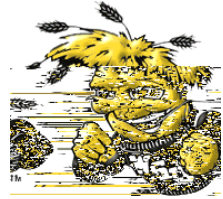


11<sup>th</sup> Annual  
Capitol Graduate  
Research Summit

February 13, 2014



Featuring Graduate Student Research from:

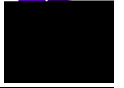
Kansas State University  
The University of Kansas  
The University of Kansas Medical Center  
Wichita State University

The Graduate Deans and Graduate Students of KU, KUMC, KSU and WSU wish to gratefully acknowledge the support and co-sponsorship of the Capitol Graduate Research Summit from the Kansas Bioscience Organization and its President and CEO, Angela Kreps.

# Presenters and Poster Titles

Kansas State University

---



**Megan Brown**

GREENHOUSE GAS FOOTPRINTS OF TWO NON-  
LEGUME COVER CROPS FOLLOWING WINTER  
WHEAT



<b>Emily Beck</b>	DECELLULARIZED CARTILAGE HYDROGELS FOR CARTILAGE TISSUE ENGINEERING
<b>Yufei Cheng</b>	ANALYZING GEODIVERSITY AND IDENTIFYING VULNERABILITIES IN OPTICAL NETWORKS
<b>Brittany Hartwell</b>	CELLULAR RESPONSE TO A NOVEL MULTIVALENT POLYMERIC IMMUNOTHERAPY FOR MULTIPLE SCLEROSIS
<b>Sharmin Kader</b>	DEVELOPMENT OF HOSPICE ENVIRONMENTAL ASSESSMENT PROTOCOL (HEAP): A POST OCCUPANCY EVALUATION TOOL FOR HOSPICE BUILDING FACILITIES
<b>Margaret Lloyd</b>	THE DISPARATE IMPACT OF ALCOHOL, METHAMPHETAMINE AND OTHER DRUGS ON FAMILY REUNIFICATION AFTER FOSTER CARE IN KANSAS
<b>Lindsey Ott</b>	BIOMATERIAL DEVICE FOR REPAIRING THE PEDIATRIC AIRWAY
<b>Cynthia L. Taylor &amp; Benjamin Rutt</b>	EVALUATION OF TEXT4BABY PROMOTIONAL EFFORTS IN FINNEY COUNTY AND STATE LEVEL REPLICATION
<b>Yan Xia</b>	DESIGNING INHIBITORS TARGETING RNA-BINDING PROTEIN MUSASHI-1







## **GREENHOUSE GAS FOOTPRINTS OF TWO NON-LEGUME COVER CROPS FOLLOWING WINTER WHEAT**

*Megan Brown, Peter J. Tomlinson, and Kraig Roozeboom*

*Department of Agronomy, Kansas State University*

Agriculture practices can affect the production of greenhouse gas emissions. Conflicting studies on the ability of cover crops to alter carbon and nitrogen (N) storage, reduce nitrogen losses and improve crop yields necessitate further study. One understudied loss mechanism is gasses losses of carbon and nitrogen. The objective of this study was to measure CO<sub>2</sub>, N<sub>2</sub>O, and CH<sub>4</sub> gas emissions from summer and winter non-legume cover crop and chemical fallow treatments planted after wheat. Field plots were established in 2007 at the Kansas State University Experiment Station in Riley County, Kansas to examine the use of different cover crops in a Soybean -Wheat/Cover Crop-Sorghum rotation, with a range of nitrogen fertilizer application rates applied at sorghum planting. Gas flux measurements were measured weekly from polyvinyl chloride (PVC) chambers constructed according to USDA-ARS GRACEnet Project Protocols. Two PVC rings 30-cm diameter 15 tall were installed in each plot to a depth of 10-cm, and used to support soil chambers during measurements. Flux measurements were taken by placing vented chambers on rings and collecting samples at 0, 15, 30, 45 min. Linear regression techniques were used to determine flux rates for each chamber and average flux rates for each treatment were



