The 5th Annual
Fall Undergraduate Research Festival

Wednesday, December 3, 2014
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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95 - Expression and Kinetic Studies of Formate Dehydrogenase mutant from Candida boidinii
Presenter: Hepeng Ye
Major: Pre-Pharmacy
Mentor: Qi Guo (Chemistry)

96 - Retinal Neurodegeneration Precedes Vasculature Loss in the Disease Mechanism of Diabetic Retinopathy
Presenter: Kasra Zarei
Major: Biomedical Engineering
Mentor: Michael Abramoff (Ophthalmology)

97 - Open City: Researching public arts infrastructure
Presenters: Claire Rosen and Sophie Katz
Majors: Anthropology, Linguistics, Art History / English, Psychology
Mentors: Tom Keegan & Matt Gilchrist (Rhetoric)
*presentation located on east end of atrium, near OVPRED office*

98 - The Peoples' Weather Map
Presenter: Nate Otjen
Majors: English, Anthropology
Mentor: Barbara Eckstein (English)
*presentation located on west end of atrium, near School of Music office*
The Fall Undergraduate Research Festival is proud to showcase nearly 100 visual presentations given by the University of Iowa’s student researchers.

These students work in over 30 different departments and represent each of the senior, junior, sophomore, and freshman classes.

Students have been asked to stand by their posters for either the first or second hour, and then are free to visit their fellow presenter’s posters during the other hour.

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

We hope that you enjoy talking with these outstanding students and will see you again in April for the Spring Festival!

A program with full abstracts is 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 2015
- Distinguished Mentor Award – March 2015
- ICRU Research Fellows Applications Due — March 2015
- Research in the Capitol – March 2015
- Spring Undergraduate Research Festival (SURF) – April 2015
List of Presenters

1 - Effect of Temperature on Water Displacement Coefficients of Glucose in Water
Presenter: Martin Aguilera
Major: Biochemistry
Mentor: Mark Arnold (Chemistry)

2 - Sedimentology and provenance of Middle-Late Pennsylvanian strata from the Appalachian Foreland Basin in Western Maryland
Presenter: Daniel Alberts
Major: Geoscience
Mentor: Emily Finzel (Earth and Environmental Science)

3 - Affects of Mediator Complex in High Fat Diet and Exercise Through Gene Expression
Presenter: Adrianne Alexia
Majors: Biochemistry, Interdepartmental Studies Business Track
Mentors: Chad Grueter & Duane Hall (Internal Medicine)

4 - Ectosomes from human neutrophils laden with Staphylococcus aureus induce a pro-inflammatory response in macrophages
Presenter: Maya Amjadi
Majors: Biology, Spanish
Mentor: William Nauseef (Internal Medicine)

5 - Lef1 Over-expression Increases Submucosal Gland Density in Mouse Trachea.
Presenter: Preston Anderson
Majors: Biochemistry, Human Physiology
Mentor: John Engelhardt & Tom Lynch (Anatomy and Cell Biology)

82 - Vascular Perfusion Fixation for the Validation of Quantitative CT Metrics
Presenter: Nick Stoyles
Major: Human Physiology
Mentor: Jessica Sieren (Radiology)

83 - Myxococcus xanthus Secondary Metabolite Production Involved in Predator-Prey Interaction
Presenter: Sarah Strack
Major: Microbiology
Mentors: John Kirby (Microbiology)

84 - Candidate Neural Crest Elements in the Neural-Crest Gene Regulatory Network
Presenter: Leslie Symonds
Major: Biology – Genetics and Biotechnology
Mentors: Robert Cornell and Gregory Bonde (Anatomy & Cell Biology)

85 - Assessment of Test-Retest Reliability and Age Differences of A Spatial Pattern Separation Task
Presenter: Asli Tahan
Major: Psychology
Mentor: Michelle Voss (Psychology)

86 - Tempskya Fern Fossil From Floyd County, Iowa Confirm a Mid-Cretaceous (Albian-Cenomanian) Age for the Windrow Formation
Presenter: Audrey TeRonde
Major: Geoscience
Mentor: Hallie Sims (Earth and Environmental Science)

