-Cancer Drug in the Solid State*
Major(s): Health and Human Physiology / Health and Human Physiology  
Mentor(s): Leonard Macgillivray (Chemistry)

73 - Angela Olvera  
*The Role of AMPK on Fibroblast Growth Factor 21 Induction in Energy-Stressed Muscle Cells*
Major(s): Biomedical Engineering  
Mentor(s): Renata Pereira (Internal Medicine) and Satya Tadinada (Pharmacology)

34 - Taylor Finch  
"Powerless, with a Guitar": *Music and Student Protest at the University of Iowa 1965-1971*
Major(s): History  
Mentor(s): Landon Storrs (History)

75 - Jordan Perez  
*Preliminary findings on complementary functions of ULK1 and ULK2 proteins in skeletal muscle autophagy*
Major(s): Health and Human Physiology  
Mentor(s): Vitor Lira Ph.D (Health and Human Physiology) and Meaghan Rowe-Johnson (Iowa Bioscience Academy)

36 - Timothy Fuqua  
*Decoding Notch-target Enhancers in Drosophila Melanogaster*
Major(s): Biology - Genetics and Biotechnology  
Mentor(s): Albert Erives and Elizabeth Stroebele (Biology)

77 - Thomas Peterson  
*Off-Plane X-Ray Reflection Grating Fabrication*
Major(s): Physics, Astronomy, and Math  
Mentor(s): Randall McEntaffer (Physics and Astronomy)

38 - Amanda Harwood  
*Streamlining Stage Management with a New Kind of Database*
Major(s): Theatre  
Mentor(s): Melissa Turner (Theatre Arts)

79 - Natalie Ross  
*Enhancing Toxicity in Breast and Lung Cancer Cells with DPEN via Mechanisms of Hydrogen Peroxide Production*
Major(s): Biomedical Engineering  
Mentor(s): Douglas Spitz and Melissa Fath (Radiation Oncology)

40 - Elizabeth Helfenberger  
*B-tagging at ATLAS: Data and Monte Carlo Comparison*
Major(s): Physics, Math  
Mentor(s): Usha Mallik (Physics)

81 - Monisa Saravanan  
*Molecular Effects of Prenatal Stress on Mitochondrial DNA in Developing Basal Ganglia and Cortex*
Major(s): Human Physiology  
Mentor(s): Hanna Stevens (Psychiatry)

42 - Jacob Isbell  
*Simulating Particle Motion in the Magnetosphere of Europa*
Major(s): Physics, Astronomy  
Mentor(s): Jasper Halekas (Physics and Astronomy)
20 - Alyssa Cady
Perception of Role Of Genetics And Running In The Family In People With A Family History Of Type 2 Diabetes
Major(s): Biology, Genetics and Biotechnology Track
Mentor(s): Sandra Daack-Hirsch (College of Nursing)

22 - Sarah Camp
Taxonomy and distribution of insect specimens in UIMNH collections
Major(s): BFA Painting
Mentor(s): Cindy Opitz (UI Museum of Natural History)

24 - Yingyi Chang
Body Accessibility Towards Different Targets in the Current Society
Major(s): Psychology B.S. & Communication Studies B.A.
Mentor(s): Steve Duck (Communication Studies)

26 - Christopher Cozzolino
Caught in the Thick of It: Determining Microrheological Mucus Properties from Porcine Cystic Fibrosis Models
Major(s): Biochemistry/Pre-Pharmacy/Pre-Law
Mentor(s): Mahmoud Abou Alaiwa and David Stoltz (Internal Medicine)

28 - Jenna DeCata
Investigating the Role of Srs2 Helicase in Break-induced Replication (BIR)
Major(s): Biology; Genetics and Biotechnology
Mentor(s): Anna Malkova (Biology)

30 - Kenneth Dofner
Racial Consciousness in the Iowa Territory and Its Impact on the Potawatomi People
Major(s): History/Political Science
Mentor(s): Stephen Warren and Jeffrey Cox (History)

