2015 Summer Undergraduate Research Symposium

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2015 SUMMER UNDERGRADUATE RESEARCH SYMPOSIUM

JULY 31, 2015
SEERLEY HALL

Featuring
Robert G. Good, D.O., F.A.C.O.I., UNI Biology ’74;
Des Moines University, College of Osteopathic Medicine

INFLUENCING THE FUTURE THROUGH RESEARCH
A message from Dr. John Fritch,
INTERIM DEAN, COLLEGE OF HUMANITIES, ARTS AND SCIENCES

Welcome to the Summer Undergraduate Research Symposium!

Today recognizes and celebrates the work of UNI undergraduate researchers this summer. We, as a college, are exceptionally proud of the work of these students. While many students are working at odd jobs to earn money over the summer and some are enjoying their time off from classes, these students are putting forth hours of work to develop themselves through hands-on research in a laboratory setting. Their summers have been filled exploring questions in which they are interested and working closely with UNI faculty. They have learned a variety of lessons: how to formulate questions, how to develop answers to those questions, how to work with faculty and peers, and how to break (and repair) instrumentation. Today we celebrate the work of these students, and we thank those who made their work possible. Many of the students are supported by generous gifts from alums and friends of UNI; others are supported by the hard-earned grants of the faculty with whom they work. I am grateful to the donors and faculty for their support of these students.

Please enjoy the day.
CONFERENCE SCHEDULE

11:00am  Welcome

Dr. John Fritch,
Interim Dean,
College of Humanities, Arts and Sciences

11:15am  Keynote

Dr. Robert Good, D.O, F.A.C.O.I.
UNI Biology, ‘74; Des Moines University College of Osteopathic Medicine

“Influencing the Future Through Research”

Dr. Good graduated from the UNI Biology program in 1974, then attended Des Moines University College of Osteopathic Medicine. Today he is a Senior Associate Medical Director at the Carle Foundation/Carle Physician Group and is an instructor at the Department of Internal Medicine at the University of Illinois College of Medicine.

12:00pm – 1:30pm  Exhibit of Posters and Lunch

Seerley Great Reading Room
(1) **ASHLEY ARMANTROUT**, JESSICA L. BOWSER, CARL L. THURMAN AND RUSSELL R. BROADDUS* (*THE UNIVERSITY OF TEXAS MD ANDERSON CANCER CENTER) (BIOLOGY)

*Actions of Transforming Growth Factor-β on Endometrial Cancer Cell Migration and Invasion: Is CD73 the Balance Between Tumor Suppressor and Pro-Metastatic Factor?*

(2) **SARAH FREELAND** AND NATHAN C. BIRD (BIOLOGY)

*The Effect of Temperature on Somite Formation and Skeletal Development*

(3) **MARIA A. JAMIE** AND MARK SHERRARD (BIOLOGY)

*Does Community Diversity Influence Natural Selection on Leaf Physiology?*

(4) **JARRETT JENSEN**, ANDREW RIDGWAY, AI WEN AND KENNETH ELGERSMA (BIOLOGY)

*Wild Bee Abundance and Diversity in Relation to Landscapes Surrounding Iowa Vegetable Farms*

(5) **BRANDON HOSKINS** AND MICHAEL WALTER (BIOLOGY)

*Isolation Methods and DNA Analysis of Small Bacteriophages of Bacillus Anthracis*

(6) **SARAH HUEBNER**, JORDAN YOUNG AND KENNETH ELGERSMA (BIOLOGY)

*Soil Respiration and Belowground Biomass in Restored Native Prairies*

(7) **RYAN LODE** AND MICHAEL WALTER (BIOLOGY)

*Protein Based Improvement of Methods for Isolation of Small Bacteriophages*

(8) **JOSE LOPEZ** AND JULIE KANG (BIOLOGY)

*Analysis of Ipomea (morning glory) Leaf Margins*
(9) **EMILY MEIER** AND **NATHAN C. BIRD** (BIOLOGY)

*Testing for Modularity in the Axial Skeleton of Fishes*

(10) **AUSTIN MEMMEN** AND **MARK SHERRARD** (BIOLOGY)

*Plant Nitrogen Use in Bioenergy Feedstocks*

(11) **BEN NETTLETON**, **ANDREW RIDGWAY**, **AI WEN** AND **KENNETH ELGERSMA** (BIOLOGY)

*Comparing Bee Abundance and Diversity in Candidate Biomass Crops*

(12) **GUSTAVO G. NOGUEIRA***, **DAVID MCCLENAHAN** AND **CARL THURMAN** (BIOLOGY) (**UNIVERSIDADE FEDERAL DE SERGIPE - ELECTRONIC ENGINEERING**)

*Effects of Lipopolysaccharide and Adenosine Triphosphate on Cultured Bovine Mammary Gland Transepithelial Resistance and Permeability*

(13) **LUCAS PIETAN** AND **JIM DEMASTES** (BIOLOGY)

*Minicircles and Heteroplasmy in the mtDNA of a Parasitic Insect*

(14) **WADE PINGEL** AND **LAURA JACKSON** (BIOLOGY & ECOLOGY)

*Effects of Chitosan Anti-fungal Seed Coating on Germination of Tallgrass Prairie Species, Asclepias Syriaca & Desmodium Canadense*