87 - Finite Element Analysis of Stemmed Total Ankle Replacement
Presenter: Jocelyn Todd
Major: Biomedical Engineering
Mentor: Jess Goetz (Orthopaedic Biomechanics Research Laboratory)

88 - Investigation of Calcineurin absorbance relative to p-Nitrophenyl Phosphate concentration and the effects of Single-site mutations
Presenter: Brandon Uribe
Major: Biomedical Engineering
Mentor: Madeline Shea (Biochemistry)
75 - What makes the risk for T2DM matter to people who have a positive family history?  
**Presenter:** Brenda Rocha  
**Major:** Nursing  
**Mentor:** Sandra Daack-Hirsch (Nursing)

6 - "Does Calmodulin Recognize a Site in the NTD of Human Voltage-Dependent Sodium Channels?"  
**Presenter:** Corinne Andresen  
**Major:** Biomedical Engineering  
**Mentor:** Madeline Shea (Biochemistry)

76 - Co-Segmentation in Medical Imaging  
**Presenter:** Hannah Rochford  
**Major:** Physics  
**Mentor:** Yusung Kim (Radiation Oncology)

7 - Inducer Interplay Synergistically Expands Cis-Activating Pathways in reactivating CMV MIE Gene  
**Presenter:** Saad Ansari  
**Majors:** Human Physiology, Psychology  
**Mentor:** Jeffery Meier (Internal Medicine) & Jinxiang Yuan (Veterans Affairs Research and Development)

77 - Dietary therapy for a Fruit Fly Mutant with Epilepsy and Sleep Abnormality  
**Presenter:** Kristy Sakurai  
**Major:** Health and Human Physiology  
**Mentors:** Toshihiro Kitamoto & Daniel Tranel (Neuroscience)

**Presenter:** Catherine Babikian  
**Majors:** History, Anthropology  
**Mentor:** Jeffery Cox (History)

78 - Producing Famous Melodies Through Name Recognition: Role of the Left Temporal Pole  
**Presenter:** Brett Schneider  
**Majors:** Biology, Psychology  
**Mentor:** Amy Belfi (Neuroscience)

9 - Achieving Monodispersity among Sub-micrometer silica particles  
**Presenter:** John Baer  
**Majors:** Chemistry, Biochemistry  
**Mentor:** Sarah Larsen (Chemistry)

79 - Interactions of ANGPTL3 With LPL/GPIHBP1 Complexes  
**Presenter:** Hannah Shows  
**Major:** Biochemistry  
**Mentor:** Brandon Davies (Biochemistry)

10 - The Aesthetics of Dante Gabriel Rossetti’s Virtuous and Fallen Women  
**Presenter:** Isabel Baldrich  
**Major:** Art History  
**Mentor:** Andrew Shelton & Sarah Falls (Ohio State University)

80 - In Dangerous New Light  
**Presenter:** Jamie Simpher  
**Majors:** English, Marketing  
**Mentors:** Brooks Landon (English)

11 - Inter-rater Validation of Safety Behavior of OHV Riders  
**Presenter:** Ellis Baranow  
**Majors:** Neurobiology, Russian  
**Mentors:** Charles Jennissen & Gerene Denning (Emergency Medicine)

81 - Anti-sense Oligo Mediated Knockdown of Maternal Frizzled Expression  
**Presenter:** Sarah Smith  
**Major:** Biology  
**Mentors:** Douglas Houston (Biology) & Melissa Marchal (Genetics)
12 - Finite Element Analysis of Train Wheel and Rail Contact
Presenter: Megan Bathel
Major: Mechanical Engineering
Mentor: Hiroyuki Sugiyama (Mechanical Engineering)

13 - Emotion versus Logic in Decision Making
Presenter: Carl Beranek
Major: Biomedical Engineering
Mentor: William Hedgcock (Marketing)