**ENCOURAGING THE ADOPTION OF *E. COLI* CONTROL AND PREVENTION STRATEGIES: ANALYSIS OF AN ONLINE TRAINING INTERVENTION**

*Joseph Chapes<sup>1</sup>, Mylissia Smith Tukey<sup>2</sup>, and Heidi Yonkey<sup>2</sup>*

*<sup>1</sup>A.Q. Miller School of Journalism, Kansas State University; <sup>2</sup>Public Health Program, Kansas State University*

This study explores the effectiveness of health communication strategies in the control and prevention of foodborne diseases. The theory of planned behavior is utilized to analyze an online video training intervention by identifying individual attitudes, norms, perceived behavioral control and intentions of adopting management strategies for *E. coli* among beef cattle producers (n=60). An online questionnaire was used to measure pre-video attitudes, norms, perceived behavior control and intentions regarding *E. coli* in the beef industry before allowing participants to watch an *E. coli* management training video. Next, the questionnaire measured perspectives on the video's content, favored sources for receiving educational information, as well as post-video attitudes, norms, perceived behavior control and intentions. The results showed significant positive changes in respondents' perceptions on *E. coli* and the advocated prevention strategies after viewing the video. Although most of them had not used previously used online training, they found the information disseminated easy to understand. Also, results demonstrated that while beef cattle producers primarily rely on periodicals or veterinarians for management information, many of them identified online sources as the preferred method to receive prevention-related training. Based on the findings of this study online training is an appropriate tool for encouraging the adoption of *E. coli* control strategies among beef cattle producers. The findings also suggest that there is an unmet demand for online training. Further research is, however, is needed to identify the barriers to using online training including accessibility as well as individual characteristics such as level of knowledge and self-efficacy.

**A NONLINEAR CONTROL SCHEME FOR EXTREMUM POWER SEEKING IN WIND TURBINE ENERGY CONVERSION SYSTEMS**

*Fariba Fateh<sup>1</sup>, Warren N. White<sup>2</sup>, and Don Gruenbacher<sup>1</sup>*

*<sup>1</sup>Department of Electrical and Computer Engineering, Kansas State University;*

*<sup>2</sup>Department of Mechanical and Nuclear Engineering, Kansas State University*

An adaptive control scheme for wind turbine systems has been developed. The role of the controller is to adaptively reach the maximum estimated power coefficient when the wind speed changes. The contribution of this work is that instead of using the dither signal used in previous works, the extremum seeking controller uses fluctuations in wind speed to adaptively maximize the output power. In the proposed control scheme, the wind turbine power coefficient is estimated using a Lyapanov-based adaptive control technique. The estimated power coefficient is used to determine a desired turbine rotor speed11(turb1d000005901 0 396 612 ren3mat)3(ed )-54(power )-520







**VALIDATION OF WASHING TREATMENTS TO REDUCE PATHOGENS IN  
FRESH PRODUCE**

***Keyla Lopez***<sup>1</sup>, ***Kelly J.K. Getty***<sup>1</sup>, and ***Christopher I. Vahl***<sup>2</sup>

<sup>1</sup>*Food Science Institute, Kansas State University;* <sup>2</sup>*Department of Statistics,  
Kansas State University*

Many fresh produce outbreaks are the result of *Salmonella* and *Escherichia coli* O157:H7 contamination due to growing conditions or human handling. The purpose of this study was to determine the efficacy of a commercial wash solution for reducing



**STUDY OF THE FEASIBILITY OF USING COMBINED GLASS PARTICLE  
SIZES AND TYPES IN CONCRETE AS PARTIAL CEMENT REPLACEMENT**