(15) **KELSEY SCHUMACHER**, **CARL THURMAN** AND **RENATA PLATENBERG*** (**UNIVERSITY OF VIRGIN ISLANDS-ST. THOMAS**) (BIOLOGY)

*Habitat Salinity and Substrate Preferences of Fiddler Crabs in St. Thomas, USVI*

(16) **ELIZABETH TURCOTTE** AND **NILDA RODRÍGUEZ** (BIOLOGY)

*Testosterone and Male Susceptibility in Leishmania infantum chagasi Infection*
(17) **ALISON R. WOLD** AND **MARK K. SLIWINSKI** (BIOLOGY)
*Cultivation of Archaea From Iowa Soil*

(18) **ZACHARY RYE**, **MARTIN CHIN**, AND **KAVITA DHANWADA** (CHEMISTRY AND BIOLOGY)
*Characterization of \([\text{Cp}_2\text{Ru}_2(\text{Phen})_2(\mu-\text{Cl})][\text{OTf}]\)* Diruthenium Complex and Determination of its Mechanism of Cell Death

(19) **JENNA GEICK** AND **JOHN BUMPUS** (CHEMISTRY AND BIOCHEMISTRY)
*The Characterization of Non-Cage Analogs of ONC and Cl-20.*

(20) **JENNA GEICK**, **TYLER MCCORMICK**, **ANGELA WEEPIE** AND **JOSHUA SEBREE** (CHEMISTRY AND BIOCHEMISTRY)
*GC/MS/MS Analysis of Astrobiologically Significant Aerosol: Hunting for Signs of Prebiotic Molecules*

(21) **COLLIN O’LEARY** AND **ERIC PETERSON** (CHEMISTRY AND BIOCHEMISTRY)
*The Stabilizing Effect of Phosphate Against Guanidine Denaturization of Cytochrome c*

(22) **JESSICA WAYSON**, **SARAH BOESDORFER** AND **DAWN DEL CARLO** (CHEMISTRY AND BIOCHEMISTRY)
*Impact of Research Experiences on Secondary Science Teachers’ Teaching Beliefs and Practices*

(23) **ANGELA WEEPIE** AND **JOSHUA SEBREE** (CHEMISTRY AND BIOCHEMISTRY)
*Characterization of Titan Analog Aerosols*
(24) **CAITLIN KELLY AND CHAD HEINZEL (EARTH SCIENCE)**

  *Eastern Iowa Lithics and their Effects on Oneota Culture*

(25) **KATHRYN PATRICK AND ALEXA SEDLACEK (EARTH SCIENCE AND ENVIRONMENTAL SCIENCE)**

  *Linking Biosphere Changes to Middle–Late Devonian Carbon Isotope Excursions of Eastern Iowa: Part One – Understanding Devonian Conditions and Stratigraphy*

(26) **COLE BOUDREAU, COVED OSWALD, SARAH DIESBURG AND ADAM FELDHAUS (COMPUTER SCIENCE AND MATHEMATICS EDUCATION)**

  *Design and Evaluation of Motion Virtual Manipulatives in Elementary Mathematics*

(27) **TAYLOR COULTER, HEATHER GALLIVAN AND JIHWAN NOH (MATHEMATICS)**


(28) **REBECCA HOLZRICHTER, SUZANNE RIEHL AND OLAF STEINTHORS-DOTTIR (MATHEMATICS EDUCATION)**

  *Proportional Reasoning in Middle School: Exploring Students’ Use of Labels*

(29) **LUCAS BEVING, MATTHEW FLEMING, PAUL M. SHAND (PHYSICS), TIMOTHY E. KIDD (PHYSICS) AND LAURA H. STRAUSS (CHEMISTRY AND BIOCHEMISTRY)**

  *Magnetic Properties of the Nanostructured Dichalcogenide Mn_{0.18} TaS_2*

(30) **PAYTON BURKEN AND TIMOTHY E. KIDD (PHYSICS)**

  *Device Formation in Nanostructured Layered Materials*
(31) **JOHN DANKER** AND TIMOTHY E. KIDD (PHYSICS)  
*Dr. Roboto: Labview Based Mobile Robotic Assistant*

(32) **BYRON FRITCH** AND TIMOTHY E. KIDD (PHYSICS)  
*Van der Waal Interactions in Ultrafine Nanocellulose Aerogels*

(33) **AMBER HARTNESS** AND TIMOTHY E. KIDD (PHYSICS)  
*Migration and Aggregation of Nanoparticles in Nanostructured Layered Materials*

(34) **RYAN HOLZAPFEL** AND TIMOTHY E. KIDD (PHYSICS)  
*Solar Powered Water Sterilization System*

(35) **ANDREW MILBRANDT** AND ALI TABEI (PHYSICS)  
*Studying the Properties of Hindered Diffusion*

(36) **KRISTINE NIELSEN** AND TIMOTHY E. KIDD (PHYSICS)  
*Wii Kart 2.0 – Microprocessor Based Go Kart Entertainment System*

(37) **JESSICA THATCHER** AND TIMOTHY E. KIDD (PHYSICS)  
*Solar Powered Automatic Irrigation System*
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