14 - "Here is Why I Love the Fight:" Gender, Labor, and Family in the Letters of Pearl McGill
Presenter: Sylvia Bochner
Majors: History, English
Mentor: Landon Storrs

15 - Statically Verifying Soundness of Rewriting-based Parsers in Agda
Presenter: John Bodeen
Major: Computer Science
Mentor: Aaron Stump (Computer Science)

16 - Fighting a War on Two Fronts: Gurkhas in Military and Legal Battles
Presenter: Jacob Bourgeois
Major: History
Mentor: Jeffery Cox (History)

17 - Feeding Prehistoric Iowa: Butchery, breakage, and reanalysis of faunal remains from Woodpecker Cave
Presenter: Tyler Buck
Major: Anthropology
Mentor: James Enloe (Anthropology)

18 - Vinculin Activators Sensitize Melanoma to Chemotherapeutics
Presenter: Gabrielle Bui
Major: Biochemistry
Mentor: Kris DeMali (Biochemistry)

68 - Impact of Temperature on Maintaining Alternate Chromosome Forms within Drosophila Americana
Presenter: Dzavid Pandzic
Majors: Biology, Human Physiology
Mentor: Bryant McAllister (Biology)

69 - The effects of mutations in Mafb and Arhgap29 on palatogenesis
Presenter: Bryan Paul
Major: Human Physiology
Mentor: Martine Dunnwald (Pediatrics)

70 - The effects of mutations in Mafb and Arhgap29 on palatogenesis
Presenter: Hannah Philgreen
Majors: International Relations, French
Mentor: Brian Lai (Political Science)

71 - The role of property-property mappings on cognitive flexibility
Presenter: Daniel Plebanek
Majors: Psychology, Linguistics
Mentor: Larissa Samuelson (Psychology)

72 - Recycling while Reinventing
Presenter: Katherine Posten
Major: Printmaking
Mentors: Anita Jung (Studio Arts—Printmaking)

73 - Calcium signaling in fetal heart development: Enzyme kinetics of Calcineurin (CaN) regulated by Wild-Type (WT) and mutant Calmodulin (CaM)
Presenter: Michael Rendleman
Major: Biomedical Engineering
Mentor: Madeline Shea (Biochemistry)

74 - Methodology Validation of Using Motion-Activated Cameras to Estimate Off-Highway Vehicle Park Census Data and Evaluate Rider Safety Behaviors
Presenter: Emily Robinson
Major: Human Physiology
Mentor: Charles Jennissen & Gerene Denning (Emergency Medicine)
61 - Genetic Diversity of Rhagoletis suavis in urban and agricultural Johnson County, IA  
**Presenter:** Gocale Nicoue  
**Major:** Environmental Science  
**Mentor:** Amanda Nelson (Biology)

62 - Evolutionary History and Dynamics of Polyomaviruses  
**Presenter:** Daniel Nielsen  
**Majors:** Biology, Political Science  
**Mentor:** Andrew Kitchen (Anthropology)

63 - Adherence to the Updated Guidelines for the Prevention of Perinatal Group B Streptococcal Disease  
**Presenter:** Taryn Nishimura  
**Majors:** Human Physiology, Music  
**Mentor:** Donna Santillan (Obstetrics and Gynecology)

64 - Kinetic Experiments of Calcineurin Enzymatic Activity and Effects of Mutation in Calmodulin Binding Domain  
**Presenter:** Maria Nunez Hernandez  
* presents during first hour*  
**Major:** Biochemistry  
**Mentor:** Madeline Shea (Biochemistry)

65 - Mechanism of Na/K-ATPase function in Drosophila Hearing  
**Presenter:** Bisola Omoba  
**Major:** Neurobiology  
**Mentor:** Daniel Eberl (Biology)

66 - Moral Roles: When the Situation Tells Us Right from Wrong  
**Presenter:** Jon Overton  
**Majors:** Sociology, Ethics and Public Policy  
**Mentor:** Michael Lovaglia (Sociology)