*Mohammadreza Mirzahosseini and Kyle A. Riding*  
*Department of Civil*









**EVALUATION OF TEXT4BABY PROMOTIONAL EFFORTS IN FINNEY  
COUNTY AND STATE LEVEL REPLICATION**

*Cynthia*



## THE OPPORTUNITY TO ACT LIKE A NURSE: A QUALITATIVE ANALYSIS OF PERCEIVED IMPACT OF SIMULATION ON PROFESSIONAL ROLE TRANSITION

*Cara Busenhart, MSN, APRN, CNM<sup>1</sup>, Shirley Waugh, MSN, RN<sup>1</sup>, Mary Meyer, MS, RN, APRN<sup>1</sup>, Karen Groller, MSN, RN-BC, CMSRN<sup>1,2</sup>, Sarah Meyers, MS, APRN, CCRN<sup>1</sup>, and Kristin Stegenga, PhD, RN<sup>1,3</sup>*

<sup>1</sup>*School of Nursing, University of Kansas;* <sup>2</sup>*Department of Nursing, Moravian College;* <sup>3</sup>*Mercy Hospital*

Simulation based training provides healthcare students opportunities to practice in an environment where patients are not at risk. Additionally simulation allows for low-risk, low-frequency care situations. Simulation is used to augment traditional learning and address gaps in what is known about learning transfer. This study aimed to describe nurses' perceptions of the experience of simulation and its' impact on learning and professional role transition. This descriptive qualitative study used content analysis and semi-structured interviews with new nurses from two geographical locations in the United States including Kansas. The study explored the impact of simulation on skill development for clinical practice and identified challenges and benefits of simulation from the learner perspective. A metaphor of simulation as theatrical play with three underpinning themes emerged. In Theme 1: *Setting the Stage*, participants described the components of simulation to include how the stage was set, the acting roles, and efforts made to achieve realism. Theme 2: *The Performance*, described how the RNs viewed simulation participation within four sub-themes: *The Performance*, *Some Actors Have Stage Fright*, *Acting Like a Nurse*, and *The Audience (Observer Role)*. In Theme 3: *Faculty as Directors*, the participants described the faculty role to include pre-simulation preparation, directing the simulation experience, and debriefing. In conclusion, nurses identified simulation encounters as effective learning experiences that augmented classroom and clinical experiences. *Acting Like a Nurse* during simulation prepares students to better care for patients in both student and professional nurse roles, thus providing safer care for Kansans.

## ALCOHOL USE DISORDER IN BURN PATIENTS

*Charles Jehle, BS<sup>1</sup>, Niam00009lh/F3 10 Tf590,, rev reWnBT/F1&00009lh/F3 10*







**INVESTIGATION OF THE ROLES OF RNA POLYMERASE SUBUNITS  
POLR1C AND POLR1D IN CRANIOFACIAL DEVELOPMENT AND THE**

---

---





**NUMERICAL ANALYSIS OF BLOOD FLOW IN THE HUMAN AORTA AND  
BYPASS GRAFTS**

*Foo Kok, Roy Myose, and Klaus A. Hoffmann*

*Department of Aerospace Engineering, Wichita*



## **ACTIVE WING SHAPING CONTROL OF A MORPHING AIRCRAFT**

*Wilfred Nobleheart and Animesh Chakravarthy*

*Department of Aerospace Engineering, Wichita State University*

This project performs the control system design of a passenger aircraft with highly flexible wings, being conceptualized by NASA. The flexible wings enable change of the wing twist and bending in flight so as to achieve a local angle of attack distribution that is optimal for the specific flight condition. This leads to lower fuel consumption, which lowers emissions and benefits the environment. The aircraft has twenty-three control surfaces, distributed along the trailing and leading edges of eachand

NOTES:

## Index of Presenters

<i>Beck, Emily</i>	10	<i>Kibis, Eyyub</i>	19
<i>Brown, Megan</i>	5	<i>Kok, Foo</i>	20
<i>Busenhart, Cara</i>	14	<i>Lloyd, Margaret</i>	12
<i>Cafferky, Bryan</i>			