83 - Brett Schneider
Left Temporal Pole as a Bidirectional Convergence Zone in Proper Naming
Major(s): Psychology and Biology (Neurobiology Track)
Mentor(s): Daniel Tranel (Psychology)

85 - Hannah Shows
Regulation of LPL Activity by ANGPTL3 and ANGPTL8
Major(s): Biochemistry
Mentor(s): Brandon Davies (Biochemistry)

87 - Jeremy Skeens
Functional Analysis of Ceramic Sherds from Woodpecker Cave
Major(s): Anthropology
Mentor(s): James Enloe (Anthropology)

89 - Paul Taufalele
Loss of Mitochondrial Pyruvate Carrier in Cardiomyocytes Leads to Cardiac Hypertrophy and Heart Failure
Major(s): Biomedical Engineering
Mentor(s): Dale Abel and Yuan Zhang (Internal Medicine)

91 - Caroline Wadman
A Dangerous Toy: All-Terrain Vehicle (ATV)-Related Deaths and Injuries
Major(s): Psychology
Mentor(s): Gerene Denning (Emergency Medicine)

93 - Abigail Weaver
Establishing an Institution: The Public Library Movement in Iowa 1900-1920
Major(s): History
Mentor(s): Tyler Priest (History)
95 - Kasra Zarei
Detailed Movement Pattern Analysis of Tadpole Swimming to Monitor the Effects of Ear/Gravity-Sensing Manipulations
Major(s): Biomedical Engineering
Mentor(s): Bernd Fritzsch (Biology) and James Buchholz (Mechanical and Industrial Engineering)

97 - Danielle Zwiefelhofer
Factors Associated with end-of-life care in Huntington’s disease
Major(s): Biology: Genetics and Biotechnology
Mentor(s): Nancy Downing (Nursing)

5:30-6:30PM Presenters
(even numbers only)

2 - Monica Ahrens
The Consequences of Cluster Randomization in Phase III Clinical Trial Interim Analyses
Major(s): Mathematics
Mentor(s): Eric Foster (Biostatistics)

4 - Seima Al-Momani
Acute Effects of Moderate Intensity Aerobic Exercise on Brain Function during a Working Memory Task
Major(s): Psychology/ Pre-Medicine
Mentor(s): Timothy Weng (Department of Psychological and Brain Sciences)

6 - Maya Amjadi
Ectosomes from human neutrophils laden with Staphylococcus aureus induce a pro-inflammatory response in macrophages
Major(s): Biology, Spanish
Mentor(s): William M Nauseef and Mallary Greenlee-Wacker (Internal Medicine)

8 - Madelyn Andree
Rediscovering Asadata Dafora Through Spatiality
Major(s): Dance, Journalism
Mentor(s): Rebekah Kowal (Dance)

10 - Alec Archer
Automatic Accelerometer Calibrator
Major(s): Electrical Engineering
Mentor(s): Anton Kruger (Electrical and Computer Engineering)

12 - Amin Bagheri
The Illusion of Religious Ignorance
Major(s): History, Philosophy
Mentor(s): Catherine Komisaruk (History)

14 - Brady Behling
Ewing Sarcoma Tumors and the High Expression Levels of the Neuropeptide Y Receptor Y1 (NPY1R)
Major(s): Human Physiology
Mentor(s): David Gordon (Pediatric Hematology/Oncology)

16 - Kathryn Brown
Perceiving and Acting on Joint Affordances: How Children Cross Roads Together
Major(s): Psychology
Mentor(s): Jodie Plumert (Psychological and Brain Sciences)

18 - Andrea Caceres
A Finite Element Analysis of the Effect of Glenoid Version on Scapular Notching in Reverse Shoulder Arthroplasties.
Major(s): Biomedical Engineering
Mentor(s): Donald Anderson (Orthopedic Biomechanics)