67 - How Much Information is in the X-ray Spectrum of Capella?  
**Presenter:** Tyler Page  
**Majors:** Physics, Astronomy, Math  
**Mentor:** Kenneth Gayley (Physics and Astronomy)
25 - Assessment of Biological Activity in Various Drinking Water Sources in Kobriti, Ghana
Presenter: Flora Duff
Major: Environmental Engineering
Mentor: Craig Just (Civil & Environmental Engineering)

26 - A Yeast Two Hybrid Screen for Interactions with C. elegans MRE-11
Presenter: Katherine Dvorak
Major: Health and Human Physiology
Mentors: Sarit Smolikove & Robert Malone (Biology)

27 - Genetic Mutation in NHE1 Mice Causing Anophthalmia or Other Abnormalities of the Eye
Presenter: Samantha Ellingson
Major: Human Physiology
Mentor: Markus Kuehn (Ophthalmology and Visual Sciences)

28 - Preferences Towards the use of Patient Education Devices in Dentistry
Presenter: Callie Espanto
Major: Health and Human Physiology
Mentor: Michelle McQuistan (Preventative and Community Dentistry)

29 - Impact of Anatomical Changes on Pelvic Proton Therapy Dose Distributions
Presenter: Nicole Felderman
Major: Biomedical Engineering
Mentor: Dongxu Wang (Radiation Oncology)

30 - Extraction of Radiogallium with Polyether Sulfone Filters
Presenter: Lindsay Floryance
Major: Biochemistry
Mentor: Michael Schultz (Radiology)

55 - Aortic Dissection-Causing Actin Mutation D24Y Impairs Actomyosin Function
Presenter: Sarah Mayer
Majors: Biochemistry, Spanish
Mentor: Dan Weeks (Biochemistry)

56 - Insulin Receptor Substrate (IRS) Signaling Preserves Contractile Function and Structure in the Adult Heart
Presenter: Nicholas McCarty
Major: Microbiology
Mentors: E. Dale Abel (Internal Medicine)

57 - A Ground Station for CubeSat Operations
Presenter: Ross McCurdy
Majors: Physics, Astronomy
Mentor: Philip Kaaret (Physics and Astronomy)

58 - Using Geographical Information Systems to Map Community Solar Arrays in Iowa City
Presenter: Chloe McGuire Brigl
Majors: Environmental Planning, Philosophy
Mentors: Marc Linderman & David Bennett (Geographical and Sustainability Science)

59 - Data Analysis Software Helps Space Plasma Physics Research Team Analyze Radiation Belts
Presenter: MacKenzie McLouth
Major: Industrial Engineering
Mentor: Craig Kletzing (Physics)

60 - Effects of Lateralization on Impingement in Reverse Shoulder Arthroplasty
Presenter: Jessica Mosqueda
Major/Minor: Mechanical Engineering
Mentor: Don Anderson (Orthopedics)
49 - Toward Patient Specific Models of Proteins Mutated in Cancer
Presenter: Mallory Keeny
Major: Biomedical Engineering
Mentor: George Weiner (Holden Comprehensive Cancer Center) & Michael Schnieders (Biochemistry)

50 - The University of Iowa Piano Pedagogy Project
Presenter: Caroline Krause
Major: Piano Performance
Mentor: Alan Huckleberry (Music—Piano)

51 - Mechanism of induced resistance to fluid shear stress in transformed cells
Presenter: Ben Krog
Major: Biomedical Engineering
Mentor: Michael Henry (Molecular Physiology and Biophysics)

52 - Scientific Knowledge and the Role of Self-Presentation in Roman Generalship
Presenter: Ryan Kunkle
Major: History
Mentors: Rosemary Moore (History)

53 - A Faraday Rotation Study of the Galactic Center Radio Arc
Presenter: Erin Maier
Majors: Astronomy, Physics
Mentors: Cornelia Lang (Physics and Astronomy)

54 - Developing a Method to Examine Decision Making in Novel Noun Generalization
Presenter: Jordan Mattis
Majors: Psychology, Communication Science and Disorders
Mentors: Larissa Samuelson (Psychology)

31 - Unkempt and the DWME Enhancer Expression in Drosophila Wing Development
Presenter: Timothy Fuqua
Major: Biology
Mentor: Albert Erives & Elizabeth Stroebele (Biology)

32 - Dancing Between the Lines: Locating Jewish-American Dance Between 1930 and 1950
Presenter: Irina Glass
Major: Dance
Mentors: Rebekah Kowal (Dance)

33 - Intergroup Compassion Fade: the relationship between compassion and racial attitudes
Presenter: Yu Han
Major: Psychology
Mentor: Daryl Cameron (Psychology)

34 - Leader power and group decisions: a study on decision rules
Presenter: Nicolas Harder
Majors: Sociology, Political Science
Mentor: Michael Lovaglia (Sociology)

35 - Supernova Remnants in Inhomogeneous Media: An Observational Perspective
Presenter: Kenny Heitritter
Major: Physics, Astronomy, & Mathematics
Mentor: Randall McEntaffer (Physics and Astronomy)

36 - Slovak Questions and Communist Answers: Czechoslovak Reactions to Slovak Nationalism Following the Prague Spring of 1968
Presenter: Quinn Hejlik
Majors: History, International Studies
Mentor: H. Glenn Penny (History)
37 - Spatiotemporal variations of airborne Polychlorinated Biphenyls (PCBs) in the Metropolitan Chicago area.
**Presenter:** Nicholas Herkert
**Major:** Civil and Environmental Engineering
**Mentor:** Keri Hornbuckle (Civil and Environmental Engineering)

38 - Does the Sexual Relevance of the Social Environment Potentiate Men’s Perceptions of Women’s Sexual Interest?
**Presenter:** Hannah Hinkel
**Major:** Psychology
**Mentor:** Teresa Treat (Psychology)

39 - Roles of reciprocals: A Favor For a Favor
**Presenter:** Brandon Hollie
**Major:** Psychology

40 - Recruitment of Calmodulin to the Tail of the Voltage-Gated Sodium Channel NaV1.2
**Presenter:** Liam Hovey
**Majors:** Physics, Chemistry
**Mentor:** Madeline Shea (Biochemistry)

41 - Energy and Climate Considerations for Small-Scale Aquaponics
**Presenters:** Kara Hoving & Alora Kraus
**Majors:** Engineering / Biochemistry
**Mentor:** Craig Just (Civil and Environmental Engineering)

42 - Understanding the DNA binding properties of a multi-zinc finger transcription factor Su(Hw)
**Presenter:** Yunyue Huang
**Major:** Biochemistry
**Mentors:** Pamela Geyer (Biochemistry)

43 - OMA1 dependent OPA1 processing is triggered by palmitate treatment
**Presenter:** Greg Jenson
**Major:** Biochemistry
**Mentors:** Kensuke Tsushima (Internal Medicine) & E. Dale Abel (Endocrinology)

44 - Leaders Incentives and the Dynamics of Civil War
**Presenter:** Ha Young Jeong
**Major:** International Relations
**Mentor:** Alyssa Prorok (Political Science)

45 - Accelerating the Animation Pipeline: Animating in Motion Graphic Software with 3D-Modeled Environments
**Presenter:** Jared Jewell
**Major:** Intermedia — Drawing
**Mentor:** Peter Chanthanakone (Art and Art History)

46 - The Fate of Radium in Unconventional Drilling Liquid Waste
**Presenter:** Adam Johns
**Major:** Chemical Engineering
**Mentor:** Tori Forbes (Chemistry)

47 - Restoration of functional von Willebrand Factor levels in von Willebrand Disease through Piggy-bac mediated gene therapy
**Presenter:** Blake Johnson
**Major:** Human Physiology
**Mentor:** Janice Staber (Pediatrics)

48 - Laboratory Quality Assurance and Control Study for Polychlorinated Biphenyl (PCB) Analites in DE and PUF media
**Presenter:** Brock Kamrath
**Major:** Environmental Engineering
**Mentor:** Keri Hornbuckle (Civil and Environmental Engineering)